

Proceedings of the
21st European Conference on
Management, Leadership and
Governance
Hosted by CESI, Paris-Nanterre, France
13-14 November 2025



Edited by
Stéphanie Buisine and
Muriel Davies

acpi

A conference managed by ACPI, UK

Proceedings of the

21st European Conference on
Management Leadership and
Governance

ECMLG 2025

A Conference Hosted By
CESI, Paris-Nanterre, France

13 - 14 November 2025

Edited by Stéphanie Buisine and
Muriel Davies

Copyright the authors, 2025. All Rights Reserved.

No reproduction, copy or transmission may be made without written permission from the individual authors.

Review Process

Papers submitted to this conference have been double-blind peer reviewed before final acceptance to the conference. Initially, abstracts were reviewed for relevance and accessibility and successful authors were invited to submit full papers. Many thanks to the reviewers who helped ensure the quality of all the submissions.

Ethics and Publication Malpractice Policy

ACIL adheres to a strict ethics and publication malpractice policy for all publications – details of which can be found here:

<http://www.academic-conferences.org/policies/ethics-policy-for-publishing-in-the-conference-proceedings-of-academic-conferences-and-publishing-international-limited/>

Self-Archiving and Paper Repositories

We actively encourage authors of papers in ACIL conference proceedings and journals to upload their published papers to university repositories and research bodies such as ResearchGate and Academic.edu. Full reference to the original publication should be provided.

Conference Proceedings

The Conference Proceedings is a book published with an ISBN and ISSN. The proceedings have been submitted to a number of accreditation, citation and indexing bodies including Clarivate Web of Science and Elsevier Scopus. Author affiliation details in these proceedings have been reproduced as supplied by the authors themselves.

From 2022 these proceedings are open access and freely available for all to read from

The Electronic version of the Conference Proceedings is available to download from

<https://papers.academic-conferences.org/index.php/ecmlg> . The Conference Proceedings for previous years can be purchased from <http://academic-bookshop.com>

E-Book ISBN: 978-1-917204-63-7

E-Book ISSN: 2048-903X

Print version ISBN: 978-1-917204-62-0

Print Version ISSN: 2048-9021

Published by Academic Conferences & Publishing International Ltd

Reading, UK

+44 (0) 118 324 6938

www.academic-conferences.org

info@academic-conferences.org

Contents

The papers in these proceedings were presented at the conference in sessions organised by topics, but are presented here by type of paper and then alphabetically by lead author surname

<u>About the Proceedings of the 20th European Conference on Management, Leadership and Governance</u>	iv
<u>Preface</u>	xi
<u>Biographies of Chairs and Keynote Speakers</u>	xii
<u>Review Committee</u>	xiv
<u>Academic Papers</u>	
<i>DEI Policies and Practices' Effect on Sustainability Performance: An Ethical Leadership Perspective</i> Raluca-Andreea Achim, Camelia Iuliana Lungu, Chirata Caraiani, Cornelia Dascalu	1-10
<i>The Ambidextrous HR System: A Consilience-Driven Framework for Paradoxical Organizations</i> Ghayur Ahmad	11-18
<i>The Conflict Management Types and Strategies of Sport Club Board Rooms: Case Evidence from Jordan</i> Yehia Al-Daaja	19-27
<i>What Makes an Academic Leader Top of the Class?</i> Cedric Bardowieck, Joachim Prinz	28-35
<i>Stress Management Among University Students in Security and Defence Fields</i> Kristýna Binková, Eva Štěpánková	36-44
<i>Collaborative Innovation Ecosystems as Platforms for Sustainable Entrepreneurship: A Regional Case from Lappeenranta, Finland</i> Olga Bogdanova	45-52
<i>Does Corporate Governance Drive the Narrative Tone of Sustainability Reporting?</i> Andreea Madalina Bojan, Camelia Iuliana Lungu	53-61
<i>Leadership Traits Maintaining Work Engagement During Change Negotiations</i> Kristiina Brusila-Meltovaara, Lasse Torkkeli, Johanna Pennanen	62-68
<i>Sustainability Indicators in Practice: Insights from Expert Companies in Finland</i> Kristiina Brusila-Meltovaara, Heidi Myyryläinen, Marja Katisko	69-76
<i>Breaking the Silence: How Advertising CEO Vacancies can Transform Gender Equality in Executive Recruitment</i> Thora H. Christiansen, Ásta Dís Óladóttir	77-84
<i>Translating Organisational Realities into the Lecture Theatre: The Power of Junior-Senior Knowledge Sharing</i> Bettina Falckenthal, Cláudia Figueiredo, Manuel Au-Yong-Oliveira	85-96

<i>Understanding and Preventing VAT Fraud: Lessons from One of the EU's Highest Gap Economies</i>	
Mihai-Daniel Gavrilă	97-105
<i>Navigating into the Military Leadership Landscape</i>	
Styliani Gkiosi, Neophytos Mouzouris	106-114
<i>Leadership Data-Driven and CBHRM: Interplay of Skills in Public Administration</i>	
Ginevra Gravili	115-125
<i>Public-Private Defence for Satellite Cybersecurity: Addressing Challenges Through Collaboration</i>	
Li Huang, Kimberly A. Cornell	126-134
<i>Increasing Organisational Effectiveness with Managerial Interpersonal Skills – The Role of Organisation Design</i>	
Ana Juras, Ivan Matić	135-143
<i>The Role of Leadership Style in Fostering Innovation Culture in Dubai Government Organisations</i>	
Amira Kamali	144-150
<i>Agile Culture, Agile and Non-Agile Minded Employees' Interrelations in the Context of Agile-Minded Leader Paradox</i>	
Wioleta Kucharska, Maciej Kucharski, Jari Jussila	151-159
<i>Artificial Intelligence, Strategic Foresight, and Competitive Intelligence: Towards Convergence for Morocco's Augmented Competitiveness</i>	
Abdelmjid Lafram, Salah Eddine Bahji	160-168
<i>The Impact of Covid-19 on the Type of Auditor's Opinion: Evidence from the Largest Non-Listed Portuguese Companies</i>	
Kátia Lemos, Sara Serra, Andreia Freitas	169-178
<i>Barriers and Benefits to the Practice of Volunteering by People With Disabilities: A Study of the Perceptions of Organisations Working With Disabilities</i>	
Ana Martinho, Susana Bernardino, Paula Pereira, Ana Luisa Azevedo	179-188
<i>Ignorant Certainty: Leadership in a Dogmatic Haystack</i>	
Richard McNeill, Hester Nienaber	189-198
<i>Expanded Value Stream Mapping in Healthcare: From Efficiency to Sustainability</i>	
Azemeraw Tadesse Mengistu, Anna Tiso, Roberto Panizzolo, Chiara Verbano	199-206
<i>Corporate Governance and Risk Management: Cash Flow Indicators in Credit Risk Prediction</i>	
Suzi Mikulić, Nikola Škobić	207-214
<i>Transforming Health Service Competencies in Remote Regions: Lessons from Lithuania's Public Health Reform</i>	
Birute Mockeviciene, Ilona I. Mulerenkiene, Romalda Kasiliauskiene, Natalja Istomina	215-222
<i>An Information System for a Small Agricultural Company Built on the Google Maps Platform</i>	
Marek Musil, František Smrčka	223-229

<i>A Study on Assessing Circular Economic Practices in the Construction Sector</i> Mona Noreng, Anandasivakumar Ekambaram	230-239
<i>Talent Management Approaches in the Kenyan Banking Sector: The Role of Organizational Characteristics</i> Lydia Nthei, Ken Kamoche, Hellen Otieno	240-248
<i>Financial Literacy, Risk, and Role Models: Investment Behavior Among Members of the Association of Women Business Leaders in Iceland</i> Ásta Dís Óladóttir, Thora H. Christiansen	249-256
<i>Leadership in Higher Education: Women's Mentorship and Leadership Styles</i> Elsa Catalina Olivas Castellanos, Leonel De Gunther Delgado, Fabiola Salas Díaz, María Gabriela Ortíz Martínez, Armando Elizondo Noriega, Ana Yael Vanoye-García, María Yolanda Burgos López	257-264
<i>Aligning Regional Innovation Ecosystems: The MEAM-3LAM Model and CAM Actor Mapping</i> Håkan Ozan, Annika Steiber	265-271
<i>Strategic Injustice in AI-Assisted Goal Setting: The Marginalization of Social Objectives</i> Mikolaj Pindelski	272-279
<i>Combining Representation, Participation, and Expertise for Effective Nonprofit Governance</i> Gina Rossi	280-287
<i>Analysing the Use of Online Communication Software in Companies in the Czech Republic</i> František Smrčka, Hana Vojáčková, Zdeňka Dostálová, Jakub Novotný	288-296
<i>Unveiling Corporate Social Responsibility in Global Fashion: Insights from Supply Chain Management</i> Nikola Soukupová, Michaela Kotková Stříteská	297-306
<i>The Governance of Good Quality Intellectual Capital Formation and its Efficiency Indicators in Various Branches of Science</i> Inese Spica, Sarmite Jegere, Kalevs Kants, Lada Kalinina, Paula Jegere	307-316
<i>Towards a Changing Role of Governance for a Sustainable World</i> Emőke Takács, Antonie Abcouwer	317-326
<i>Integrating ESG-Driven Risk Intelligence: A Strategic Framework for Sustainable Financial Performance and CSR Alignment in Emerging Economies</i> Mohammad Talha, Syed Mohammad Faisal, Ahmad Khalid Khan	327-335
<i>Fragmented Voices, Unified Principles: Diversity and Just Engagement in Earning Community Acceptance for Large Projects</i> Douglas Taylor	336-343
<i>Reimagining Business Educators: Leveraging Generative AI for Enhanced Teaching</i> Joanne Chi-hang Tsoi, Karl Joachim Breunig	344-355
<i>Framing Data Governance Amid AI Advancements in a Public University in South Africa</i> Garreth van Leeve, Sue Petratos	356-365

<i>Building Dynamic Resilience through Strategic Coherence and Ambidextrous Leadership</i>	
Tigran Voskanian, Konstantin Bagrationi, Olga Tunkevichus	366-373
<i>Youth participation in NGOs: Implications for Leadership Development and Social Responsibility</i>	
Norhasni Zainal Abiddin, Junita Sulaiman	374-381
<i>Digital Transformation in Human Resource Development in Malaysia: Emerging Trends and Strategic Implications</i>	
Norhasni Zainal Abiddin, Ihsan Ro'is, Zahimi Zainol Abidin, Junita Sulaiman	382-389
<i>Leadership and Empathy: A Bibliometric Review of Two Decades of Research</i>	
Sanja Zivkovic	390-398
<i>Operationalizing of DCV Microfoundations: A Behavioral Model for a Transforming System Integrator Firm</i>	
Anastasia Znobina, Konstantin Bagrationi, Olga Tunkevichus	399-407

PhD Papers

<i>Soft Skills to Enhance Team Performance: A Systematic Review of Diverse Teamwork</i>	
Saman Abbaszadeh Baghali, Nasrullah Khilji, Konstantin Nikolic	409-418
<i>IT: Business Strategic Alignment for Sustainable Performance in Saudi Government Institutions</i>	
<i>Systematic Literature Review</i>	
Jawaher Albarrak	419-428
<i>Sectoral Impact of Corporate Governance: Short-Term Profitability vs. Long-Term Value Creation</i>	
Michael Mansberger, Rodney Leitner	429-435
<i>Analysing Management Capabilities Interface on Governance and Performance in Pharmaceutical Alliances Context</i>	
Foroozan Piroozi, Mário José Batista Romão, Carlos J. Costa , Manuela Aparicio	436-444
<i>Implementation of Lean Healthcare Approaches in a Hospital's Surgical Block</i>	
Catarina Ribeiro, Paulo M. Fernandes, Erik T. Lopes, Bruno S. Gonçalves, Rui M. Lima	445-454
<i>The Effect of Carbon Emissions on Company Profitability</i>	
Alexandra Stefan, Madalina Preda	455-465
<i>Leadership Role Models Across Contexts: Identifying Common Similarities and Differences</i>	
Franziska Weindel	466-472

Masters Papers

<i>Kata Coaching and Organizational Factors for Engagement and Performance: A Literature Review</i>	
Jéssica da Silva Soares Cunha, June Marques Fernandes, Luciana Paula Reis	474-482
<i>Lean Leadership: A Study on Lean Leadership Attributes</i>	
Thierry Jefferson Barros Scursulim, June Marques Fernandes, Luciana Paula Reis	483-492

Work in Progress Papers

Being Bypassed: Uncovering Skip-Level Meetings from U.S. Frontline Technology Leaders' Perspectives
Samuel Blacher 494-498

When AI Changes its Tone, Does Acceptance Follow?
Kevin Lejeune, Corentin Burnay 499-502

Workplace Learning Potential as a Mediator Between Psychological Safety and Strategy Implementation
Teemu Ojala, Soila Lemmetty 503-506

Healthcare Lean Readiness Assessment in a Territorial Outpatient System
Caterina Pozzan, Anna Tiso, Maria Crema, Chiara Verbano 507-511

Educating Sustainable Leadership through Academia–Industry Collaboration for Shared Value and Resilience
Iskra Rodriguez 512-515

Late Submissions

Synthesising Challenges and Opportunities in Human Resource Development for Productivity Enhancement: Toward a Framework for Malaysia's High-Income Transition
Shahrul Azuwar Abdul Aziz, Norhasni Zainal Abiddin 517-526

About the 21st European Conference on Management, Leadership and Governance, 2025

The European Conference on Management, Leadership and Governance has evolved significantly over the past 21 years, adapting to the changing landscape of management and leadership practices. Initially focusing on foundational theories and practices in management, the conference has expanded its scope to include a diverse range of topics reflecting contemporary challenges in the field.

In its earlier years, the conference mainly emphasized traditional management principles, leadership styles, and governance frameworks. As global business dynamics shifted, so did the conference's themes, incorporating emerging trends such as digital transformation, sustainability, and ethical leadership.

Aims and Scope

The aims of the conference now not only include sharing academic research but also fostering dialogue among practitioners, policymakers, and scholars to address pressing issues facing organizations today.

Recent editions have featured discussions on topics like organizational resilience, innovation management, and cross-cultural leadership, showcasing the conference's commitment to staying relevant in an ever-evolving business environment. This evolution reflects a broader understanding of management and governance as interdisciplinary fields that require collaborative approaches and innovative solutions.

Topics Covered

The call for papers for the ECMLG conference asked for contributions that considered the following topics. In addition, the committee welcomed papers on a number of specialist mini-tracks which can be seen at the end of this list.

Leadership Styles and Theories:

Exploring various approaches to leadership, including transformational, transactional, and servant leadership, and their impact on organizational culture.

Strategic Management:

Discussions on the formulation and implementation of strategies that drive organizational success, emphasizing agility and adaptability in changing markets.

Digital Transformation:

Examining the role of technology in shaping management practices, including the integration of artificial intelligence and data analytics in decision-making processes.

Sustainability and Corporate Social Responsibility (CSR):

Addressing the importance of ethical leadership and sustainable practices in organizations, highlighting the balance between profit and societal impact.

Cross-Cultural Management:

Investigating the challenges and opportunities of managing diverse teams across different cultural contexts, emphasizing communication and collaboration.

Innovation and Change Management:

Focusing on how organizations can foster a culture of innovation and effectively manage change to remain competitive.

Organisational Behaviour:

Exploring the dynamics of team interactions, motivation, and employee engagement in enhancing organizational performance.

Governance and Policy Making:

Analysing the frameworks and practices that guide effective governance in both public and private sectors.

Experts in the field proposed mini tracks on the following topics. Papers accepted on these topics after the double-blind peer review process were presented as mini tracks at the conference and are also published in these proceedings.

- Artificial Intelligence Applied to Management, Leadership and Governance
- The Role of Corporate Governance in a Sustainable Business Environment
- Leadership and Management Beyond Borders
- Women in Leadership: The Liminal Fluctuating Spaces They Occupy

The programme from the 2025 conference can be downloaded from here and full details about the conference can be seen from the conference website: <https://www.academic-conferences.org/conferences/ecmlg/>

ECMLG Preface

These proceedings represent the work of contributors to the 21st European Conference on Management Leadership and Governance (ECMLG 2025), hosted by ACI and CESI, Paris-Nanterre on 13-14 November 2025. The Conference Chair was Stéphanie Buisine, and the Programme Chairs was Muriel Davies both from CESI, Paris-Nanterre.

ECMLG is a well-established event on the academic research calendar and now in its 21st year the key aim remains the opportunity for participants to share ideas and meet the people who hold them. The aims and scope of the conference is to be a forum for practical, technical and theoretical exchange about the study, management, development and implementation of issues pertaining to management, leadership and governance from a multidisciplinary context.

The opening keynote presentation was given by Stéphanie Buisine from CESI Paris-Nanterre, who spoke about The Future of Leadership. The second day of the conference opened with an address from Daniel Ahlers, Centre for Coaching (Europe) who discussed Team Coaching: Overcoming Corporate Contradiction.

With an initial submission of 156 abstracts, after the double blind, peer review process there are 47 Academic research papers, 7 PhD research papers, 2 Masters Research papers and 5 work-in-progress papers published in these Conference Proceedings. These papers represent research from Belgium, Bosnia and Herzegovina, Brazil, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Finland, Germany, Greece, Iceland, India, Israel, Italy, Kenya, Latvia, Lithuania, Malaysia, Mexico, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Saudi Arabia, South Africa, Sweden, Türkiye, UAE UK, USA

We would like to thank everyone who participated in this conference.

Stéphanie Buisine and Muriel Davies

CESI, Paris-Nanterre

November 2025

Biographies of Chairs and Keynote Speakers

Conference and Programme Chairs



Stéphanie Buisine is Research Director at CESI, and leads innovation research at LINEACT laboratory. Her career has taken her from technological innovation issues (ex: Human-Computer Interaction) to the methodological and strategic dimensions of innovation (ex: Creativity, Prospective on future needs), up to organizational innovation. Through innovation, her research aims to support self-determination of users, designers and collaborators.



After studying engineering and management, **Muriel Davies** worked 14 years in the textile industry on several plants as supply chain or quality manager. She joined CESI in 2009 as a pedagogical manager, and the LINEACT CESI 8 years ago as researcher. Today she conducts research on culture and organizational innovation with the current socio-environmental challenges as structural framework.

Keynote Speakers



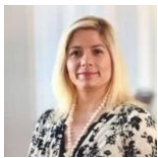
Daniel Ahlers is Managing Partner of the Centre for Coaching (Europe), as well as a Certified Professional Integral Coach®, Systemic Team Coach, and experienced facilitator. With over 12 years of coaching experience, drawing on Swiss and South African heritage, he helps executives and leadership teams navigate transformational shifts and enhance stakeholder value. A background in Chemistry and Information Systems and his prior leadership roles in finance and marketing inform his evidence-based, strategically aligned approach. Passionate about developing confident, authentic leaders, he also teaches, mentors, and designs leadership interventions worldwide, driving meaningful impact across diverse organisational contexts.

Mini Track Chairs



Dr. Ghayur Ahmad holds a Bachelor of Arts in English Literature and Law, as well as a Master of Philosophy/Psychology from the University of Peshawar, Pakistan. He was awarded a scholarship by the University of Bedfordshire, United Kingdom, where he earned his Master's degree in Human Resource Management. Dr. Ahmad pursued his doctoral studies at Preston University, Kohat, completing his coursework before being granted a prestigious scholarship by the Higher Education Commission of Pakistan to finalize his PhD dissertation at the Carlson School of Management, University of Minnesota, USA. With over 18 years of professional and academic experience, Dr. Ahmad has taught and worked in various countries, including the United Kingdom, Pakistan, the United States, and Saudi Arabia. He has held positions at the University of Bedfordshire, UK, as well as esteemed institutions in Pakistan such as the National University of Sciences and Technology (NUST) and Islamia College Peshawar. Dr. Ahmad has successfully managed multi-million-dollar projects in Pakistan and currently serves as an Assistant Professor at the College of Business Administration, Prince Mohammad

Bin Fahd University, Al Khobar, Kingdom of Saudi Arabia. His research focuses on motivation, commitment, and reward systems within organizations, particularly the role of rewards in employee motivation. He has published numerous articles in international journals and is an active participant in national and international conferences and seminars. Additionally, Dr. Ahmad has held significant leadership roles, including serving as the founding General Manager of the Industry Relations Department at NUST and as the Founding Director of the Student Startup Center at Islamia College, Peshawar.



Dr Maryam Shadman-Pajouh joined Teesside University in September 2008 as a part-time Lecturer in International Management whilst pursuing her PhD in Management. In 2013 she was appointed to the full-time position of Senior Lecturer in Human Resource Management (HRM). She completed her PhD at Teesside University on “The Challenges of Importing Knowledge from Other Cultures: A Case Study of an Iranian Hotel Chain” 2015. Her project studied one of the largest corporations in the tourism sector in Iran, which examined the challenges the corporation faced in the areas of absorptive capacity and knowledge transfer in relation to training and innovation advancement. She studied the corporate from 2005 until 2012, using ethnography and held over 200 in depth interviews with staff and senior management. Her work is considered pioneering in the area of the impact of culture on HRM. She received a BA (Hons) in Accounting from Karaj Azad University in Iran, a Masters in International Business from Hull University and a Masters in Research in Business and Management also from Hull University

ECMLG Conference Committee

Prof Rute Abreu, Guarda Polytechnic Institute, Portugal; Dr Małgorzata Patrycja Adamska, Opole University of Technology, Poland; Prof Grigorescu Adriana, NUPSPA; IEF Romanian Academy, Romania; Dr Ghayur Ahmad, Prince Muhammad Bin Fahd University, Saudi Arabia; Dr Mohd Shahril Ahmad Razimi, Northern University of Malaysia, Malaysia; Dr Noor Ahmed, Begum Nusrat Bhutto Women University Sukkur, Pakistan; Dr Saad Aldoihi, KACST, Saudi Arabia; Dr. Morariu Alunica, "Stefan cel Mare" University of Suceava, Faculty of Economics and Public Administration, Romania; Prof Maria Ceu Alves, University of Beira Interior, Portugal; Dr Sanaullah Ansari, Shaheed Zulfikar Ali Bhutto Institute of Science and Technology (SZABIST), Pakistan; Prof. Doutora Marina Godinho Antunes, ISCAL - Instituto Superior de Contabilidade e Administração de Lisboa, Portugal; Prof Lina Artemenko, National technical university of Ukraine "Igor Sikorsky Kyiv Politechnical University", Ukraine; Ahmet Aykac, Theseus Business School, Lyons, France; Dr Daniel Badulescu, University of Oradea, Romania; Dr Afsaneh Bagheri, Faculty of Entrepreneurship, University of Tehran, Iran; Dr Samira Bakr, NCEEE, Egypt; Prof Joan Ballantine, Ulster University, UK; Dr Neeta Baporikar, Harold Pukewitz Graduate School of Business (HP-GSB), Namibia; Prof Dimitrios Belias, University of Thessaly, Larissa, Geopolis, Greece; Prof Andrea Bencsik, University of Pannonia, Hungary; Svein Bergum, Lillehammer University College, Norway; Dr Madeleine Block, University Bielefeld, Germany; Constantin Bratianu, Bucharest University of Economic Studies, Romania; Dr Marta Bubicz, Lusófona University, Portugal; Prof Ivana Bulog, Faculty of Business, Economic and Tourism, University of Split, Croatia; Prof Felicjan Bylok, Technical University of Czeszochowa, Poland; Prof Kiyomet Tunca Caliyurt, Trakya University - Faculty of Business Administration and Economics, Turkey; Prof Sven Carlsson, Lund University, Sweden; Dr Ondrej Castek, Faculty of Economics and Administration, Masaryk University, Czech Republic; Dr Walter Castelnovo, Università dell'Insubria, Como, Italy; Dr Francisca Castilla-Polo, University of Jaén, Spain; Prof Prasenjit Chatterjee, MCKV, India; Prof George Chiladze, The University of Georgia, Georgia; Dr Sudhinder Singh Chowhan, IIHMR University Jaipur, India; Dr Roila Christakou, Eurobank, Greece; Dr Mei-Tai Chu, La Trobe University, Australia; Dr Leszek Cichobłaziński, Czeszochowa University of Technology, Poland; Simona Činčalová, College of Polytechnics Jihlava, Jihlava, Czech Republic; Prof Teresa Costa, Instituto Politécnico de Setúbal, Portugal; Dr Miguel de Castro Neto, ISEGI, Universidade Nova de Lisboa, Portugal; Dr Benny M.E. De Waal, University of Applied Sciences Utrecht, The Netherlands; Andrew Deegan, University College Dublin, Ireland; Assistant Professor Reza Dehghan, Islamic Azad University, Iran; Assistant Professor Reza Dehghan, Islamic Azad University, North Tehran Branch, Iran; Prof Sri Ranjan Dharmakeerthi Sri Ranjan, G. D., Sri Palee Campus, University of Colombo, Sri Lanka; Dr Mihela Diaconu, The Gheorghe Asachi Technical University of Iasi, Romania; Prof Ana Dinis, School of Management - Polytechnic University of Cávado and Ave, Portugal; Dr Hichem Dkhili, Faculty of Economics, and Management of Jendouba, University of Jendouba, Tunisia, Tunisia; Dr Maria José Palma Lampreia Dos-Santos, Polytechnic University of Lisbon, LIACOM, ISCTE-IUL DINÂMIA'CET, Portugal; Prof Philip Dover, Babson College, USA; Dr Th Economides, Neapolis University Pafos, Cyprus; Emmanuel Innocents Emmanuel Innocents, Tshwane University of Technology, South Africa; Luisa Errichiello, Italian National Research Council (CNR), Italy; Dr Mercy Escalante Ludena, Anhmebi Morumbi University, Brazil; Prof Liliana Feleaga, Academy of Economic Studies (ASE), Romania; Prof Cristina Feniser, Technical University of Cluj Napoca, Romania; Prof Paula Fernandes, Polytechnic Institute of Bragança & UNIAG, Portugal; Jorge Ferreira, Nova University of Lisbon, Portugal; Dr Pedro Ferreira, University of Aveiro, Portugal; Dr zair Firdaous, , Morocco; Dr Marzena Frankowka, University of Szczecin, Poland; Prof Elisabete G. S. Félix, University of Évora, Portugal; Dr Andreas Gadatsch, Bonn-Rhein-Sieg University of Applied Sciences, Germany; Ass Prof Balan George, Romanian-German University, Romania; Dr Tatiana Gladkikh, The University of Winchester, UK; Dr Diogo Goes, Instituto Superior de Administração e Línguas, Portugal; Prof Sofia Gomes, Portucalense University, Portugal; Prof Jorge Gomes, Universidade Lusofona Lisboa, Portugal; Prof Paulo Gonçalves, Polytechnic Institute of Porto, ISCAP, Portugal; Dr Iwona Gorzeń-Mitka, Czeszochowa University of Technology, Faculty of Management, Poland; Prof Ken Grant, Ryerson University, Toronto, Canada; Dr Aleksandra Grobelna, Gdynia Maritime University, Poland; Prof Antonio Guerreiro, University of Evora, Portugal; Prof Niraj Gupta, Indian Institute of Corporate Affairs, India; Dr Noor Ul Hadi, Prince Mohammad Bin Fahd University, Saudi Arabia; Dr hossein hakimpour, Islamic AzaUniversity Birjand

Branch, Iran; Dr Mahmoud Hassanin , Ahram Canadian University , Egypt; Prof Graciete Honrado, Instituto Politécnico de Tomar, Portugal; Dr Saadia Irfan, National University of Sciences and Technology, Pakistan; Dr Md Enamul Islam, Association of Social Science Research, Bangladesh, Bangladesh; Dr Md Enamul Islam, RAJUK Uttara Model College, Bangladesh; Dr Dembińska Izabela, University of Szczecin, Poland; Martina Jakábová, Visions, S.R.O., Slovakia; Asst Rosilah Jamil, Azman Hashim International Business School, Universiti Teknologi Malaysia , Malaysia; Dr Shital Jayantilal, Universidade Portucalense, Portugal; Dr Nalla Bala Kalyan, Sri Venkateswara College of Engineering, (Autonomous), Tirupati-517507, India; Research Scientist Paul Kamal Chandra, Global Research Centre, Malaysia and Bangladesh, Malaysia; Dr DrMeenakshi Kaushik, Lloyd Group of Institutions | Greater Noida <http://www.lloydbusinessschool.edu.in/>, India; Dr N.V. Kavitha, St. Ann's College for Women, India; Mr. Seyed Amirhesam Khalafi, University of Houston, USA; Prof Tatiana Khvatova, Emlyon Business School, Ecully, France; Associate Professor Joanna Kizielewicz, Faculty of Management and Quality Science, Poland; Prof Joanna Kizielewicz, Gdynia Maritime University, Poland; Maria Knecht-Tarczewska, Wrocław College of Management "Edukacja", Poland; Prof Jesuk Ko, Universidad Mayor de San Andres, Bolivia; Jolanta Kowal, College of Management and Wrocław University, Poland; Dr Ewa Kraska, Jan Kochanowski University of Kielce, Poland; Prof Dr Ibrahim Krasniqi, University for Business and Technology, Kosovo; Aleksandra Kwiatkowska, College of Management and Wrocław University, Poland; Prof Abdelmjid LAFRAM, School of Information Sciences ESI-Rabat, Morocco; Dr Anna Lemańska-Majdzik, Częstochowa University of Technology, Faculty of Management, Poland; Prof Kátia Lemos, School of Management - Institute Polytechnic of Cávado and Ave, Portugal; Dean Mieczysław Leniartek, Technical University in Cracow, Poland; Dr Vanessa Liu, The Hong Kong Polytechnic University, China; Prof Joao Alexandre Lobo Marques, University of Saint Joseph, Macau; Prof Felipa Lopes dos Reis, Lusófona University - University Center of Lisbon, Portugal; Prof Sam Lubbe, NWU, South Africa; Dr Camelia Luliana Lungu, Academy Of Economic Studies, Bucharest, Romania; Dr Łukasz Mach, Opole University of Technology, Poland; Paolo Magrassi, Polytechnique of Milan, Italy; Dr Arkadiusz Malkowski, Faculty of Economic, Poland; Arjen Maris, HU University of Applied Sciences, Utrecht, The Netherlands; Bill Martin, Royal Melbourne Institute of Technology, Australia, Australia; Asst Carla Martinho, Lisbon Accounting and Business School, Polytechnic Institute of Lisbon, Portugal; Prof Nico Martins, University of South Africa, South Africa; Dr Milos Maryska, Prague University of Economics and Business, Department of Information Technology, Czech Republic; Dr Florinda Matos, Iscte - Instituto Universitário de Lisboa, Portugal; Rija Maurizo, University of Calabria, Italy; Mr Mohd Shamsuri Md Saad, Universiti Teknikal Malaysia Melaka, Malaysia; Prof Luis Mendes, Beira Interior University, Portugal; Prof Tamara Menichini, University of Rome "Niccolò Cusano", Italy; Dr Anesu Mironga, Africa University, Zimbabwe; Mr Akhil Mittal, Synopsys, USA; Ms Hezlin Mohd Hashim, Universiti Teknologi Petronas, Malaysia; Prof Mónica Monteiro, Universidade Portucalense, Portugal; Prof Dr. Pedro Ribeiro Mucharreira, University of Lisbon, Portugal; Dr Gunilla Myreteg, Örebro University School of Business, Sweden; Timothy Nichol, Liverpool Business School, LJMU, Liverpool, UK; Prof Hester Nienaber, NAU (Research Affiliate), USA; Dr Nik Mohd Norfadzilah Nik Mohd Rashid, Universiti Sultan Zainal Abidin, UniSZA, Malaysia; Asst Sónia P. Nogueira, Polytechnic Institute of Bragança, Portugal; Prof Elisabete Nogueira, Portucalense University, Portugal; Dr Melao Nuno, Polytechnic Institute of Viseu, Portugal; Dr Catalina Olivas, Tecnológico de Monterrey, Mexico; Prof Elsa Catalina Olivas Castellanos, Tecnológico de Monterrey, Mexico; Luciana Oliveira, Polytechnic of Porto, Portugal; Asst Prof Dr Abdelnaser Omran, School of Economics, Finance and Banking, Universiti Utara Malaysia, Malaysia; Dr Roslina Othman, International Islamic University Malaysia, Kuala Lumpur, Malaysia; Prof Snezhanka Ovcharova, Varna Free University, dept. Administration and management, Bulgaria; Dr Nayantara Padhi, Indira Gandhi National Open University, New Delhi, India; Dr Xavier Parisot, IKI-SEA, Thailand; Dr Stavros Paralalis, Frederick University, Cyprus; Prof Chintan Patel, Adani Institute of Digital Technology Management, India; Dr Shaun Pather, University of the Western Cape, South Africa; Prof Manuel Sousa Pereira, IPVC, Portugal; Dr Danilo Piaggese, Framericas, USA; Prof Rui Pimenta, P.PORTO- ESS, Portugal; Florina Pinzaru, The College of Management - NSPSA,, Romania; Dr John Politis, Charles Darwin University, Australia; Adina Simona Popa, "Eftimie Murgu" University of Resita, Romania; Dr Cosmin Popa, The University of Agricultural Sciences and Veterinary Medicine, Romania; Prof Sheila Puffer, Northeastern University, Boston, USA; Senthamil Raja, Pondicherry University, India; Dr Pascal Ravesteijn, HU University of Applied Sciences, The Netherlands; Dr Marcin

Relich, University of Zielona Gora, Poland; Asstc Metin Reyhanoglu, Hatay Mustafa Kemal University, Turkey; Assistant Professor Dehghan Reza, Islamic Azad University, North Tehran Branch, Iran; Researcher Mohamad Rjoob, Riphah International University, PALESTINE; Mohamad Rjoob, Ministry of Education, Palestine; Prof José Carlos Rouco, Universidade Lusófona, Portugal; Prof Agnieszka Rzepka, Lublin University of Technology, Poland; Prof Abdel-Badeeh Salem, Ain Shams University, Cairo, Egypt; Lele Sang, Wharton School of the University of Pennsylvania, U.S.; Amitrajit Sarkar, Christchurch Polytechnic Institute of Technology, New Zealand; Dr Abdullah Sarwar, Multimedia University, Cyberjaya, Malaysia; Dr Ousanee Sawagvudcharee, Centre for the Creation of Coherent Change and Knowledge, Liverpool John Moores University, Thailand; Dr Elena Seghedin, Alexandru Ioan Cuza University, Romania; Kakoli Sen, Institute for International Management and Technology (IIIMT) Gurgaon, India; Dr Armin Shams, Sharif University of Technology, Iran; Asstc Eriona Shtembari, University of New York Tirana, Albania; Irma Shyle, Polytechnic University of Tirana, Albania; Dr MD Abubakar Siddique Siddique, Abu Dhabi University, United Arab Emirates; Dr Gourida Siham, Djelfa University, Algérie; Prof Susana Silva, School of Hospitality and Tourism, Institute Polytechnic of Porto, Portugal; Prof Maria Gabriela Silva, ISCTE-University Institute of Lisbon, Portugal; Prof Natacha Silva, IPB, Portugal; Prof Lúcia de Fátima Silva Piedade, Universidade Lusófona, Portugal; Dr Raj Singh, University of Riverside, USA; Owen Skae, Rhodes Business School, Rhodes University, Grahamstown, South Africa; Dr Katarzyna Skrzyszewska, Gdynia Maritime University, Poland; Dr Roy Soh, Albukhary International University, Malaysia; Dr Lew Sook Ling, Multimedia University, Malaysia; Dr Maria Jos Sousa, Universidade Europeia, Portugal; Dr Riccardo Spinelli, Università Di Genova, Italy; Mr David Stewart, RYP International, Australia; Fred Strønen, Oslo Metropolitan University, Norway; John Sullivan, School of Information, University of South Florida, USA; Prof Reima Suomi, University of Turku, Finland; Dr Dalia Susniene, Kaunas University of Technology, Lithuania; Dr Hamed Taherdoost, Hamta Group | Hamta Business Solution Sdn Bhd, Malaysia; Dr Safdar Husain Tahir, Govt. College University Faisalabad, Pakistan; Ramayah Thurasamy, Universiti Sains Malaysia, Malaysia; Dr Xuemei Tian, Swinburne University, Australia; Dr Piotr Tomski, Czestochowa University of Technology, Poland; Dr Tiago Trancoso, IPVC, Portugal; Dr Savvas Trichas, Open University Cyprus, Cyprus; Prof Roberta Troisi, University of Salerno, Italy; Dr Hab Mirosława Wawrzak-Chodaczek, Institute of Pedagogy, Wrocław University, Poland; Dr Lugkana Worasinchai, Bangkok University, Thailand; Dr Zulnadi Yaacob, Universiti Sains Malaysia, Malaysia; Tuan Yu, Kent Business School, University of Kent, Canterbury, UK; Asst Prof Nurul Mohammad Zayed, Daffodil International University, Bangladesh; Dr Sanja Zivkovic, Heartist Center, Croatia; Dr Justyna Żywiołek, Czestochowa University of Technology, Poland.

Branch, Iran; Dr Mahmoud Hassanin , Ahram Canadian University , Egypt; Prof Graciete Honrado, Instituto Politécnico de Tomar, Portugal; Dr Saadia Irfan, National University of Sciences and Technology, Pakistan; Dr Md Enamul Islam, Association of Social Science Research, Bangladesh, Bangladesh; Dr Md Enamul Islam, RAJUK Uttara Model College, Bangladesh; Dr Dembińska Izabela, University of Szczecin, Poland; Martina Jakábová, Visions, S.R.O., Slovakia; Asst Rosilah Jamil, Azman Hashim International Business School, Universiti Teknologi Malaysia , Malaysia; Dr Shital Jayantilal, Universidade Portucalense, Portugal; Dr Nalla Bala Kalyan, Sri Venkateswara College of Engineering, (Autonomous), Tirupati-517507, India; Research Scientist Paul Kamal Chandra, Global Research Centre, Malaysia and Bangladesh, Malaysia; Dr DrMeenakshi Kaushik, Lloyd Group of Institutions | Greater Noida <http://www.lloydbusinessschool.edu.in/>, India; Dr N.V. Kavitha, St. Ann's College for Women, India; Mr. Seyed Amirhesam Khalafi, University of Houston, USA; Prof Tatiana Khvatova, Emlyon Business School, Ecully, France; Associate Professor Joanna Kizielewicz, Faculty of Management and Quality Science, Poland; Prof Joanna Kizielewicz, Gdynia Maritime University, Poland; Maria Knecht-Tarczewska, Wrocław College of Management "Edukacja", Poland; Prof Jesuk Ko, Universidad Mayor de San Andres, Bolivia; Jolanta Kowal, College of Management and Wrocław University, Poland; Dr Ewa Kraska, Jan Kochanowski University of Kielce, Poland; Prof Dr Ibrahim Krasniqi, University for Business and Technology, Kosovo; Aleksandra Kwiatkowska, College of Management and Wrocław University, Poland; Prof Abdelmjid LAFRAM, School of Information Sciences ESI-Rabat, Morocco; Dr Anna Lemańska-Majdzik, Częstochowa University of Technology, Faculty of Management, Poland; Prof Kátia Lemos, School of Management - Institute Polytechnic of Cávado and Ave, Portugal; Dean Mieczysław Leniartek, Technical University in Cracow, Poland; Dr Vanessa Liu, The Hong Kong Polytechnic University, China; Prof Joao Alexandre Lobo Marques, University of Saint Joseph, Macau; Prof Felipa Lopes dos Reis, Lusófona University - University Center of Lisbon, Portugal; Prof Sam Lubbe, NWU, South Africa; Dr Camelia Luliana Lungu, Academy Of Economic Studies, Bucharest, Romania; Dr Łukasz Mach, Opole University of Technology, Poland; Paolo Magrassi, Polytechnique of Milan, Italy; Dr Arkadiusz Malkowski, Faculty of Economic, Poland; Arjen Maris, HU University of Applied Sciences, Utrecht, The Netherlands; Bill Martin, Royal Melbourne Institute of Technology, Australia, Australia; Asst Carla Martinho, Lisbon Accounting and Business School, Polytechnic Institute of Lisbon, Portugal; Prof Nico Martins, University of South Africa, South Africa; Dr Milos Maryska, Prague University of Economics and Business, Department of Information Technology, Czech Republic; Dr Florinda Matos, Iscte - Instituto Universitário de Lisboa, Portugal; Rija Maurizo, University of Calabria, Italy; Mr Mohd Shamsuri Md Saad, Universiti Teknikal Malaysia Melaka, Malaysia; Prof Luis Mendes, Beira Interior University, Portugal; Prof Tamara Menichini, University of Rome "Niccolò Cusano", Italy; Dr Anesu Mironga, Africa University, Zimbabwe; Mr Akhil Mittal, Synopsys, USA; Ms Hezlin Mohd Hashim, Universiti Teknologi Petronas, Malaysia; Prof Mónica Monteiro, Universidade Portucalense, Portugal; Prof Dr. Pedro Ribeiro Mucharreira, University of Lisbon, Portugal; Dr Gunilla Myreteg, Örebro University School of Business, Sweden; Timothy Nichol, Liverpool Business School, LJMU, Liverpool, UK; Prof Hester Nienaber, NAU (Research Affiliate), USA; Dr Nik Mohd Norfadzilah Nik Mohd Rashid, Universiti Sultan Zainal Abidin, UniSZA, Malaysia; Asst Sónia P. Nogueira, Polytechnic Institute of Bragança, Portugal; Prof Elisabete Nogueira, Portucalense University, Portugal; Dr Melao Nuno, Polytechnic Institute of Viseu, Portugal; Dr Catalina Olivas, Tecnológico de Monterrey, Mexico; Prof Elsa Catalina Olivas Castellanos, Tecnológico de Monterrey, Mexico; Luciana Oliveira, Polytechnic of Porto, Portugal; Asst Prof Dr Abdelnaser Omran, School of Economics, Finance and Banking, Universiti Utara Malaysia, Malaysia; Dr Roslina Othman, International Islamic University Malaysia, Kuala Lumpur, Malaysia; Prof Snezhanka Ovcharova, Varna Free University, dept. Administration and management, Bulgaria; Dr Nayantara Padhi, Indira Gandhi National Open University, New Delhi, India; Dr Xavier Parisot, IKI-SEA, Thailand; Dr Stavros Paralalis, Frederick University, Cyprus; Prof Chintan Patel, Adani Institute of Digital Technology Management, India; Dr Shaun Pather, University of the Western Cape, South Africa; Prof Manuel Sousa Pereira, IPVC, Portugal; Dr Danilo Piaggese, Framericas, USA; Prof Rui Pimenta, P.PORTO- ESS, Portugal; Florina Pinzaru, The College of Management - NSPSA,, Romania; Dr John Politis, Charles Darwin University, Australia; Adina Simona Popa, "Eftimie Murgu" University of Resita, Romania; Dr Cosmin Popa, The University of Agricultural Sciences and Veterinary Medicine, Romania; Prof Sheila Puffer, Northeastern University, Boston, USA; Senthamil Raja, Pondicherry University, India; Dr Pascal Ravesteijn, HU University of Applied Sciences, The Netherlands; Dr Marcin

Relich, University of Zielona Gora, Poland; Asstc Metin Reyhanoglu, Hatay Mustafa Kemal University, Turkey; Assistant Professor Dehghan Reza, Islamic Azad University, North Tehran Branch, Iran; Researcher Mohamad Rjoob, Riphah International University, PALESTINE; Mohamad Rjoob, Ministry of Education, Palestine; Prof José Carlos Rouco, Universidade Lusófona, Portugal; Prof Agnieszka Rzepka, Lublin University of Technology, Poland; Prof Abdel-Badeeh Salem, Ain Shams University, Cairo, Egypt; Lele Sang, Wharton School of the University of Pennsylvania, U.S.; Amitrajit Sarkar, Christchurch Polytechnic Institute of Technology, New Zealand; Dr Abdullah Sarwar, Multimedia University, Cyberjaya, Malaysia; Dr Ousanee Sawagvudcharee, Centre for the Creation of Coherent Change and Knowledge, Liverpool John Moores University, Thailand; Dr Elena Seghedin, Alexandru Ioan Cuza University, Romania; Kakoli Sen, Institute for International Management and Technology (IIIMT) Gurgaon, India; Dr Armin Shams, Sharif University of Technology, Iran; Asstc Eriona Shtembari, University of New York Tirana, Albania; Irma Shyle, Polytechnic University of Tirana, Albania; Dr MD Abubakar Siddique Siddique, Abu Dhabi University, United Arab Emirates; Dr Gourida Siham, Djelfa University, Algérie; Prof Susana Silva, School of Hospitality and Tourism, Institute Polytechnic of Porto, Portugal; Prof Maria Gabriela Silva, ISCTE-University Institute of Lisbon, Portugal; Prof Natacha Silva, IPB, Portugal; Prof Lúcia de Fátima Silva Piedade, Universidade Lusófona, Portugal; Dr Raj Singh, University of Riverside, USA; Owen Skae, Rhodes Business School, Rhodes University, Grahamstown, South Africa; Dr Katarzyna Skrzyszewska, Gdynia Maritime University, Poland; Dr Roy Soh, Albukhary International University, Malaysia; Dr Lew Sook Ling, Multimedia University, Malaysia; Dr Maria Jos Sousa, Universidade Europeia, Portugal; Dr Riccardo Spinelli, Università Di Genova, Italy; Mr David Stewart, RYP International, Australia; Fred Strønen, Oslo Metropolitan University, Norway; John Sullivan, School of Information, University of South Florida, USA; Prof Reima Suomi, University of Turku, Finland; Dr Dalia Susniene, Kaunas University of Technology, Lithuania; Dr Hamed Taherdoost, Hamta Group | Hamta Business Solution Sdn Bhd, Malaysia; Dr Safdar Husain Tahir, Govt. College University Faisalabad, Pakistan; Ramayah Thurasamy, Universiti Sains Malaysia, Malaysia; Dr Xuemei Tian, Swinburne University, Australia; Dr Piotr Tomski, Czestochowa University of Technology, Poland; Dr Tiago Trancoso, IPVC, Portugal; Dr Savvas Trichas, Open University Cyprus, Cyprus; Prof Roberta Troisi, University of Salerno, Italy; Dr Hab Mirosława Wawrzak-Chodaczek, Institute of Pedagogy, Wrocław University, Poland; Dr Lugkana Worasinchai, Bangkok University, Thailand; Dr Zulnadi Yaacob, Universiti Sains Malaysia, Malaysia; Tuan Yu, Kent Business School, University of Kent, Canterbury, UK; Asst Prof Nurul Mohammad Zayed, Daffodil International University, Bangladesh; Dr Sanja Zivkovic, Heartist Center, Croatia; Dr Justyna Żywiołek, Czestochowa University of Technology, Poland.

Contents

The papers in these proceedings were presented at the conference in sessions organised by topics, but are presented here by type of paper and then alphabetically by lead author surname

<u>About the Proceedings of the 20th European Conference on Management, Leadership and Governance</u>	iv
<u>Preface</u>	xi
<u>Biographies of Chairs and Keynote Speakers</u>	xii
<u>Review Committee</u>	xiv
<u>Academic Papers</u>	
<i>DEI Policies and Practices' Effect on Sustainability Performance: An Ethical Leadership Perspective</i> Raluca-Andreea Achim, Camelia Iuliana Lungu, Chirata Caraiani, Cornelia Dascalu	1-10
<i>The Ambidextrous HR System: A Consilience-Driven Framework for Paradoxical Organizations</i> Ghayur Ahmad	11-18
<i>The Conflict Management Types and Strategies of Sport Club Board Rooms: Case Evidence from Jordan</i> Yehia Al-Daaja	19-27
<i>What Makes an Academic Leader Top of the Class?</i> Cedric Bardowieck, Joachim Prinz	28-35
<i>Stress Management Among University Students in Security and Defence Fields</i> Kristýna Binková, Eva Štěpánková	36-44
<i>Collaborative Innovation Ecosystems as Platforms for Sustainable Entrepreneurship: A Regional Case from Lappeenranta, Finland</i> Olga Bogdanova	45-52
<i>Does Corporate Governance Drive the Narrative Tone of Sustainability Reporting?</i> Andreea Madalina Bojan, Camelia Iuliana Lungu	53-61
<i>Leadership Traits Maintaining Work Engagement During Change Negotiations</i> Kristiina Brusila-Meltovaara, Lasse Torkkeli, Johanna Pennanen	62-68
<i>Sustainability Indicators in Practice: Insights from Expert Companies in Finland</i> Kristiina Brusila-Meltovaara, Heidi Myyryläinen, Marja Katisko	69-76
<i>Breaking the Silence: How Advertising CEO Vacancies can Transform Gender Equality in Executive Recruitment</i> Thora H. Christiansen, Ásta Dís Óladóttir	77-84
<i>Translating Organisational Realities into the Lecture Theatre: The Power of Junior-Senior Knowledge Sharing</i> Bettina Falckenthal, Cláudia Figueiredo, Manuel Au-Yong-Oliveira	85-96

<i>Understanding and Preventing VAT Fraud: Lessons from One of the EU's Highest Gap Economies</i>	
Mihai-Daniel Gavrilă	97-105
<i>Navigating into the Military Leadership Landscape</i>	
Styliani Gkiosi, Neophytos Mouzouris	106-114
<i>Leadership Data-Driven and CBHRM: Interplay of Skills in Public Administration</i>	
Ginevra Gravili	115-125
<i>Public-Private Defence for Satellite Cybersecurity: Addressing Challenges Through Collaboration</i>	
Li Huang, Kimberly A. Cornell	126-134
<i>Increasing Organisational Effectiveness with Managerial Interpersonal Skills – The Role of Organisation Design</i>	
Ana Juras, Ivan Matić	135-143
<i>The Role of Leadership Style in Fostering Innovation Culture in Dubai Government Organisations</i>	
Amira Kamali	144-150
<i>Agile Culture, Agile and Non-Agile Minded Employees' Interrelations in the Context of Agile-Minded Leader Paradox</i>	
Wioleta Kucharska, Maciej Kucharski, Jari Jussila	151-159
<i>Artificial Intelligence, Strategic Foresight, and Competitive Intelligence: Towards Convergence for Morocco's Augmented Competitiveness</i>	
Abdelmjid Lafram, Salah Eddine Bahji	160-168
<i>The Impact of Covid-19 on the Type of Auditor's Opinion: Evidence from the Largest Non-Listed Portuguese Companies</i>	
Kátia Lemos, Sara Serra, Andreia Freitas	169-178
<i>Barriers and Benefits to the Practice of Volunteering by People With Disabilities: A Study of the Perceptions of Organisations Working With Disabilities</i>	
Ana Martinho, Susana Bernardino, Paula Pereira, Ana Luisa Azevedo	179-188
<i>Ignorant Certainty: Leadership in a Dogmatic Haystack</i>	
Richard McNeill, Hester Nienaber	189-198
<i>Expanded Value Stream Mapping in Healthcare: From Efficiency to Sustainability</i>	
Azemeraw Tadesse Mengistu, Anna Tiso, Roberto Panizzolo, Chiara Verbano	199-206
<i>Corporate Governance and Risk Management: Cash Flow Indicators in Credit Risk Prediction</i>	
Suzi Mikulić, Nikola Škobić	207-214
<i>Transforming Health Service Competencies in Remote Regions: Lessons from Lithuania's Public Health Reform</i>	
Birute Mockeviciene, Ilona I. Mulerenkiene, Romalda Kasiliauskiene, Natalja Istomina	215-222
<i>An Information System for a Small Agricultural Company Built on the Google Maps Platform</i>	
Marek Musil, František Smrčka	223-229

<i>A Study on Assessing Circular Economic Practices in the Construction Sector</i> Mona Noreng, Anandasivakumar Ekambaram	230-239
<i>Talent Management Approaches in the Kenyan Banking Sector: The Role of Organizational Characteristics</i> Lydia Nthei, Ken Kamoche, Hellen Otieno	240-248
<i>Financial Literacy, Risk, and Role Models: Investment Behavior Among Members of the Association of Women Business Leaders in Iceland</i> Ásta Dís Óladóttir, Thora H. Christiansen	249-256
<i>Leadership in Higher Education: Women's Mentorship and Leadership Styles</i> Elsa Catalina Olivas Castellanos, Leonel De Gunther Delgado, Fabiola Salas Díaz, María Gabriela Ortíz Martínez, Armando Elizondo Noriega, Ana Yael Vanoye-García, María Yolanda Burgos López	257-264
<i>Aligning Regional Innovation Ecosystems: The MEAM-3LAM Model and CAM Actor Mapping</i> Håkan Ozan, Annika Steiber	265-271
<i>Strategic Injustice in AI-Assisted Goal Setting: The Marginalization of Social Objectives</i> Mikolaj Pindelski	272-279
<i>Combining Representation, Participation, and Expertise for Effective Nonprofit Governance</i> Gina Rossi	280-287
<i>Analysing the Use of Online Communication Software in Companies in the Czech Republic</i> František Smrčka, Hana Vojáčková, Zdeňka Dostálová, Jakub Novotný	288-296
<i>Unveiling Corporate Social Responsibility in Global Fashion: Insights from Supply Chain Management</i> Nikola Soukupová, Michaela Kotková Stříteská	297-306
<i>The Governance of Good Quality Intellectual Capital Formation and its Efficiency Indicators in Various Branches of Science</i> Inese Spica, Sarmite Jegere, Kalevs Kants, Lada Kalinina, Paula Jegere	307-316
<i>Towards a Changing Role of Governance for a Sustainable World</i> Emőke Takács, Antonie Abcouwer	317-326
<i>Integrating ESG-Driven Risk Intelligence: A Strategic Framework for Sustainable Financial Performance and CSR Alignment in Emerging Economies</i> Mohammad Talha, Syed Mohammad Faisal, Ahmad Khalid Khan	327-335
<i>Fragmented Voices, Unified Principles: Diversity and Just Engagement in Earning Community Acceptance for Large Projects</i> Douglas Taylor	336-343
<i>Reimagining Business Educators: Leveraging Generative AI for Enhanced Teaching</i> Joanne Chi-hang Tsoi, Karl Joachim Breunig	344-355
<i>Framing Data Governance Amid AI Advancements in a Public University in South Africa</i> Garreth van Leeve, Sue Petratos	356-365

<i>Building Dynamic Resilience through Strategic Coherence and Ambidextrous Leadership</i>	
Tigran Voskanian, Konstantin Bagrationi, Olga Tunkevichus	366-373
<i>Youth participation in NGOs: Implications for Leadership Development and Social Responsibility</i>	
Norhasni Zainal Abiddin, Junita Sulaiman	374-381
<i>Digital Transformation in Human Resource Development in Malaysia: Emerging Trends and Strategic Implications</i>	
Norhasni Zainal Abiddin, Ihsan Ro'is, Zahimi Zainol Abidin, Junita Sulaiman	382-389
<i>Leadership and Empathy: A Bibliometric Review of Two Decades of Research</i>	
Sanja Zivkovic	390-398
<i>Operationalizing of DCV Microfoundations: A Behavioral Model for a Transforming System Integrator Firm</i>	
Anastasia Znobina, Konstantin Bagrationi, Olga Tunkevichus	399-407
<u>PhD Papers</u>	
<i>Soft Skills to Enhance Team Performance: A Systematic Review of Diverse Teamwork</i>	
Saman Abbaszadeh Baghali, Nasrullah Khilji, Konstantin Nikolic	409-418
<i>IT: Business Strategic Alignment for Sustainable Performance in Saudi Government Institutions Systematic Literature Review</i>	
Jawaher Albarrak	419-428
<i>Sectoral Impact of Corporate Governance: Short-Term Profitability vs. Long-Term Value Creation</i>	
Michael Mansberger, Rodney Leitner	429-435
<i>Analysing Management Capabilities Interface on Governance and Performance in Pharmaceutical Alliances Context</i>	
Foroozan Piroozi, Mário José Batista Romão, Carlos J. Costa , Manuela Aparicio	436-444
<i>Implementation of Lean Healthcare Approaches in a Hospital's Surgical Block</i>	
Catarina Ribeiro, Paulo M. Fernandes, Erik T. Lopes, Bruno S. Gonçalves, Rui M. Lima	445-454
<i>The Effect of Carbon Emissions on Company Profitability</i>	
Alexandra Stefan, Madalina Preda	455-465
<i>Leadership Role Models Across Contexts: Identifying Common Similarities and Differences</i>	
Franziska Weindel	466-472
<u>Masters Papers</u>	
<i>Kata Coaching and Organizational Factors for Engagement and Performance: A Literature Review</i>	
Jéssica da Silva Soares Cunha, June Marques Fernandes, Luciana Paula Reis	474-482
<i>Lean Leadership: A Study on Lean Leadership Attributes</i>	
Thierry Jefferson Barros Scursulim, June Marques Fernandes, Luciana Paula Reis	483-492

Work in Progress Papers

Being Bypassed: Uncovering Skip-Level Meetings from U.S. Frontline Technology Leaders' Perspectives
Samuel Blacher 494-498

When AI Changes its Tone, Does Acceptance Follow?
Kevin Lejeune, Corentin Burnay 499-502

Workplace Learning Potential as a Mediator Between Psychological Safety and Strategy Implementation
Teemu Ojala, Soila Lemmetty 503-506

Healthcare Lean Readiness Assessment in a Territorial Outpatient System
Caterina Pozzan, Anna Tiso, Maria Crema, Chiara Verbano 507-511

Educating Sustainable Leadership through Academia–Industry Collaboration for Shared Value and Resilience
Iskra Rodriguez 512-515

Late Submissions

Synthesising Challenges and Opportunities in Human Resource Development for Productivity Enhancement: Toward a Framework for Malaysia's High-Income Transition
Shahrul Azuwar Abdul Aziz, Norhasni Zainal Abiddin 517-526

About the 21st European Conference on Management, Leadership and Governance, 2025

The European Conference on Management, Leadership and Governance has evolved significantly over the past 21 years, adapting to the changing landscape of management and leadership practices. Initially focusing on foundational theories and practices in management, the conference has expanded its scope to include a diverse range of topics reflecting contemporary challenges in the field.

In its earlier years, the conference mainly emphasized traditional management principles, leadership styles, and governance frameworks. As global business dynamics shifted, so did the conference's themes, incorporating emerging trends such as digital transformation, sustainability, and ethical leadership.

Aims and Scope

The aims of the conference now not only include sharing academic research but also fostering dialogue among practitioners, policymakers, and scholars to address pressing issues facing organizations today.

Recent editions have featured discussions on topics like organizational resilience, innovation management, and cross-cultural leadership, showcasing the conference's commitment to staying relevant in an ever-evolving business environment. This evolution reflects a broader understanding of management and governance as interdisciplinary fields that require collaborative approaches and innovative solutions.

Topics Covered

The call for papers for the ECMLG conference asked for contributions that considered the following topics. In addition, the committee welcomed papers on a number of specialist mini-tracks which can be seen at the end of this list.

Leadership Styles and Theories:

Exploring various approaches to leadership, including transformational, transactional, and servant leadership, and their impact on organizational culture.

Strategic Management:

Discussions on the formulation and implementation of strategies that drive organizational success, emphasizing agility and adaptability in changing markets.

Digital Transformation:

Examining the role of technology in shaping management practices, including the integration of artificial intelligence and data analytics in decision-making processes.

Sustainability and Corporate Social Responsibility (CSR):

Addressing the importance of ethical leadership and sustainable practices in organizations, highlighting the balance between profit and societal impact.

Cross-Cultural Management:

Investigating the challenges and opportunities of managing diverse teams across different cultural contexts, emphasizing communication and collaboration.

Innovation and Change Management:

Focusing on how organizations can foster a culture of innovation and effectively manage change to remain competitive.

Organisational Behaviour:

Exploring the dynamics of team interactions, motivation, and employee engagement in enhancing organizational performance.

Governance and Policy Making:

Analysing the frameworks and practices that guide effective governance in both public and private sectors.

Experts in the field proposed mini tracks on the following topics. Papers accepted on these topics after the double-blind peer review process were presented as mini tracks at the conference and are also published in these proceedings.

- Artificial Intelligence Applied to Management, Leadership and Governance
- The Role of Corporate Governance in a Sustainable Business Environment
- Leadership and Management Beyond Borders
- Women in Leadership: The Liminal Fluctuating Spaces They Occupy

The programme from the 2025 conference can be downloaded from here and full details about the conference can be seen from the conference website: <https://www.academic-conferences.org/conferences/ecmlg/>

ECMLG Preface

These proceedings represent the work of contributors to the 21st European Conference on Management Leadership and Governance (ECMLG 2025), hosted by ACI and CESI, Paris-Nanterre on 13-14 November 2025. The Conference Chair was Stéphanie Buisine, and the Programme Chairs was Muriel Davies both from CESI, Paris-Nanterre.

ECMLG is a well-established event on the academic research calendar and now in its 21st year the key aim remains the opportunity for participants to share ideas and meet the people who hold them. The aims and scope of the conference is to be a forum for practical, technical and theoretical exchange about the study, management, development and implementation of issues pertaining to management, leadership and governance from a multidisciplinary context.

The opening keynote presentation was given by Stéphanie Buisine from CESI Paris-Nanterre, who spoke about The Future of Leadership. The second day of the conference opened with an address from Daniel Ahlers, Centre for Coaching (Europe) who discussed Team Coaching: Overcoming Corporate Contradiction.

With an initial submission of 156 abstracts, after the double blind, peer review process there are 47 Academic research papers, 7 PhD research papers, 2 Masters Research papers and 5 work-in-progress papers published in these Conference Proceedings. These papers represent research from Belgium, Bosnia and Herzegovina, Brazil, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Finland, Germany, Greece, Iceland, India, Israel, Italy, Kenya, Latvia, Lithuania, Malaysia, Mexico, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Saudi Arabia, South Africa, Sweden, Türkiye, UAE UK, USA

We would like to thank everyone who participated in this conference.

Stéphanie Buisine and Muriel Davies

CESI, Paris-Nanterre

November 2025

Biographies of Chairs and Keynote Speakers

Conference and Programme Chairs



Stéphanie Buisine is Research Director at CESI, and leads innovation research at LINEACT laboratory. Her career has taken her from technological innovation issues (ex: Human-Computer Interaction) to the methodological and strategic dimensions of innovation (ex: Creativity, Prospective on future needs), up to organizational innovation. Through innovation, her research aims to support self-determination of users, designers and collaborators.



After studying engineering and management, **Muriel Davies** worked 14 years in the textile industry on several plants as supply chain or quality manager. She joined CESI in 2009 as a pedagogical manager, and the LINEACT CESI 8 years ago as researcher. Today she conducts research on culture and organizational innovation with the current socio-environmental challenges as structural framework.

Keynote Speakers



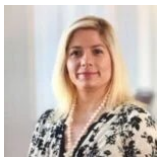
Daniel Ahlers is Managing Partner of the Centre for Coaching (Europe), as well as a Certified Professional Integral Coach®, Systemic Team Coach, and experienced facilitator. With over 12 years of coaching experience, drawing on Swiss and South African heritage, he helps executives and leadership teams navigate transformational shifts and enhance stakeholder value. A background in Chemistry and Information Systems and his prior leadership roles in finance and marketing inform his evidence-based, strategically aligned approach. Passionate about developing confident, authentic leaders, he also teaches, mentors, and designs leadership interventions worldwide, driving meaningful impact across diverse organisational contexts.

Mini Track Chairs



Dr. Ghayur Ahmad holds a Bachelor of Arts in English Literature and Law, as well as a Master of Philosophy/Psychology from the University of Peshawar, Pakistan. He was awarded a scholarship by the University of Bedfordshire, United Kingdom, where he earned his Master's degree in Human Resource Management. Dr. Ahmad pursued his doctoral studies at Preston University, Kohat, completing his coursework before being granted a prestigious scholarship by the Higher Education Commission of Pakistan to finalize his PhD dissertation at the Carlson School of Management, University of Minnesota, USA. With over 18 years of professional and academic experience, Dr. Ahmad has taught and worked in various countries, including the United Kingdom, Pakistan, the United States, and Saudi Arabia. He has held positions at the University of Bedfordshire, UK, as well as esteemed institutions in Pakistan such as the National University of Sciences and Technology (NUST) and Islamia College Peshawar. Dr. Ahmad has successfully managed multi-million-dollar projects in Pakistan and currently serves as an Assistant Professor at the College of Business Administration, Prince Mohammad

Bin Fahd University, Al Khobar, Kingdom of Saudi Arabia. His research focuses on motivation, commitment, and reward systems within organizations, particularly the role of rewards in employee motivation. He has published numerous articles in international journals and is an active participant in national and international conferences and seminars. Additionally, Dr. Ahmad has held significant leadership roles, including serving as the founding General Manager of the Industry Relations Department at NUST and as the Founding Director of the Student Startup Center at Islamia College, Peshawar.



Dr Maryam Shadman-Pajouh joined Teesside University in September 2008 as a part-time Lecturer in International Management whilst pursuing her PhD in Management. In 2013 she was appointed to the full-time position of Senior Lecturer in Human Resource Management (HRM). She completed her PhD at Teesside University on “The Challenges of Importing Knowledge from Other Cultures: A Case Study of an Iranian Hotel Chain” 2015. Her project studied one of the largest corporations in the tourism sector in Iran, which examined the challenges the corporation faced in the areas of absorptive capacity and knowledge transfer in relation to training and innovation advancement. She studied the corporate from 2005 until 2012, using ethnography and held over 200 in depth interviews with staff and senior management. Her work is considered pioneering in the area of the impact of culture on HRM. She received a BA (Hons) in Accounting from Karaj Azad University in Iran, a Masters in International Business from Hull University and a Masters in Research in Business and Management also from Hull University

ECMLG Conference Committee

Prof Rute Abreu, Guarda Polytechnic Institute, Portugal; Dr Małgorzata Patrycja Adamska, Opole University of Technology, Poland; Prof Grigorescu Adriana, NUPSPA; IEF Romanian Academy, Romania; Dr Ghayur Ahmad, Prince Muhammad Bin Fahd University, Saudi Arabia; Dr Mohd Shahril Ahmad Razimi, Northern University of Malaysia, Malaysia; Dr Noor Ahmed, Begum Nusrat Bhutto Women University Sukkur, Pakistan; Dr Saad Aldoihi, KACST, Saudi Arabia; Dr. Morariu Alunica, "Stefan cel Mare" University of Suceava, Faculty of Economics and Public Administration, Romania; Prof Maria Ceu Alves, University of Beira Interior, Portugal; Dr Sanaullah Ansari, Shaheed Zulfikar Ali Bhutto Institute of Science and Technology (SZABIST), Pakistan; Prof. Doutora Marina Godinho Antunes, ISCAL - Instituto Superior de Contabilidade e Administração de Lisboa, Portugal; Prof Lina Artemenko, National technical university of Ukraine "Igor Sikorsky Kyiv Politechnical University", Ukraine; Ahmet Aykac, Theseus Business School, Lyons, France; Dr Daniel Badulescu, University of Oradea, Romania; Dr Afsaneh Bagheri, Faculty of Entrepreneurship, University of Tehran, Iran; Dr Samira Bakr, NCEEE, Egypt; Prof Joan Ballantine, Ulster University, UK; Dr Neeta Baporikar, Harold Pukewitz Graduate School of Business (HP-GSB), Namibia; Prof Dimitrios Belias, University of Thessaly, Larissa, Geopolis, Greece; Prof Andrea Bencsik, University of Pannonia, Hungary; Svein Bergum, Lillehammer University College, Norway; Dr Madeleine Block, University Bielefeld, Germany; Constantin Bratianu, Bucharest University of Economic Studies, Romania; Dr Marta Bubicz, Lusófona University, Portugal; Prof Ivana Bulog, Faculty of Business, Economic and Tourism, University of Split, Croatia; Prof Felicjan Bylok, Technical University of Czeszochowa, Poland; Prof Kiyomet Tunca Caliyurt, Trakya University - Faculty of Business Administration and Economics, Turkey; Prof Sven Carlsson, Lund University, Sweden; Dr Ondrej Castek, Faculty of Economics and Administration, Masaryk University, Czech Republic; Dr Walter Castelnovo, Università dell'Insubria, Como, Italy; Dr Francisca Castilla-Polo, University of Jaén, Spain; Prof Prasenjit Chatterjee, MCKV, India; Prof George Chiladze, The University of Georgia, Georgia; Dr Sudhinder Singh Chowhan, IIHMR University Jaipur, India; Dr Roila Christakou, Eurobank, Greece; Dr Mei-Tai Chu, La Trobe University, Australia; Dr Leszek Cichobłaziński, Czeszochowa University of Technology, Poland; Simona Činčalová, College of Polytechnics Jihlava, Jihlava, Czech Republic; Prof Teresa Costa, Instituto Politécnico de Setúbal, Portugal; Dr Miguel de Castro Neto, ISEGI, Universidade Nova de Lisboa, Portugal; Dr Benny M.E. De Waal, University of Applied Sciences Utrecht, The Netherlands; Andrew Deegan, University College Dublin, Ireland; Assistant Professor Reza Dehghan, Islamic Azad University, Iran; Assistant Professor Reza Dehghan, Islamic Azad University, North Tehran Branch, Iran; Prof Sri Ranjan Dharmakeerthi Sri Ranjan, G. D., Sri Palee Campus, University of Colombo, Sri Lanka; Dr Mihela Diaconu, The Gheorghe Asachi Technical University of Iasi, Romania; Prof Ana Dinis, School of Management - Polytechnic University of Cávado and Ave, Portugal; Dr Hichem Dkhili, Faculty of Economics, and Management of Jendouba, University of Jendouba, Tunisia, Tunisia; Dr Maria José Palma Lampreia Dos-Santos, Polytechnic University of Lisbon, LIACOM, ISCTE-IUL DINÂMIA'CET, Portugal; Prof Philip Dover, Babson College, USA; Dr Th Economides, Neapolis University Pafos, Cyprus; Emmanuel Innocents Emmanuel Innocents, Tshwane University of Technology, South Africa; Luisa Errichiello, Italian National Research Council (CNR), Italy; Dr Mercy Escalante Ludena, Anhmebi Morumbi University, Brazil; Prof Liliana Feleaga, Academy of Economic Studies (ASE), Romania; Prof Cristina Feniser, Technical University of Cluj Napoca, Romania; Prof Paula Fernandes, Polytechnic Institute of Bragança & UNIAG, Portugal; Jorge Ferreira, Nova University of Lisbon, Portugal; Dr Pedro Ferreira, University of Aveiro, Portugal; Dr zair Firdaous, , Morocco; Dr Marzena Frankowka, University of Szczecin, Poland; Prof Elisabete G. S. Félix, University of Évora, Portugal; Dr Andreas Gadatsch, Bonn-Rhein-Sieg University of Applied Sciences, Germany; Ass Prof Balan George, Romanian-German University, Romania; Dr Tatiana Gladkikh, The University of Winchester, UK; Dr Diogo Goes, Instituto Superior de Administração e Línguas, Portugal; Prof Sofia Gomes, Portucalense University, Portugal; Prof Jorge Gomes, Universidade Lusofona Lisboa, Portugal; Prof Paulo Gonçalves, Polytechnic Institute of Porto, ISCAP, Portugal; Dr Iwona Gorzeń-Mitka, Czeszochowa University of Technology, Faculty of Management, Poland; Prof Ken Grant, Ryerson University, Toronto, Canada; Dr Aleksandra Grobelna, Gdynia Maritime University, Poland; Prof Antonio Guerreiro, University of Evora, Portugal; Prof Niraj Gupta, Indian Institute of Corporate Affairs, India; Dr Noor Ul Hadi, Prince Mohammad Bin Fahd University, Saudi Arabia; Dr hossein hakimpour, Islamic AzaUniversity Birjand

Branch, Iran; Dr Mahmoud Hassanin , Ahram Canadian University , Egypt; Prof Graciete Honrado, Instituto Politécnico de Tomar, Portugal; Dr Saadia Irfan, National University of Sciences and Technology, Pakistan; Dr Md Enamul Islam, Association of Social Science Research, Bangladesh, Bangladesh; Dr Md Enamul Islam, RAJUK Uttara Model College, Bangladesh; Dr Dembińska Izabela, University of Szczecin, Poland; Martina Jakábová, Visions, S.R.O., Slovakia; Asst Rosilah Jamil, Azman Hashim International Business School, Universiti Teknologi Malaysia , Malaysia; Dr Shital Jayantilal, Universidade Portucalense, Portugal; Dr Nalla Bala Kalyan, Sri Venkateswara College of Engineering, (Autonomous), Tirupati-517507, India; Research Scientist Paul Kamal Chandra, Global Research Centre, Malaysia and Bangladesh, Malaysia; Dr DrMeenakshi Kaushik, Lloyd Group of Institutions | Greater Noida <http://www.lloydbusinessschool.edu.in/>, India; Dr N.V. Kavitha, St. Ann's College for Women, India; Mr. Seyed Amirhesam Khalafi, University of Houston, USA; Prof Tatiana Khvatova, Emlyon Business School, Ecully, France; Associate Professor Joanna Kizielewicz, Faculty of Management and Quality Science, Poland; Prof Joanna Kizielewicz, Gdynia Maritime University, Poland; Maria Knecht-Tarczewska, Wrocław College of Management "Edukacja", Poland; Prof Jesuk Ko, Universidad Mayor de San Andres, Bolivia; Jolanta Kowal, College of Management and Wrocław University, Poland; Dr Ewa Kraska, Jan Kochanowski University of Kielce, Poland; Prof Dr Ibrahim Krasniqi, University for Business and Technology, Kosovo; Aleksandra Kwiatkowska, College of Management and Wrocław University, Poland; Prof Abdelmjid LAFRAM, School of Information Sciences ESI-Rabat, Morocco; Dr Anna Lemańska-Majdzik, Częstochowa University of Technology, Faculty of Management, Poland; Prof Kátia Lemos, School of Management - Institute Polytechnic of Cávado and Ave, Portugal; Dean Mieczysław Leniartek, Technical University in Cracow, Poland; Dr Vanessa Liu, The Hong Kong Polytechnic University, China; Prof Joao Alexandre Lobo Marques, University of Saint Joseph, Macau; Prof Felipa Lopes dos Reis, Lusófona University - University Center of Lisbon, Portugal; Prof Sam Lubbe, NWU, South Africa; Dr Camelia Luliana Lungu, Academy Of Economic Studies, Bucharest, Romania; Dr Łukasz Mach, Opole University of Technology, Poland; Paolo Magrassi, Polytechnique of Milan, Italy; Dr Arkadiusz Malkowski, Faculty of Economic, Poland; Arjen Maris, HU University of Applied Sciences, Utrecht, The Netherlands; Bill Martin, Royal Melbourne Institute of Technology, Australia, Australia; Asst Carla Martinho, Lisbon Accounting and Business School, Polytechnic Institute of Lisbon, Portugal; Prof Nico Martins, University of South Africa, South Africa; Dr Milos Maryska, Prague University of Economics and Business, Department of Information Technology, Czech Republic; Dr Florinda Matos, Iscte - Instituto Universitário de Lisboa, Portugal; Rija Maurizo, University of Calabria, Italy; Mr Mohd Shamsuri Md Saad, Universiti Teknikal Malaysia Melaka, Malaysia; Prof Luis Mendes, Beira Interior University, Portugal; Prof Tamara Menichini, University of Rome "Niccolò Cusano", Italy; Dr Anesu Mironga, Africa University, Zimbabwe; Mr Akhil Mittal, Synopsys, USA; Ms Hezlina Mohd Hashim, Universiti Teknologi Petronas, Malaysia; Prof Mónica Monteiro, Universidade Portucalense, Portugal; Prof Dr. Pedro Ribeiro Mucharreira, University of Lisbon, Portugal; Dr Gunilla Myreteg, Örebro University School of Business, Sweden; Timothy Nichol, Liverpool Business School, LJMU, Liverpool, UK; Prof Hester Nienaber, NAU (Research Affiliate), USA; Dr Nik Mohd Norfadzilah Nik Mohd Rashid, Universiti Sultan Zainal Abidin, UniSZA, Malaysia; Asst Sónia P. Nogueira, Polytechnic Institute of Bragança, Portugal; Prof Elisabete Nogueira, Portucalense University, Portugal; Dr Melao Nuno, Polytechnic Institute of Viseu, Portugal; Dr Catalina Olivas, Tecnológico de Monterrey, Mexico; Prof Elsa Catalina Olivas Castellanos, Tecnológico de Monterrey, Mexico; Luciana Oliveira, Polytechnic of Porto, Portugal; Asst Prof Dr Abdelnaser Omran, School of Economics, Finance and Banking, Universiti Utara Malaysia, Malaysia; Dr Roslina Othman, International Islamic University Malaysia, Kuala Lumpur, Malaysia; Prof Snezhanka Ovcharova, Varna Free University, dept. Administration and management, Bulgaria; Dr Nayantara Padhi, Indira Gandhi National Open University, New Delhi, India; Dr Xavier Parisot, IKI-SEA, Thailand; Dr Stavros Paralalis, Frederick University, Cyprus; Prof Chintan Patel, Adani Institute of Digital Technology Management, India; Dr Shaun Pather, University of the Western Cape, South Africa; Prof Manuel Sousa Pereira, IPVC, Portugal; Dr Danilo Piaggese, Framericas, USA; Prof Rui Pimenta, P.PORTO- ESS, Portugal; Florina Pinzaru, The College of Management - NSPSA,, Romania; Dr John Politis, Charles Darwin University, Australia; Adina Simona Popa, "Eftimie Murgu" University of Resita, Romania; Dr Cosmin Popa, The University of Agricultural Sciences and Veterinary Medicine, Romania; Prof Sheila Puffer, Northeastern University, Boston, USA; Senthamil Raja, Pondicherry University, India; Dr Pascal Ravesteijn, HU University of Applied Sciences, The Netherlands; Dr Marcin

Relich, University of Zielona Gora, Poland; Asstc Metin Reyhanoglu, Hatay Mustafa Kemal University, Turkey; Assistant Professor Dehghan Reza, Islamic Azad University, North Tehran Branch, Iran; Researcher Mohamad Rjoob, Riphah International University, PALESTINE; Mohamad Rjoob, Ministry of Education, Palestine; Prof José Carlos Rouco, Universidade Lusófona, Portugal; Prof Agnieszka Rzepka, Lublin University of Technology, Poland; Prof Abdel-Badeeh Salem, Ain Shams University, Cairo, Egypt; Lele Sang , Wharton School of the University of Pennsylvania , U.S.; Amitrajit Sarkar, Christchurch Polytechnic Institute of Technology, New Zealand; Dr Abdullah Sarwar, Multimedia University, Cyberjaya, Malaysia; Dr Ousanee Sawagvudcharee, Centre for the Creation of Coherent Change and Knowledge, Liverpool John Moores University, Thailand; Dr Elena Seghedin, Alexandru Ioan Cuza University, Romania; Kakoli Sen, Institute for International Management and Technology (IIIMT) Gurgaon, India; Dr Armin Shams, Sharif University of Technology, Iran; Asstc Eriona Shtembari, University of New York Tirana, Albania; Irma Shyle, Polytechnic University of Tirana, Albania; Dr MD Abubakar Siddique Siddique, Abu Dhabi University, United Arab Emirates; Dr Gourida Siham, Djelfa University , Algérie; Prof Susana Silva, School of Hospitality and Tourism, Institute Polytechnic of Porto, Portugal; Prof Maria Gabriela Silva, ISCTE-University Institute of Lisbon, Portugal; Prof Natacha Silva, IPB, Portugal; Prof Lúcia de Fátima Silva Piedade, universidade Lusófona, Portugal; Dr Raj Singh, University of Riverside, USA; Owen Skae, Rhodes Business School, Rhodes University, Grahamstown, South Africa; Dr Katarzyna Skrzyszewska, Gdynia Maritime University, Poland; Dr Roy Soh, Albukhary International University, Malaysia; Dr Lew Sook Ling , Multimedia University , Malaysia; Dr Maria Jos Sousa, Universidade Europeia, Portugal; Dr Riccardo Spinelli, Università Di Genova, Italy; Mr David Stewart, RYP International, Australia; Fred Strønen, Oslo Metropolitan University, Norway; John Sullivan, School of Information, University of South Florida, USA; Prof Reima Suomi, University of Turku, Finland; Dr Dalia Susniene, Kaunas University of Technology, Lithuania; Dr Hamed Taherdoost, Hamta Group | Hamta Business Solution Sdn Bhd, Malaysia; Dr Safdar Husain Tahir, Govt. College University Faisalabad, Pakistan; Ramayah Thurasamy, Universiti Sains Malaysia, Malaysia; Dr Xuemei Tian, Swinburne University, Australia; Dr Piotr Tomski, Czestochowa University of Technology, Poland; Dr Tiago Trancoso, IPVC, Portugal; Dr Savvas Trichas, Open University Cyprus, Cyprus; Prof Roberta Troisi, University of Salerno, Italy; Dr Hab Mirosława Wawrzak-Chodaczek, Institute of Pedagogy, Wrocław University, Poland; Dr Lugkana Worasinchai , Bangkok University, Thailand; Dr Zulnadi Yaacob, Universiti Sains Malaysia, Malaysia; Tuan Yu, Kent Business School, University of Kent, Canterbury, UK; Asst Prof Nurul Mohammad Zayed, Daffodil International University, Bangladesh; Dr Sanja Zivkovic, Heartist Center, Croatia; Dr Justyna Żywiołek, Czestochowa University of Technology, Poland.

DEI Policies and Practices' Effect on Sustainability Performance: An Ethical Leadership Perspective

Raluca Andreea Achim, Camelia Iuliana Lungu, Chirata Caraiani and Cornelia Dascalu

Bucharest University of Economic Studies, Romania

achimraluca19@stud.ase.ro

camelia.lungu@cig.ase.ro

chirata.caraiani@cig.ase.ro

cornelia.dascalu@cig.ase.ro

Abstract: Multicultural and heterogenous society has prompted policymakers and regulators to prioritize creation of a diverse, equitable, and inclusive economic environment. In addition, noticeable increase in companies' focus for ethical actions is driven to improve corporate performance and to build stakeholders' confidence and trustworthiness. Hence, the aim of this paper is to investigate the effect of ethical leadership related to diversity, equity and inclusion (DEI) policies and practices on sustainability performance. Considering the interdisciplinary nature of this relationship, the research integrates a holistic theoretical framework. Governance theories explain the equilibrium between managers' behavior and stakeholders' expectations, economic theories describe the understanding of resource allocation for strategic decisions, while social theories provide evidence regarding human behavior and culture in sustainable companies. The present study utilizes the Diversity and Inclusion Score (DIS), provided by the LSEG methodology, to present the integrated DEI policies and practices. Muchmore, specific mechanisms of corporate governance related to board cultural diversity, board gender diversity, and executive gender diversity extend the measurement of DEI policies and practices. Sustainability performance is assessed through environmental, social and governance (ESG) score. The data are collected from Thomson Reuters Eikon database for non-financial international companies, during the 2020-2024 period. A final sample of 4,163 company-year observations is used to respond to three research hypotheses. Fixed effects robust regressions are employed to emphasize the impact of integrated and specific diversity-oriented policies and practices on ESG performance. Results indicate significant positive influence of DEI policies and practices on sustainability performance. Muchmore, the moderating effects included in analysis show that irrespective of the specific corporate governance mechanisms of diversity, the presence of integrated DEI policies and practices reduces the positive and significant impact on companies' sustainability performance. The robustness test emphasizes the positive influence that various pillars of DIS have on ESG performance. With a multi-layered approach, this study contributes to academic and practical understanding by promoting diverse and inclusive leadership as a key corporate governance mechanism that enhances sustainability performance.

Keywords: Ethical leadership, Sustainability performance, Corporate governance mechanisms, DEI policies and practices

1. Introduction

Sustainability and diversity, equity, and inclusion (DEI) have been crucial social issues in recent years, as society's attention has been increasingly focused on matters related to creating an inclusive environment that generate not only economic growth but also social benefits. According to James, Davis and Alqaseer (2024) survey, 94% of companies included DEI aspects in their sustainability reports given the attention it has garnered among a large category of stakeholders. As a result of this increasing attention, companies have prioritized the enhancement of DEI practices within their organizations, including active initiatives that improve their corporate social responsibility. Consequently, a growing number of stakeholders are now devoting greater attention to sustainability concerns, with a particular focus on promoting inclusive culture within the leadership structure of companies in which they invest (Baker et al., 2024). The purpose of this study is to discuss the way ethical leadership may be enhanced by adopting DEI policies and practices to significantly contribute to improving corporate sustainability performance.

Despite the importance of controversial and actual sustainability topics, few studies in the field of corporate governance and accounting have considered the importance of DEI policies and practices in enhancing ESG performance. Researchers have mainly investigated the impact of board gender and cultural diversity on ESG performance, focusing on the banking sector (Paolone et al., 2024), or covering only one region (Donkor, Trireksani & Djajadikerta, 2023). Most of the previous literature that analyses the impact of diversity and inclusion on sustainability performance focuses either on a specific country, or a specific industry (Tumewang et al., 2024), leaving a gap in considering the global perspective and specific dimensions of workplace diversity and inclusion.

Hence, to fill the existing gap and contribute to the imminent literature on exploring the impact of DEI initiatives on ESG performance in the corporate governance research field, this study measures and analyses whether the overall diversity-oriented policies and practices, abut also specific corporate governance diversity

mechanisms have positive impact on sustainability performance. The results highlight that companies that have an ethical leadership willing to promote DEI policies and practices tend to enhance their sustainability performance. The study contributes to current knowledge by extending the analysis to include multiple measures of diversity aspects, reflecting various corporate governance mechanisms. It contributes to the academic and practical understanding of how a more diverse and inclusive corporate culture is important for ensuring long-term sustainability goals. This study also provides important insights for businesses, stimulating practical reflections into the role that diverse and inclusive-oriented practices and policies may play in ensuring long-term sustainability goals.

The rest of the paper is organized as follows. Section 2 covers an overview of the existing literature on the relation between DEI and ESG performance, emphasizing underlying theories and development of the research hypotheses. Section 3 presents the research approach, describing data collection and processing, while the key findings are debated in Section 4. Section 5 provides an overview of the findings, limitations, and directions for future research.

2. Literature Review and Research Hypotheses

Following the implementation of the Paris Agreement on Climate Change (2015) and the adoption of the 2030 Agenda for Sustainable Development (UN, 2015), companies started to pay more attention to ESG practices and social implications, aligning their operational activity with sustainability objectives. Recently, this globalized society acted as a force in understanding that sustainability is not limited to protecting the environment, but also to create fair social practices that promote DEI (Alhazemi, 2025).

The importance of DEI of corporate board members has become an aspect of particular importance nowadays, creating an important factor in attracting new investors and increasing the sustainable performance of a company (Alhazemi, 2025; Tumewang et al., 2024; Monteiro et al., 2023). Considering that the role of leaders is to provide guidance in ensuring the achievement of strategic objectives, being responsible for resource allocation optimization and for promoting the companies' long-term value, it is essential to ensure a diverse membership in the board of directors. Ethical leadership has a crucial role in enhancing corporate social responsibility by promoting a sustainable work environment, where diversity and inclusion represent core values that foster ethical behaviour and sustainability performance (Alhazemi, 2025; Rabbani et al., 2024).

The business initiative to shape an integrated culture that promotes DEI is based on both social and economic motivations (Monteiro et al., 2023). From the economic perspective, the adoption of a culture that promotes DEI will enhance corporate performance. From the social perspective, board diversity ensures the equity and inclusion of all social groups. Cultural and gender diversity may develop an integrated business environment, able to support enhanced stakeholders' interests. The insurance of diversity only to comply with policies and attract new investors, but without proactively supporting DEI practices, will result in neither financial outcomes, nor the expected social benefits (Baker et al., 2024). Thus, considering the interdisciplinary nature of the DEI practices, it is crucial to investigate their impact on sustainable performance within a complex theoretical framework underpinning both economic and sociological perspectives (Paolone et al., 2025; Odriozola, Blanco-González & Baraibar-Diez, 2024). The implication of a more diverse and inclusive board on ESG performance is outlined under economic theories that describe the understanding of resource allocation for the decision-making process, while sociological theories provide evidence regarding human behavior, culture, as well as social responsibility. *Stakeholder theory* is linked to corporate sustainability, because it focuses on effective corporate governance mechanisms implemented in order to respond to all stakeholders' interests, while *legitimacy theory* indicates company's commitment to DEI policies and practices to demonstrate its social responsibility and to legitimize their inclusive practices to gain stakeholders' confidence (Rabbani et al., 2024). Creating an inclusive culture that promotes diversity representation, equal opportunities and inclusion represents actions of ESG practices that are designed to meet the needs of a wider category of stakeholders (Alhazemi, 2025). *Resource dependence theory* and *resource-based view theory* describe the impact of a heterogeneous board on the decision-making process due to their diverse value, perspectives, qualifications and experiences (Paolone et al., 2024; Rabbani et al., 2024). *The upper echelons theory* states that corporate leaders influence organizations' outcomes and their strategic objectives through personal behavior, skills and experience (Orazalin & Baydauletov, 2020), while *social identity theory* shows how individuals' interactions and behavior are influenced by the different socio-cognitive categories and how each person tends to adhere to the group with similar aspirations and motivations, having the same socio-economic characteristics (Donkor, Trireksani & Djabdikerta, 2023; Suci, Noja & Cristea, 2020). From this perspective, board of directors' members, with similar social attributes better respond to managerial

directions, leading to greater efficiency when performing tasks, thereby contributing to improved performance (Suciu, Noja & Cristea, 2020). Consequently, social-identity theorists argue that the board of directors may lead to miscommunication issues and conflict of perspectives, due to different cultural backgrounds (Saha et al., 2024; Donkor, Trireksani & Djajadikerta, 2023).

Underpinning the complex aspects of diversity, extant literature demonstrates that gender and culture are the most important categories that influence the sustainable performance of companies, considering various legislative efforts to ensure the female representation in corporate boards and the establishment of subsidiaries in various locations around the world, forcing companies to face different local cultures (Paolone et al., 2025; Paolone et al., 2024). Tumewang et al. (2024) and Monteiro et al. (2023) present the positive impact that diversity, inclusion and people development or workplace controversies have on overall ESG performance, as well as for the social performance.

The increased evidence on the importance of DEI in ensuring higher level of ESG performance has motivated this research. It aims to respond to the wide recognized gap of narrow-focused studies related to either the impact of only board diversity on ESG or the impact of diversity and inclusion on other corporate performance measures. A limited number of studies conduct research on the importance of DEI practices on ESG performance analysing mainly financial companies (Tumewang et al., 2024). Prior literature (Rabbani et al., 2024; Donkor, Trireksani & Djajadikerta, 2023) that focused on board diversity emphasise that to further understand diversity, equity, and inclusion phenomena, more in-depth analyses of DEI policies and practices across different inter-continental contexts evaluating the impact of different cultural and legal environments should be conducted in association with ESG performance. Hence, this research answers three research hypotheses:

RH1. *The diversity-oriented policies and practices measured with Diversity and Inclusion Score are positively associated with sustainability performance.*

RH2. *The diversity-related mechanisms of corporate governance are positively associated with sustainability performance.*

RH3. *The joint effect of diversity-oriented policies and practices and diversity-related mechanisms of corporate governance is negatively associated with sustainability performance.*

3. Research Methodology

The initial sample designed for this empirical study consists of worldwide listed companies included in the Refinitiv Eikon database, limiting the period to the years 2020 until 2024, in order to delineate the complex crisis period. The Refinitiv Eikon platform has been selected due to the comprehensive coverage of various measures related to corporate sustainability. Further, to avoid potential biases generated by specific guidelines, companies activating in the financial industry were excluded from the sample (references). Another constraint was to include only those companies with no missing data for the dependent, independent, and control variables. After eliminating the extreme values based on 1% and 99% percentile, the sample was narrowed down to a total of 4,136 company-year observations.

Table 1 summarizes the variables included in the empirical study with description details. These variables are further used in a quantitative approach establishing the validity of the research hypotheses.

Table 1: Variables of the study

Variables	Code	Description
Dependent variables		
ESG Score	ESG	Refinitiv ESG Score is an overall company score based on the self-reported information in the environmental, social and corporate governance pillars.
Independent variables		
DIS rating	DIS	Refinitiv Diversity Inclusion Rating is an overall score of a company based on reported workforce information that define diverse and inclusive workplaces.
DISDiversity	DIS_DIV	Diversity category measures a company's commitment and effectiveness towards maintaining gender diverse workforce and board member cultural diversity.
DISInclusion	DIS_INC	Inclusion category measures a company's commitment and effectiveness

Variables	Code	Description
		towards effective life-work balance, a family friendly environment and disability inclusion.
DISControversies	DIS_CON	Controversies category accounts for the negative impact workforce controversies have on the company.
BoardCulturalDiversity	BCD	Percentage of board members that have a cultural background different from the location of the corporate headquarters.
BoardGenderDiversity	BGD	Percentage of female on the board.
ExecutiveGenderDiversity	EGD	Percentage of female executive members.
Control variables		
BoardSize	BS	The total number of board members at the end of the fiscal year.
CEODummy	CEO_D	Does the CEO simultaneously chair the board or has the chairman of the board been the CEO of the company?
IndependentBoardMembers	IBM	Percentage of independent board members as reported by the company.
AverageBoardTenure	ABT	Average number of years each board member has been on the board
BoardSpecificSkills	BSS	Board Specific Skills, Percent
Return on asset	ROA	Financial performance measures as profit after taxes scaled by total assets
LnSales	LnS	Natural logarithm of sales
LnTotalAssets	LnTA	Natural logarithm of total assets
LEV	LEV	Total liabilities divided by total assets
ACCSTDDummy	ACCSTD_D	1 if companies adopted IFRS, 0 otherwise

The diversity-related mechanisms of corporate governance included in this analysis as independent variables, were also used in previously research (Tumewang et al., 2024; Paolone et al. 2024) and refer to: board cultural diversity, board gender diversity, executive committee gender diversity. These variables complement the overall score (DIS-Diversity and Inclusion Score) measuring the DEI policies and practices.

A general regression model is designed in accordance with previous studies (Tumewang et al., 2024; Paolone et al. 2024). The generic equations (1), (2) as well as the equation including the moderating effect of diversity and inclusion policies and practices (3), tested with robust fixed effects multiple regression, using STATA18 software, are presented as follows:

$$ESG_{it} = \beta_0 + \beta_1 DIS_{it} + \beta_2 ControlVariables_{it} + \mu_{it} + \varepsilon_{it}, \quad (1)$$

$$ESG_{it} = \beta_0 + \beta_1 BCD_{it} + \beta_2 BGD_{it} + \beta_3 EGD_{it} + \beta_4 ControlVariables_{it} + \mu_{it} + \varepsilon_{it}, \quad (2)$$

$$ESG_{it} = \beta_0 + \beta_1 DIS_{it} + \beta_2 BCD_{it} + \beta_3 BGD_{it} + \beta_4 EGD_{it} + \beta_5 DIS\_BCD_{it} + \beta_6 DIS\_BGD_{it} + \beta_7 DIS\_EGD_{it} + \beta_8 ControlVariables_{it} + \mu_{it} + \varepsilon_{it}, \quad (3)$$

where all variables are explained in Table 1, *i* is the company and *t* is the time period, μ_{it} refers to year, industry, and country fixed-effects, and ε_{it} is the error term.

To validate and support the robustness of the results, an alternative regression analysis is performed by excluding executive management characteristics. Differences are investigated, compared with the estimations displayed in Equations (1) and (2).

4. Results and Discussion

4.1 Descriptive of Data

The final sample of 4,136 observations that met the filters for cleaning the data is statistically analysed first by using descriptive statistics.

Table 2: Descriptive statistics

Variables	Mean	Std. Dev.	Skew.	Kurt.
Dependent variables				
ESG	64.996	15.358	-0.518	2.854

Variables	Mean	Std. Dev.	Skew.	Kurt.
Independent variables				
DIS	56.607	7.92	0.275	3.151
DIS_DIV	40.756	13.313	-0.01	2.447
DIS_INC	33.804	19.199	0.735	3.259
DIS_CON	98.519	5.323	-3.609	14.861
BCD	26.553	22.656	1.607	4.92
BGD	29.469	13.554	-0.254	2.648
EGD	19.624	15.277	0.564	3.178
Control variables				
BS	10.327	3.119	0.64	3.513
CEO_D	0.272	0.445	1.024	2.048
IBM	60.414	24.711	-0.333	2.456
ABT	6.84	3.226	1.272	5.579
BSS	45.124	20.277	-0.023	2.578
ROA	0.046	0.067	-0.151	4.793
LnS	21.995	1.708	-0.204	3.443
LnTA	22.629	1.644	0.005	2.662
LEV	0.575	0.186	-0.288	2.695
ACCSTD_D	0.703	0.457	-0.889	1.79

Note: This table presents the descriptive statistics for the variables included in the statistical and econometric analysis.

The descriptive statistics of the dependent, independent, and control variables are shown in Table 2. Results illustrate that companies report ESG performance with an above-average mean score of 64.996, focussing more on reporting social (68.137) then governance (63.631) aspects, indicating the commitment of companies to sustainable practices. The DIR scores, overall and decomposed by the three pillars, indicate that, in general, companies prioritize 56.607% of the workforce information that defines diverse and inclusive workplaces practices, 40.756% of a company's policy to drive diversity and equal opportunity (DIS_DIV), 33.804% of company's sense of belonging and absence of discrimination (DIS_INC), and 98.519% of company's working conditions controversies (DIS_CON) pillars. The cultural diversity of the board (BCD) emphasizes that, on average, 26.553% of board members of the sampled companies are international, with different cultural background compared to the location of the corporate headquarters. Analysing the board commitment to gender diversity (BGD) it can be observed that the mean value of 29.469 is slightly higher compared to board cultural diversity (BCD), indicating that, on average, almost 30% of the board members are female directors. The proportion of female executives (EGD) shows that on average only 19.624% of the executive leadership team are women. Regarding control variables that refer to the characteristics of the board of directors, the following results can be observed: the average size of the board is about 10 directors, with a maximum of 20 members and a minimum of 4; on average, these boards have only 60.414% independent directors and in 27.2% of cases, the chairman does not hold the CEO position at the same time. The average share of directors with specific skill is 45.124%, while the tenure of the board members is on average 6.84 years.

In line with Wen et al. (2023), skewness and kurtosis indices are used to validate further econometric analysis. Results lay within the recommended ranges (-3.00 to 3.00, for skewness, and -8.00 to 8.00, for kurtosis), except for DIS_CON variable, that was winsorized at 1% level before being used in regression analysis.

4.2 Research Hypotheses Validation

To discuss and validate the research hypotheses, Table 3 presents the results of FE robust panel regressions for overall DEI score, but also for specific diversity-related mechanisms of corporate governance on sustainable performance. Model 1 examines the impact of diversity-oriented policies and practices measured with Diversity and Inclusion Score on ESG performance (RH1), Model 2 examines the impact of ethical leadership

measured by diversity-related mechanisms of corporate governance (RH3), while Model 3 presents the impact of the joint effect on ESG performance of all DEI policies and practices considered in this study, using DIS as moderating variable. The year, industry and country fixed effects were considered. Furthermore, in order to correct for the presence of heteroskedasticity and autocorrelation in standard errors, the regression models were implemented using the robustness check included in STATA codes. The results of the regression estimations testing the three research hypotheses are presented in Table 3.

Table 3: Robust panel regression analysis for verifying the research hypotheses

VARIABLES	RH1	RH2	RH3
	DV: ESG	DV: ESG	DV: ESG
DIS	0.287***		0.451***
	(9.171)		(6.538)
BCD		0.047***	0.042
		(3.094)	(0.605)
BGD		0.078***	0.350***
		(3.585)	(3.435)
EGD		0.050***	0.139
		(3.279)	(1.423)
DIS_BCD			-0.000
			(-0.205)
DIS_BGD			-0.005***
			(-2.953)
DIS_EGD			-0.002
			(-1.074)
BS	-0.317***	-0.261**	-0.286**
	(-2.759)	(-2.291)	(-2.529)
CEO_D	-2.360***	-2.477***	-2.364***
	(-3.981)	(-4.090)	(-4.004)
IBM	0.092***	0.094***	0.089***
	(6.575)	(6.438)	(6.180)
ABT	-0.095	-0.015	-0.038
	(-0.802)	(-0.122)	(-0.323)
BSS	0.055***	0.058***	0.054***
	(4.385)	(4.492)	(4.377)
ROA	-4.633*	-5.202**	-4.504*
	(-1.873)	(-2.076)	(-1.805)
LnS	0.516	0.618	0.547
	(1.235)	(1.470)	(1.299)
LnTA	1.099	1.176	1.045
	(1.323)	(1.470)	(1.262)
LEV	0.058	0.124	0.292
	(0.028)	(0.058)	(0.142)
ACCSTD_D	-3.418**	-5.022**	-3.025**
	(-2.178)	(-2.035)	(-2.225)
Constant	10.802	18.475	-1.684
	(0.588)	(1.019)	(-0.090)

VARIABLES	RH1	RH2	RH3
	DV: ESG	DV: ESG	DV: ESG
R-squared	0.155	0.125	0.173
Observations	4,163	4,163	4,163
Number of companies	1,653	1,653	1,653
Year fixed-effect	Yes	Yes	Yes
Industry fixed-effect	Yes	Yes	Yes
Country fixed-effect	Yes	Yes	Yes

Note. Robust t-statistics in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

The positive and significant impact of diversity-oriented policies and practices, as well as diversity-related mechanisms of corporate governance on ESG score confirms that companies which prioritize workforce diversity and inclusion also tend to increase the level of ESG performance reported. A positive and significant impact of DIS on ESG ($\beta = 0.287$, $p < 1\%$) confirms that companies which prioritize an inclusive environment that promotes equal opportunities also tend to increase the sustainability performance measured with ESG score, validating the *RH1*. Similarly, Tumewang et al. (2024) demonstrate that diversity and inclusion policies and practices implementation may be considered a channel through which companies enhance ESG performance, becoming more oriented towards society and improving corporate governance mechanisms.

Findings also support the *RH2* with positive and significant impact of ethical leadership measured by diversity-related mechanisms of corporate governance: BCD ($\beta = 0.047$, $p < 1\%$), BGD ($\beta = 0.078$, $p < 1\%$), and EGD ($\beta = 0.050$, $p < 1\%$) on ESG performance. Similar results are obtained by Paolone et al. (2025), Paolone et al. (2024). These findings are aligned with *stakeholder theory* and suggest that diversity and inclusion-oriented policies and practices, including different cultural representation, as well as a higher proportion of female on boards and on executive level could drive companies to become more socially and ethically engaged to serve the interest of a wide range of stakeholders. The fact that board gender diversity and executive gender diversity positively influence ESG performance, support the premise of *upper echelon theory*, which predict that female representation is more likely to ensure an ethical approach to implement effective sustainable initiative that promote DEI policies and practices (Orazalin & Baydauletov, 2020).

The moderating role of DIS on board diversity and sustainability performance nexus is tested (*RH3*), results suggesting that the presence of DIS policies and practices reduces the positive effect of board diversity on firms' sustainability performance. The regression analysis reveals a statistically significant negative impact of the interaction effect of DIS_BGD ($\beta = -0.005$, $p < 1\%$) on ESG performance. This empirically demonstrates that the joint effect of BGD and DIS significantly reduces ESG performance and has important implications for *social identity theory* showing that a diverse representation could generate a convergence of perspectives leading to miscommunication issues and reducing social cohesion (Donkor, Trireksani & Djajadikerta, 2023). The findings show that enhanced diversity and inclusion policies and practices doesn't exert a significant moderating effect on ESG-BCD relationship and on ESG-EGD relationship. These results show that irrespective of the measures of board diversity (i.e., BCD, BGD or EXG), the presence of DIR practices reduces the positive significant effect of board diversity on firms' sustainability performance. The negative impact that joint effect of DIS and BCD, BGD, EGD has on ESG can be explain throw the social identity theory that posits that diversity can lead to inability to comprehend the perspective of others, reducing the board monitor capacity (Saha et al., 2024; Donkor, Trireksani & Djajadikerta, 2023). The negative interaction could reflect the presence of tokensim, where companies make symbolic initiatives to meet diversity and inclusion targets (more women or underrepresented social categories in boardrooms), without acting in order to actively support and create an inclusive environment (Baker et al., 2024). These assumptions are in line with *resource-based view theory* and *institutional theory* by emphasizing that companies fail to value diversity as a strategic resource that may generate long term performance, but also by the fact that they symbolically comply with DEI policies and practices to respond to normative pressure and not to effectively implementing them in ESG strategies (Paolone et al., 2024; Odriozola, Blanco-González & Baraibar-Diez, 2024). Similar results were also obtained by Paolone et al. (2025) and Paolone et al. (2024) when analyzing the joint effect of board and executive gender and cultural diversity on ESG performance. While the impact of board cultural diversity and board/executive gender diversity analysed separately enhance ESG performance, the interaction effects between these two diversity variables seems to negatively impact the ESG performance.

4.3 Robustness Tests

To validate the results, the models applied for testing the research hypotheses are performed based on robust regressions, in line with prior literature (Tumewang et al., 2024). Muchmore, alternative models' specifications are used to strengthen the reliability of the findings. Thus, three complementary econometric models are estimated by subsequently replacing DIS score with each of the three pillars (Diversity, Inclusion, and Controversies).

Table 4: Robustness checks results

VARIABLES	DV: ESG	DV: ESG	DV: ESG	DV: ESG
DIS_DIV	0.138***	0.142***		
DIS_INC	0.055***		0.059***	
DIS_CON	0.011			0.023
BCD	0.016	0.017	0.045***	0.046***
BGD	0.047**	0.047**	0.078***	0.078***
EGD	0.021	0.021	0.050***	0.050***
BS	-0.267**	-0.270**	-0.256**	-0.263**
CEO_D	-2.296***	-2.349***	-2.419***	-2.473***
IBM	0.091***	0.095***	0.091***	0.094***
ABT	-0.020	-0.013	-0.022	-0.015
BSS	0.056***	0.057***	0.057***	0.058***
ROA	-5.106**	-4.936**	-5.433**	-5.094**
LnS	0.613	0.653	0.573	0.626
LnTA	1.015	1.050	1.129	1.187
LEV	-0.141	-0.028	0.001	0.119
ACCSTD_D	-3.629**	-4.319**	-4.313**	-4.918**
Constant	15.603	16.906	18.427	15.760
R-squared	0.167	0.156	0.137	0.125

Note: The regressions of the alternative were run with robust fixed effects integrated in STATA 18. Year, industry and country fixed effects were also included. *** p<0.01, ** p<0.05, * p<0.1

Results presented in Table 4 provide additional support to the initial findings, emphasizing the positive and significant impact of diversity and inclusion policies and practices on ESG performance. A positive and significant impact of diversity and inclusion score on ESG confirms that companies which prioritize an integrated culture of DEI also tend to increase the level of ESG policies and practices reported. The positive influences of diversity and inclusion on the ESG score are also found by Monteiro et al. (2023), emphasizing that companies that develop diversity and inclusion practices are more likely to improve social performance. Tumewang et al. (2024) report similar insights on a sample of Islamic and conventional banks. The positive but insignificant impact of workspace controversies on ESG shows that there is no robust evidence of a meaningful relationship between DEI workplace - related controversies and ESG score. Contrary, Monteiro et al. (2023), emphasizes a negative and significant causality between controversies and social performance. Hence, these results are in line with stakeholder theory, showing that company's commitment to maintaining an inclusive environment and a gender and culturally diverse leadership could enhance sustainability performance and firm attractiveness to sustainable-oriented stakeholders (Alhazemi, 2025).

5. Conclusions

This empirical study examines the impact of diversity, equity and inclusion on sustainability performance from a holistic perspective, integrating both the specific and integrated diversity-oriented policies and practices and diversity-related mechanisms of corporate governance to emphasize the importance of an ethical and diversity-oriented leadership. Thus, it shows how companies may strategically apply DEI policies and practices to promote social inclusion and to enhance ESG performance.

Despite the extant research that explores the impact of diversity and inclusion on sustainability performance, most of these studies concentrate on presenting the impact of board gender or cultural diversity without taking into consideration the impact of DEI policies and practices on sustainability performance for non-financial companies. In order to fill the gap regarding less explored dimensions related to DEI-ESG nexus, the original contribution of this study focuses on presenting a comprehensive approach on the complexity of DEI concept, considering both board diversity characteristic, and integrated diversity and inclusion policies and practices.

The main findings illustrate that companies that prioritize ethical leadership through fair representation of diverse and inclusive workforce tend to increase their attention to sustainable social actions. These ethical practices foster an integrated culture that supports underrepresented social categories by adopting robust DEI policies and practices, contributing to increased attention on social responsibility that enhance ESG performance. The moderating effect of DIS on the board diversity-ESG performance nexus indicates that while diversity and inclusion policies and practices and leadership diversity (BGD, BCD, EGD) exert individually positive effect on ESG performance, their interactive influence has a negative impact on sustainable outcomes. This negative interaction may reflect a symbolic compliance with normative pressure, where ethical leadership and DEI policies and practices coexist without being supported and integrated in organizational culture, representing only DEI targets that attract new investors. The underlying theories are validated by the findings illustrating that diversity and inclusion policies and practices influence ESG performance. While each economic and sociological theory provides a distinct lens of the adoption of DEI policies and practices, together they foster the importance of an integrated ethical culture that strategically enhances ESG performance.

Although this study sheds new light on the research of diversity and inclusion in sustainability reporting, limitations may refer at the short time frame analysis (2020 - 2024 period), as well as the limited amount of data reported for the year 2024. Moreover, another limitation may be attributed to the fact that ESG score is the single variable used for sustainability performance measurement.

Future research may extend the investigation by including an in-depth analysis of the influence of DEI policies and practices on each ESG pillars. An extended time frame may allow comparison analyses between different periods, offering a comprehensive overview of the social movements that influenced the adoption of DEI practices and policies. Muchmore, a comparative analysis on regions to identify the effects of country-level policies and practices on the DEI-ESG nexus.

Acknowledgements

This paper was co-financed by the Bucharest University of Economic Studies during the PhD program.

Ethics declaration: Ethical clearance was not required for the research.

Declaration of generative AI: We declare that no authors used generative AI in scientific writing during the preparation of this work.

References

- Alhazemi, A. (2025) "Integrating ESG Framework with Social Sustainability Metrics: A Dual SEM-PLS Formative–Reflective Model Perspective", *Sustainability*, Vol. 17, No. 6, 2566.
- Baker, A.C., Larcker, D.F., McClure, C.G., Saraph, D. and Watts, E.M. (2024) "Diversity Washing", *Journal of Accounting Research*, Vol. 62, No. 5, pp 1661-1709.
- Donkor, A., Trireksani, T. and Djajadikerta, H.G. (2023) "Board Diversity and Corporate Sustainability Performance: Do CEO Power and Firm Environmental Sensitivity Matter?", *Sustainability*, Vol. 15, No. 23, 16142.
- James, R., Davis, L.R., and Alqaseer F. (2024) "The State of Sustainability in 2024: DEI Will Survive", Harvard Law School Forum on Corporate Governance.
- Monteiro, A.P., Cepêda, C., Pereira, C. and Silva A. (2023) "Social Performance Disclosed by European Companies: The Role of the Board Attributes and the Country's Legal System", *Journal of Risk and Financial Management*, Vol. 16, No.6, 284.
- Odriozola, M.D., Blanco-González, A. and Baraibar-Diez, E. (2024) "The link of ESG performance and board gender diversity in European firms", *Corporate Social Responsibility and Environmental Management*, Vol. 31, No. 6, pp 5656–5669.
- Orazalin N. and Baydauletov M. (2020) "Corporate social responsibility strategy and corporate environmental and social performance: The moderating role of board gender diversity", *Corporate Social Responsibility Environmental Management*, Vol. 27, No. 4, pp 1664–1676.
- Paolone, F., Bitbol-Saba, N., Gasbarro, D. and Nicolò, G. (2025) "Female leadership and environmental, social and governance performance. Empirical evidence from France", *Social Responsibility Journal*, Vol. 21 No. 4, pp 689-703.

- Paolone, F., Pozzoli, M., Chhabra, M. and Di Vaio, A. (2024) "Cultural and gender diversity for ESG performance towards knowledge sharing: empirical evidence from European banks", *Journal of Knowledge Management*, Vol. 28, No. 11, pp 106-131.
- Rabbani, M.R., Kiran, M., Bhuiyan, A.B. and Al-Hiyari, A. (2024) "Does diversity in top management and boards affect ESG performance? Evidence from Islamic and conventional banks in the MENA region", *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 17 No. 6, pp 1244-1266.
- Saha, R., Kabir, M.N., Hossain, S.A. and Rabby, S.M. (2024) "Impact of Diversity and Inclusion on Firm Performance: Moderating Role of Institutional Ownership", *Journal of Risk and Financial Management*, Vol. 17, No. 8, 344.
- Suciu, M.C., Noja, G.G. and Cristea, M. (2020) "Diversity, Social Inclusion and Human Capital Development as Fundamentals of Financial Performance and Risk Mitigation", *Amfiteatru Economic*, Vol. 22, No. 55, pp 742-757.
- Tumewang, Y.K., Ayunda, K.P., Azzahra M.R. and Hassan, M.K. (2024) "The effects of diversity and inclusion on ESG performance: A comparison between Islamic and conventional banks", *Borsa Istanbul Review*, Vol. 24, No. 6, pp 1101-1110.
- Wen, K., Alessa, N., Marah, K., Kyeremeh, K., Ansah, E.S. and Tawiah, V. (2023) "The Impact of Corporate Governance and International Orientation on Firm Performance in SMEs: Evidence from a Developing Country", *Sustainability*, Vol. 15, No. 6, 5576.

The Ambidextrous HR System: A Consilience-Driven Framework for Paradoxical Organizations

Ghayur Ahmad

College of Business Administration, Prince Mohammad bin Fahd University, Al-Khobar, Saudi Arabia

Abstract: This conceptual paper critically examines a fundamental limitation in the Strategic Human Resource Management (SHRM) literature: the prevailing models of HR systems are designed for specific, isolated objectives and are consequently ill-equipped for the paradoxical and multifaceted nature of contemporary organizations. We argue that in complex and dynamic environments, systems focused solely on control, commitment, or performance are inherently insufficient to address the multitude of simultaneous strategic challenges organizations face. Drawing on theory from organizational studies (Morgan's metaphors), complexity science, and strategic management (ambidexterity), we propose a novel framework: The Consilience-Driven Hybrid Ambidextrous HR System. This model is conceived to overcome the limitations of existing systems by unifying disparate HR policies and practices through the principle of consilience, enabling organizations to simultaneously pursue exploitation (efficiency, incremental innovation) and exploration (adaptability, radical innovation). The paper delineates the architecture of this system and discusses its theoretical underpinnings. We conclude by outlining significant implications for HR theory and practice, providing a clear agenda for future empirical research to operationalize and validate this proposed framework.

Keywords: HR systems, Conceptual paper, Ambidexterity, Consilience, Paradoxical organizations, Complexity, Theoretical framework

1. Introduction

Strategic Management provides the fundamental framework for strategy development, where formulation, implementation, and evaluation are core phases of the management process (Al-Musali & Ismail, 2016). The implementation phase is critical to the success and overall goal achievement of any organization (Buonomo et al., 2020), a feat impossible without the dedicated effort of its human resources (HR) (Brende & Sternfels, 2022). The field of Strategic HRM (SHRM) facilitates the smooth implementation of corporate strategy (Boungou & Yatié, 2022) by emphasizing the alignment of all HR efforts with the overall corporate strategy—creating an external fit (Bennett & Lemoine, 2014). Similarly, the internal consistency and alignment of all HR policies and practices—ensuring internal or horizontal fit—are paramount for success (Banholzer et al., 2022).

Literature further advocates for vertical fit, aligning HR practices within each HR function and its sub-functions (Asiaei et al., 2023). This emphasis on "fit" endorses a system thinking approach in HRM (Asiaei et al., 2022). Research has also highlighted the need for HR "bundles" (Asiaei et al., 2018), suggesting that clusters of HR practices work synergistically, rather than in isolation, to positively impact organizational performance (Cosa & Urban, 2023). This logic reinforces the operationalization of HR as an integrated system, consistent with general systems theory.

Previous studies have conceptualized numerous HR systems based on specific assumptions, such as high-performance, high-involvement, high-commitment, innovation-based, high-investment, control-based, safety-oriented, customer-service, and HR information systems (Daou et al., 2019). A critical missing element in this body of work is the incorporation of environmental dynamism, complexity, organizational equivocality, and multifaceted nature into HR system design.

Organizations continuously struggle with organizing and are open to multiple interpretations (Hazan et al., 2021). Their equivocal and multifaceted nature suggests diverse operational realities. Iazzolino and Laise (2016) argued that different metaphors—such as machines, organisms, brains, cultures, political systems, psychic prisons, instruments of domination, and flux and transformation—are needed to understand organizations amidst high complexity and equivocality. Furthermore, organizational actions are not always internally controlled but are often shaped by external forces, as posited by population ecology models and institutional theory (Ishaq, 2021; Izzo et al., 2022).

This study is rooted in the science of complexity. Given that organizations and their environments are complex, rapidly changing, and often externally influenced, and that business strategies can be emergent rather than purely deliberate (Jain et al., 2017), HR systems must encompass environmental dynamism, complexity, and multiple organizational images. A further problem with existing HR systems is their focus on singular strategic choices (e.g., commitment, performance, safety). The concern that all these choices need to coexist within a single, contemporary HR system has not been adequately raised. True systems thinking, where the whole is

greater than the sum of its parts, necessitates that these strategic choices work together synergistically, much like the established concepts of 'HR bundles' and 'fits' (Pandey et al., 2023).

This paper, therefore, makes three key contributions to address this gap. First, it synthesizes and critiques the limitations of prevailing HR systems, arguing that their singular-focus design renders them inadequate for complex organizations. Second, it explicitly connects the design of HR systems to environmental dynamism, complexity (Paoloni et al., 2020), and the multiple, simultaneous images of organizations (Brynjolfsson & McAfee, 2014). Third, and most significantly, it responds to this need by conceptualizing a novel, consilience-driven, and ambidextrous HR system designed to embrace paradoxical demands and provide integrated strategic solutions.

The paper is organized as follows: a review of existing HR systems and their limitations; an exploration of the paradoxical and multifaceted nature of organizations and their relationship with complexity; an appraisal of the need for a stable, ambidextrous hybrid HR system supported by consilience ideologies, including its proposed nature and design; and finally, a discussion of managerial implications and future research directions.

2. Methodology

This paper adopts a conceptual theory-building methodology. The objective is not to test hypotheses with empirical data but to synthesize existing literature across relevant domains to illuminate a critical theoretical gap and propose a novel, integrative framework to address it (Jaakkola, 2020; Gilson & Goldberg, 2015).

The process followed a structured approach to conceptual research:

1. **Problem Identification:** The initial phase involved a critical analysis of the prevailing literature on dominant HR systems (e.g., high-performance, high-commitment, control-based). This analysis was conducted to identify their core assumptions, purported strengths, and, most critically, their shared limitations when confronted with the realities of modern organizational environments.
2. **Theoretical Synthesis and Integration:** To build a rationale for a new framework, we engaged in a synthesis of theories beyond the traditional boundaries of HRM. This involved reviewing and integrating foundational concepts from:
 - **Organizational Theory:** Specifically, Morgan's (1986) metaphors of organization were used to articulate the multifaceted and paradoxical nature of organizations.
 - **Complexity Science:** Principles of environmental dynamism, complexity, and uncertainty were incorporated to establish the context in which HR systems must operate.
 - **Strategic Management:** The concept of organizational ambidexterity (exploration vs. exploitation) was identified as a crucial mechanism for resolving strategic tensions.
 - **Philosophy of Science:** The principle of *consilience*, or the unity of knowledge, was adopted as the guiding logic for integrating disparate HR policies and practices into a coherent whole.
3. **Theory Building through Logical Reasoning:** The novel framework—the Consilience-Driven Hybrid Ambidextrous HR System—was developed through abductive and deductive reasoning (Sætre & Brun, 2023). We reasoned that *if* organizations are paradoxical and environments are complex (established premises), *then* an effective HR system must possess specific characteristics (ambidexterity, hybridity, consilience) to be effective (theoretical proposition). The resulting model is the output of this theory-building process.
4. **Deriving Implications:** Finally, the implications of the proposed framework were delineated for both future research and managerial practice, providing a roadmap for subsequent empirical testing and application.

This methodological approach is appropriate for generating new perspectives and breaking away from established but potentially limiting paradigms, thereby offering a foundational contribution that can guide future empirical inquiry in the field.

3. Literature Review

3.1 HR Systems

HR systems are designed to facilitate organizational performance (Moutinho et al., 2021). They are composed of operational-level HR practices (specific activities to achieve objectives) and HR policies (guiding principles for selecting practices). HR systems operate at a higher level, integrating coherent and reliable policies and practices

to create a synergistic effect for desired outcomes (Kozera-Kowalska, 2020). While a contemporary concept, HR systems have roots in scientific management (task focus), administrative management (organizational focus), and the recognition of human behavior's role in optimal performance (Khan & Ali, 2017; Paoloni et al., 2023). The drive for high performance, involvement, and commitment underpins the need for HR systems (Patel & Guedes, 2017), with organizational philosophy and objectives guiding their selection and implementation (Pedro et al., 2018).

3.2 HR Systems as per Existing Research Literature

This section analyzes existing HR systems to identify limitations that 21st-century organizations must avoid.

Control-based HR Systems aim to reduce labor costs and improve efficiency through rule compliance and performance-contingent rewards (Soheilrad et al., 2017). Features include narrow jobs, centralized decision-making, and close monitoring (Turovets, 2021). Limitations include stifling innovation, discouraging teamwork and risk-taking (Turovets, 2021), and poor responsiveness in customer service and knowledge economies (Sveiby, 2018). They excel only at enhancing efficiency.

High-Commitment HR Systems aim to achieve performance through strong employee commitment and identification with organizational goals (Ali et al., 2021). Features include intensive training, socialization, internal promotions, high compensation, and selective staffing. Benefits include a committed workforce and high productivity (Usama et al., 2020). However, they often lack support for cost-effective innovation, knowledge economy information access, and customer service (Verhoef et al., 2021). Their effectiveness is highly contingent on specific strategies and market conditions (e.g., high-quality product strategies).

High-Performance Work Systems (HPWS) (or high-involvement/commitment systems) use management approaches to achieve high performance through people (Soetanto & Liem, 2019). Features include employment security, selective staffing, self-managed teams, decentralization, high contingent compensation, training, reduced status distinctions, and information sharing (Shinde et al., 2022; Buenechea-Elberdin, 2017). Benefits encompass high-quality output, customer satisfaction, skill enhancement, low turnover, and motivation. A major limitation is inconsistency with cost-effective innovation and a lack of resilience in handling environmental complexity and disruption (Shinde et al., 2022). They require a pre-existing climate of motivation and strategic alignment and do not support a risk-taking culture.

High-Involvement HR Systems focus on using HR practices to shape the work environment and latitude (Šebestová & Popescu, 2022). Objectives include delegation, productivity, empowerment, and information flow. Features are formal teams, job rotation, quality circles, and TQM (Radhakrishnan et al., 2017). Like others, they lack in providing innovative solutions, customer service, and risk-taking (Radhakrishnan et al., 2017).

HR Systems for Occupational Safety extend HPWS with safety management practices (Quarchioni et al., 2022; Peykani et al., 2022). Objectives are a safety-oriented climate and low injury rates. They lack support for cost-effectiveness, innovation, risk-taking, customer service, and knowledge economy information (Peykani et al., 2022).

HR Systems for Customer Service are based on policies promoting participation, training, and incentives for service (Al-Musali & Ismail, 2016). Objectives are customer satisfaction and loyalty. They often lack emphasis on internal efficiency, effectiveness, and a framework for innovation (Al-Musali & Ismail, 2016).

High-Investment HR Systems are inclined toward high-involvement and commitment systems, aiming for productivity, commitment, and skill development (Buonomo et al., 2020). Their limitations include a lack of cost-effective innovation, absence of teamwork, and low customer service (Buonomo et al., 2020).

Other systems exist (e.g., for knowledge-intensive teamwork, innovation, diversity), but all share a common trait: they are designed for specific, often isolated, objectives.

A critical analysis of the defining characteristics and documented limitations of these predominant HR systems reveals a consistent and fundamental pattern: each is architecturally designed to excel in a specific domain while inherently creating a significant strategic deficiency in another. This analysis, synthesized from the extant literature, is summarized in Table 1, which moves beyond a checklist of features to highlight the core strategic trade-offs each system imposes. For instance, while control-based systems ensure efficiency, they are explicitly designed to stifle the very innovation and adaptability required in dynamic markets. This systematic deficiency across all models proves that the problem is not one of poor execution but of flawed foundational design. Consequently, as the final row of Table 1 asserts, no singular, existing system can provide the holistic

capabilities—efficiency *and* innovation, commitment *and* cost-control—that modern, paradoxical organizations require to thrive.

Table 1: Strategic Gaps in Traditional HR Systems

HR System Type	Primary Strength	Key Strategic Gap (Critical Missing Capability)
Control-Based	Efficiency, Cost-Control	Innovation & Adaptability (Stifles creativity and risk-taking)
High-Commitment	Employee Loyalty, Culture	Cost-Effectiveness & Radical Innovation (Can be resource-heavy and inflexible)
High-Performance (HPWS)	Overall Performance, Skills	Cost-Effective Innovation (Struggles with disruptive change and complexity)
Customer-Service	Customer Satisfaction, Loyalty	Internal Efficiency & Innovation (Can neglect internal processes and R&D)
Ideal 21st-Century System	Must Integrate All Capabilities	

Source: Developed by the author (2025) based on critical synthesis of extant literature (e.g., Ali et al., 2021; Soheilirad et al., 2017; Soetanto & Liem, 2019).

4. Paradoxical and Multifaceted Nature of Organizations

Organizations are social entities, goal-directed, deliberately structured, and coordinated activity systems linked to their external environment (Jain et al., 2017). This interconnectedness necessitates environmental awareness. As noted by Morgan (1986, cited in Pandey et al., 2023), organizations are "many things at once." They are complex, multifaceted, and paradoxical. A paradox is a statement containing two contradictory yet true elements, such as goals being both opportunities and constraints. Paradoxical situations create disequilibrium, resolved through effort and political processes (Paoloni et al., 2020).

Organizations can be seen as systems evolving through creative destruction and self-organization (Brynjolfsson & McAfee, 2014; Moutinho et al., 2021), making their future unpredictable. Morgan's (1986) metaphors provide a powerful lens:

- **Machines:** Emphasize efficiency, order, standardization, and control.
- **Organisms:** Highlight adaptation, environmental fit, homeostasis, and survival.
- **Brains:** Feature learning, distributed intelligence, and knowledge networks.
- **Cultures:** Are defined by values, beliefs, traditions, and shared vision.
- **Political Systems:** Are arenas of power, conflict, interests, and alliances.
- **Psychic Prisons:** Exhibit unconscious processes, constraints, and defensive routines.
- **Instruments of Domination:** Involve exploitation, manipulation, and alienation.
- **Flux and Transformation:** Embody constant change, chaos, emergence, and self-organization.

Critically, all eight metaphors can coexist simultaneously within a single organization (Massaro et al., 2016). This multifaceted reality suggests the need for a comprehensive HR system that can engage with all these elements. Existing HR systems, designed for singular metaphors (e.g., control for machines, commitment for cultures), are ill-equipped to address the multiple strategic issues arising from this complexity.

5. Complexity and HR Systems

Existing HR systems often fail to account for environmental uncertainties—both dynamism (rate of change) and complexity (number of factors)—which critically affect an organization's value creation and performance (Soheilirad et al., 2017). HR uncertainty, stemming from environmental uncertainty, is a vibrant yet often overlooked variable. HR strategy is most operational when aligned with the environment (Sveiby, 2018). Firms must build the capacity to fit their resource alignments with environmental demands to achieve superior performance (Ali et al., 2021). Success relies on the capacity to exploit opportunities born from environmental uncertainties, providing an advantage over less adaptable rivals (Usama et al., 2020). This evidence supports the conceptualization of a hybrid HR system that can address environmental complexity and guide firms toward optimum performance.

6. Towards Conceptualization of an Ambidextrous HR System

The consensus in SHRM leans toward a systems perspective over isolated practices (Verhoef et al., 2021). However, conceptual inconsistencies plague existing HR systems due to competing objectives and a lack of solid empirical evidence on their functions. Inconsistent policies and practices within a system render it deficient.

This study identifies the limitations of prevalent HR systems and argues for a new system that provides complete conceptual understanding, addresses modern strategic issues, and embeds the critical success factors from Table 1. Furthermore, existing systems are weak in addressing environmental dynamism and complexity (Shinde et al., 2022); a new hybrid system must also facilitate organizational transformation. The rationale is rooted in organizational analysis: organizations are paradoxical and multifaceted, so HR policies/practices from any single-system perspective will fail if this reality is ignored. These practices are unsustainable amidst fast-paced change. Organizations constantly improvise and redesign due to self-learning, business model demands, and environmental factors (Šebestová & Popescu, 2022), necessitating ambidexterity in HR systems.

Organizational ambidexterity is the capacity to be efficient in managing current business while adapting to future changes. It involves equally using both exploration (search, experimentation, innovation) and exploitation (refinement, efficiency, execution) for sustained performance (Radhakrishnan et al., 2017).

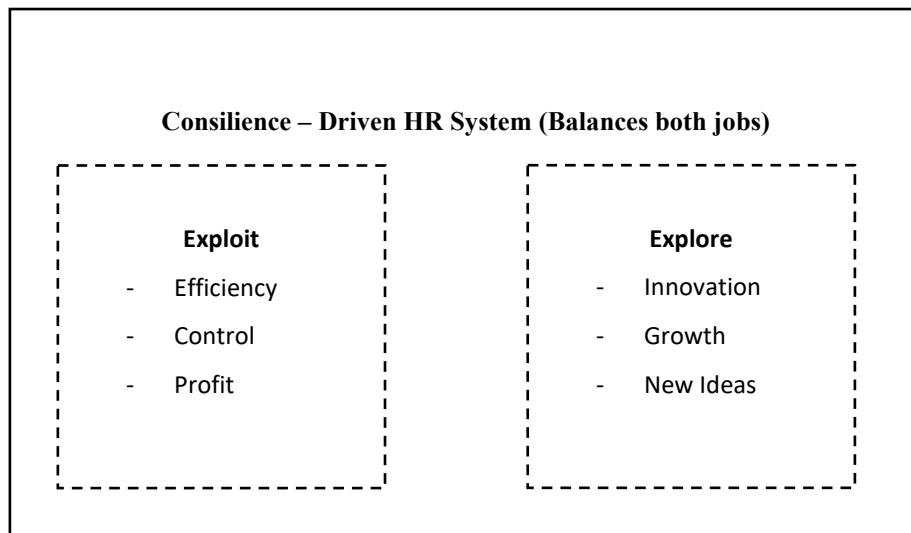
An ambidextrous HR system would function on two fronts:

- **Exploitative Front:** Strategic intent is cost and profit. It demands operational competencies, focus on operations, efficiency, and incremental innovation. The structure is formal and mechanistic, with a culture of efficiency, low risk, quality, and customers. Leadership is authoritative and top-down.
- **Exploratory Front:** Strategic intent is innovation and growth. Critical tasks include adaptability, new products, and breakthrough innovation. Entrepreneurial competencies are key, with an adaptive, loose structure focused on milestones, growth, and a culture of risk-taking, speed, and experimentation. Leadership is visionary and involved.

Operationalizing such a system demands insights from **consilience**—the unification of knowledge from independent disciplines to reveal common explanatory principles (Brende & Sternfels, 2022). Applying biological models (e.g., population ecology) to organizational science is an example. The term "hybrid" signifies that the proposed system incorporates and realigns effective policies and practices from all existing systems (e.g., performance management, training, selective hiring, job design, security, involvement, team development, information/innovation policies, customer service, compensation).

The proposed system must not only develop Knowledge, Skills, and Abilities (KSAs) and ensure a level playing field for Knowledge, Motivation, and Opportunities to perform (KMOs) but also develop the firm's **dynamic capabilities**—the ability to integrate, build, and reconfigure resources to address changing environments (Hazan et al., 2021). This is achievable by investing in human resources to produce cost-effective innovations, contingent on an HR philosophy that views people as a source of competitive advantage (Iazzolino & Laise, 2016). A consilience-driven, ambidextrous HR system would be autopoietic (self-regulating) (Ishaq, 2021), qualifying all assumptions of general systems theory and adapting to changing conditions (Izzo et al., 2022).

The Ambidextrous HR Balancing Act



Source: Developed by the author(s) (2025).

Figure 1: The Consilience-Driven Hybrid Ambidextrous HR System Model

This study proposes that the primary function of a contemporary HR system is to serve as a dynamic framework for managing the core tension between exploitation and exploration. Rather than a static set of policies, it must be an adaptive mechanism that integrates these competing demands.

As would be illustrated in Figure 1, the *Consilience-Driven HR System* is conceptualized not as a choice between two paths, but as a unifying structure that actively balances them. The *Exploit* function focuses on refining existing capabilities, ensuring efficiency, control, and profitability in current operations. Simultaneously, the *Explore* function is dedicated to fostering innovation, growth, and the development of new ideas for future viability.

The model represents the system's foundational principle of *consilience*—the unification of knowledge from across the organization to ensure that HR practices supporting one function do not contradict but are strategically aligned with those supporting the other. This model moves beyond the limitations of singular-focus systems (as critiqued in Table 1) by making the conscious management of this tension its central purpose, thereby enabling the multifaceted and paradoxical organization to thrive in complex environments.

7. Discussion

This paper set out to conceptualize an HR system capable of navigating the paradoxes inherent in modern organizations. While the proposed Consilience-Driven Ambidextrous HR System presents a theoretically compelling solution, its practical application invites critical discussion and unveils significant challenges.

The foremost implementation challenge lies in achieving genuine *consilience*. Unifying policies from the exploitative and exploratory fronts requires overcoming deeply ingrained organizational contradictions. Can a single performance management system truly reward both efficient execution *and* failed experimental learning? This demands a radical rethinking of HR philosophy and may encounter resistance from leaders and systems accustomed to clear, singular priorities. The model, therefore, does not propose a simple checklist but a profound cultural and structural shift towards embracing and managing tension, akin to the principles of paradoxical leadership (Smith & Lewis, 2011).

Furthermore, the model's effectiveness is likely highly *context-dependent*. The optimal balance between exploitation and exploration is not static; it must dynamically shift in response to industry volatility, competitive threats, and organizational life cycle stage. An ambidextrous system in a stable manufacturing firm may lean heavily on its exploitative front, while a tech startup might prioritize exploration. This contextual fluidity suggests that the model is a meta-framework—a guiding philosophy—rather than a one-size-fits-all prescription. Future research must explore the contingent factors that determine this balance.

A third point of discussion is the *resource intensity* implied by this model. Maintaining dual structures, competencies, and cultures is inherently costly and complex. It requires significant investment in managerial time to reconcile conflicting agendas and in capital to fund both incremental improvements and radical

innovation. For many organizations, especially SMEs, this may seem prohibitively expensive. This critique forces a consideration of the minimum viable level of ambidexterity required for different types of firms and how the consilience principle can be applied most efficiently.

Despite these challenges, the model's value is in providing a necessary *corrective lens* for SHRM theory. It moves the field beyond seeking a "best" system and towards developing a "most adaptable" one. By explicitly integrating the external environment and multifaceted nature of organizations into its core design, the framework offers a more robust foundation for building organizational resilience. It makes the case that the primary role of HR is no longer just alignment, but *orchestration*—orchestrating the tensions between competing demands to fuel sustainable performance.

In conclusion, this conceptualization is not the end of the conversation but a vital beginning. It succeeds not by providing easy answers, but by framing the right questions for both scholars and practitioners: How do we measure HR ambidexterity? What leadership styles enable consilience? And how do we manage the inherent costs of this complexity? The pursuit of these questions will drive the empirical work needed to advance this theory into practice.

8. Managerial Implications

This conceptualization urges management to revisit recruitment strategies, as a misfit between candidate, job, and organization (Turovets, 2021) would undermine the proposed system. It demands vigorous training programs with impact assessments to develop employees for cost-effective innovation. Management must realize that the HR system should support both human capital-enhancing practices (Ali et al., 2021) and building dynamic capabilities (Usama et al., 2020) for the entire organization. Consequently, environmental complexity, uncertainty, and dynamism (Verhoef et al., 2021) must become regular considerations in crafting and implementing corporate strategy.

9. Conclusion and Future Research Directions

SHRM literature is silent on conceptualizing an HR system that solves multiple modern strategic issues, particularly one consistent with multiple organizational images (Soetanto & Liem, 2019) and dynamic, complex environments (Buenechea-Elberdin, 2017). Our conceptualization, focusing on an ambidextrous system that simultaneously explores and exploits opportunities with human resources, aims to help contemporary organizations excel by controlling their multifaceted challenges. It is logically assembled based on the limitations of existing systems, their lack of coping capacity, and the veracity of organizations' paradoxical nature.

This paper offers thought-provoking insights for SHRM and organizational scholars regarding the role of HR systems in performance. Future research should focus on establishing the sustainability of this conceptualization, identifying and operationalizing the constructs of an ambidextrous HR system, and empirically measuring its impact on organizational performance across varying contexts (e.g., public/private sector, family businesses, different industries). Scholars should analyze, evaluate, and verify the applicability and cogency of the proposed system, suggesting modifications based on the changing nature of specific organizations.

Ethical Compliance: This article is based on a conceptual analysis of existing literature. No human or animal subjects were involved in this research, and thus, no ethical approval was required.

AI Assistance Declaration: The author utilized ChatGPT. The AI was used solely for purposes of text refinement, and improving grammatical clarity. The core ideas, theoretical analysis, critical conceptualization, and final arguments remain entirely those of the author. The AI acted as a tool to enhance the clarity and coherence of the writing and was not used to generate the foundational intellectual contributions of this work. The author submitted the AI check report generated by Turnitin.

References

- Al-Musali, M., & Ismail, K. (2016). Cross-country comparison of intellectual capital performance and its impact on financial performance of commercial banks in GCC countries. *International Journal of Islamic and Middle Eastern Finance and Management*, 9(4), 512–531.
- Ali, M. A., Hussin, N., Haddad, H., Al-Araj, R., & Abed, I. A. (2021). Intellectual capital and innovation performance: systematic literature review. *Risks*, 9(9), 170.
- Asiaei, K., Jusoh, R., & Bontis, N. (2018). Intellectual capital and performance measurement systems in Iran. *Journal of Intellectual Capital*, 19(2), 294–320.

- Asiaei, K., Jusoh, R., Barani, O., & Asiaei, A. (2022). How does green intellectual capital boost performance? The mediating role of environmental performance measurement systems. *Business Strategy and the Environment*, 31(4), 1587–1606.
- Banholzer, M., Dreischmeier, R., LaBerge, L., & Libarikian, A. (2022). *Business building: the path to resilience in uncertain times*. McKinsey & Company.
- Bennett, N., & Lemoine, J. (2014). What VUCA really means for you. *Harvard Business Review*, 92(1/2), 27.
- Brende, B., & Sternfels, B. (2022). *Resilience for sustainable, inclusive growth*. McKinsey & Company.
- Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. W. W. Norton & Company.
- Buenechea-Elberdin, M. (2017). Structured literature review about intellectual capital and innovation. *Journal of Intellectual Capital*, 18(2), 262–285.
- Buonomo, I., Benevene, P., Barbieri, B., & Cortini, M. (2020). Intangible assets and performance in nonprofit organizations: a systematic literature review. *Frontiers in Psychology*, 11, 729.
- Cosa, M., & Urban, B. (2023). A systematic review of performance measurement systems and their relevance to social enterprises. *Journal of Social Entrepreneurship*, 1–29.
- Daou, A., Joseph, J., Yousif, D. S., Fathallah, R., & Reyes, G. (2019). Intellectual capital and resilience in torn societies. *Journal of Intellectual Capital*, 20(4), 598–618.
- Gilson, L. L., & Goldberg, C. B. (2015). Editors' comment: So, what is a conceptual paper? *Group & Organization Management*, 40(2), 127–130.
- Hazan, E., Smit, S., Woetzel, J., Cvetanovski, B., Krishnan, M., Gregg, B., Perrey, J., & Hjartar, K. (2021). *Getting tangible about intangibles: The future of growth and productivity*. McKinsey Global Institute.
- Iazzolino, G., & Laise, D. (2016). Value creation and sustainability in knowledge-based strategies. *Journal of Intellectual Capital*, 17(3), 457–470.
- Ishaq, M. (2021). Multidimensional green brand equity: a cross-cultural scale development and validation study. *International Journal of Market Research*, 63(5), 560–575.
- Izzo, F., Tomnyuk, V., & Lombardo, R. (2022). 4.0 digital transition and human capital: evidence from the Italian Fintech market. *International Journal of Manpower*, 43(4), 910–925.
- Jaakkola, E. (2020). Designing conceptual articles: four approaches. *AMS Review*, 10(1), 18–26.
- Jain, P., Vyas, V., & Roy, A. (2017). Exploring the mediating role of intellectual capital and competitive advantage on the relation between CSR and financial performance in SMEs. *Social Responsibility Journal*, 13(1), 1–23.
- Khan, S. N., & Ali, E. I. E. (2017). The moderating role of intellectual capital between enterprise risk management and firm performance: a conceptual review. *American Journal of Social Sciences and Humanities*, 2(1), 9–15.
- Kianto, A., Sáenz, J., & Aramburu, N. (2017). Knowledge-based human resource management practices, intellectual capital and innovation. *Journal of Business Research*, 81, 11–20.
- Massaro, M., Dumay, J., & Guthrie, J. (2016). On the shoulders of giants: undertaking a structured literature review in accounting. *Accounting, Auditing and Accountability Journal*, 29(5), 767–801.
- Morgan, G. (1986). *Images of Organization*. Sage Publications.
- Moutinho, V., Vale, J., Bertuzi, R., Bandeira, A.M. & Palhares, J.A. (2021). Two-stage DEA model to evaluate the performance of iberian banks. *Economies*, 9(3), p. 115.
- Pandey, D. K., Hassan, M. K., Kumari, V., & Hasan, R. (2023). Repercussions of the Silicon Valley Bank collapse on global stock markets. *Finance Research Letters*, 55(Part B), 104013.
- Paoloni, N., Mattei, G., Dello Strologo, A., & Celli, M. (2020). The present and future of intellectual capital in the healthcare sector: a systematic literature review. *Journal of Intellectual Capital*, 21(3), 357–379.
- Sætre, A. S., & Brun, E. (2023). *Qualitative research in innovation and technology management*. World Scientific.
- Šebestová, J., & Popescu, C. (2022). Factors influencing investments into human resources to support company performance. *Journal of Risk and Financial Management*, 15(1), 19.
- Smith, W. K., & Lewis, M. W. (2011). Toward a theory of paradox: A dynamic equilibrium model of organizing. *Academy of Management Review*, 36(2), 381–403.
- Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N., & Haenlein, M. (2021). Digital transformation: a multidisciplinary reflection and research agenda. *Journal of Business Research*, 122, 889–901.

The Conflict Management Types and Strategies of Sport Club Board Rooms: Case Evidence from Jordan

Yehia AlDaaja

College of Business Administration, Prince Mohammad bin Fahd University, Alkhobar, Kingdom of Saudi Arabia

yaldaaja@pmu.edu.sa

Abstract: Organisational conflict is an inevitable aspect of any workplace and understanding the different types of conflict while implementing effective strategies is crucial for promoting a healthy and productive work environment. This study aims to identify the types and strategies of organisational conflict management in Jordanian sports organisations, specifically in Amman, the capital. It will examine the perceptions of both board members and club presidents and analyse any significant variations in their views. The study employs a descriptive survey method, using a structured questionnaire to collect primary data. The research population comprises presidents and board members from 114 sports clubs registered with the Ministry of Youth, totalling 1 1,090 individuals. A random sampling technique is utilised to select a sample of 46 sports clubs, representing approximately 400 individuals. Out of the 400 questionnaires distributed, 290 responses were received, consisting of 46 club presidents and 244 board members. Data analysis was conducted using the Statistical Package for Social Sciences (SPSS) software. The study finds agreement among sports club board members and presidents that intergroup conflict is the predominant type of conflict occurring in Jordanian sports clubs. Additionally, the results showed agreement between members and club presidents on choosing the cooperative strategy as the best possible approach to resolve organisational conflicts. However, the results indicate the existence of statistically significant differences in conflict management types and strategies between board members and club presidents. The observed differences can be attributed to their distinct roles and responsibilities within the club, as well as variations in their levels of experience. It is recommended that Jordanian sports clubs effectively manage conflicts by combining open communication, strengthening governance, inclusive decision-making processes, and a willingness to collaborate and compromise.

Keywords: Organisational conflict management, Ministry of Youth, Jordan, Sport clubs, Conflict management types, Conflict management strategies

1. Introduction

Organisational conflict is a natural and often unavoidable phenomenon in all types of organisations. It can disrupt normal operations but also has the potential to foster innovation and improved decision-making when managed effectively (Rahim, 2011; Cogburn et al., 2012). In Jordan, sports clubs are registered non-governmental organisations authorised to conduct sports, cultural, and social activities (Al-Daaja & Szabados, 2018). Despite their importance in fostering community engagement and youth development, internal conflicts have increasingly affected the stability and performance of many Jordanian sports clubs. Examples such as Al-Hussein Irbid, Al-Jazeera, and Al-Baqaa illustrate how unresolved conflicts can lead to administrative instability, poor performance, and even the dissolution of clubs.

Drawing from the author's personal experience and official records, it is clear that boardroom conflicts consume a substantial amount of time and energy, often centred around power struggles, unclear roles, or personal disagreements. This study fills a gap in academic literature by being one of the first empirical investigations into conflict management practices within Jordanian sports organisations. It aims to identify the prevalent types of organisational conflict in Jordanian sports clubs, ascertain the primary conflict management strategies employed, examine the differences in perceptions between club presidents and board members concerning the types of conflicts and strategies utilised, and explore the relationship between different types of conflict and their corresponding strategies. By focusing on clubs in Amman—home to the highest number of registered sports clubs—the study offers representative insights into the broader dynamics of conflict within Jordan's sports sector.

2. Literature Review

2.1 Organisational Conflict Management

Conflict management refers to the processes and strategies used to resolve disputes within organisations.

Minimising negative outcomes while leveraging positive factors (Rahim, 2002). Effective conflict management is crucial for sustaining harmony, enhancing productivity, and ensuring organisational effectiveness. In the public administration and non-profit sectors, where decision-making is frequently decentralised and

stakeholder participation is significant, conflict management becomes more intricate (Somech et al., 2009). Conflicts may stem from internal challenges, such as conflicting goals, inadequate communication, and resource distribution problems, or from external influences like regulatory changes and public scrutiny.

Liu & Chen (2002) propose three primary conflict management strategies:

- **Avoidance Strategy:** Defined as ignoring or delaying discussions about conflicts. Although it can help soothe emotions, this method may lead to an escalation of issues.
- **Competition Strategy:** Entails prioritising personal interests over others, frequently resulting in win-lose scenarios. While this approach might be warranted in urgent situations, it risks harming long-term relationships.
- **Cooperation Strategy:** Centres on collaborative problem-solving to attain mutually beneficial outcomes. By emphasising open communication and shared objectives, this approach fosters trust and promotes long-term organisational well-being (Anestaki, 2016).

Of these, the cooperative strategy is increasingly acknowledged for its capacity to create sustainable solutions and strengthen team cohesion (Lee, 2009; Weingart & Jehn, 2009).

2.2 Types of Organisational Conflict

Thomas (2002) categorises organisational conflict into several types:

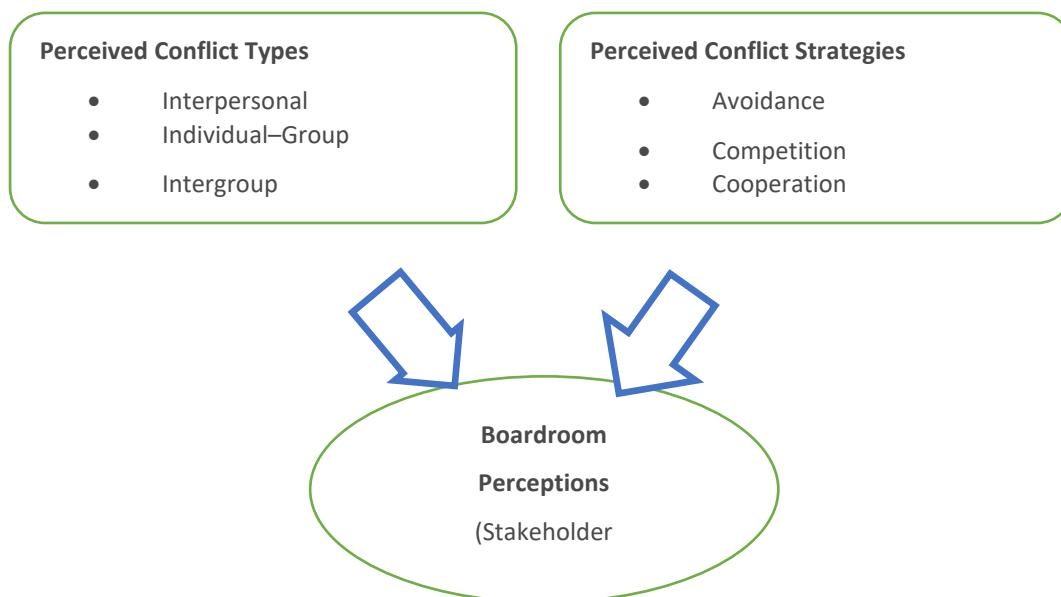
- **Interpersonal Conflict:** Occurs between two individuals.
- **Conflict Between Individual and Group:** A person at odds with a collective.
- **Intergroup Conflict:** Occurs among various groups within the same organisation.

Within Jordanian sports clubs, conflicts between subgroups on the board are prevalent, stemming from varying opinions, historical alliances, and ambiguous leadership structures (Mohamed, 2017). Although interpersonal and intergroup conflicts do occur, they are less common.

2.3 Conceptual Framework

This study utilises a conceptual model derived from Liu & Chen (2002) that combines conflict types and strategies with the viewpoints of board members and club presidents. The framework consists of three components:

1. **Perceived Conflict Types:** Includes interpersonal, individual-group, and intergroup conflicts.
2. **Perceived Conflict Strategies:** Avoidance, competition, and cooperation.
3. **Boardroom Perceptions:** How stakeholders view and interpret conflict dynamics.



Source: Author's compilation

Figure 1: The research Model

This model enhances comprehension of how different actors view and react to conflict, offering insights into organisational culture and leadership styles.

3. Methodology

This research utilises a descriptive survey approach, integrating quantitative data collection and analysis to examine the conflicts and strategies found in Jordanian sports clubs. The study focused on 114 sports clubs registered with the Ministry of Youth in Amman, representing around 1,090 people (club presidents and board members). A random sample of 46 clubs (approximately 40% of the total) was chosen using the random selection function in Microsoft Excel. Of these 46 clubs, 400 questionnaires were distributed, leading to a response rate of 72.5% and resulting in 290 valid responses: 46 from club presidents and 244 from board members.

A structured questionnaire adapted from Al-Zahrani (1999) was used. It included three sections: 1. Demographic Information: Gender, years of membership, and education level. 2. Conflict Strategies: 18 items measuring avoidance, competition, and cooperation strategies on a five-point Likert scale. 3. Conflict Types: Six items assessing interpersonal, individual-group, and intergroup conflicts.

Data were entered into SPSS for analysis. Descriptive statistics, including means and standard deviations, were calculated to evaluate the prevalence of conflict types and strategies. Independent samples t-tests were conducted to compare the perceptions of club presidents and board members. Cronbach's alpha values were used to assess internal consistency.

The reliability test was conducted, and the results are presented in Table No. 1. The results indicate that all values in the table below are greater than 0.60, with most exceeding 0.70, suggesting acceptable to high reliability (SANTOS, 1999).

Table 1: Reliability Statistics, Cronbach's Alpha

Main factors	Dimensions	No. of Items	Cronbach Alpha
Types of Conflict	Interpersonal	3	0.882
	Individual conflict with a group	2	0.731
	Intergroup conflict	1	-
Conflict Strategies	Avoidance	6	0.912
	Competitive	6	0.897
	Collaboration	6	0.886
Overall scale		24	0.867

Source: Author computation

4. Results and Discussion

4.1 Demographic Analysis

The demographic characteristics of the respondents (N = 290) reveal several important findings about the study population. Firstly, the gender distribution indicates a significant predominance of male respondents (89.31%), accurately reflecting the current gender composition in Jordanian sports club leadership positions. This aligns with Rouhani's (2022) research, which documents the male-dominated nature of sports governance in Arab countries, where cultural norms have traditionally limited female participation in sports administration roles. Membership duration data suggest that nearly half of the respondents (48.96%) have had over ten years of club membership, indicating that the sample includes many experienced administrators with extensive institutional knowledge. This is particularly valuable for conflict research, as long-tenured members would have witnessed and participated in various conflict situations over time. Regarding education, the majority of respondents (52.75%) held bachelor's degrees, while only a small percentage (1.73%) possessed higher education qualifications.

This distribution may reflect both the educational attainment levels common among sports administrators in Jordan and the relatively limited emphasis placed on advanced academic credentials for sports leadership

positions in the region, as noted by Al-Hussein (2020). The combination of these demographic factors—predominantly male, experienced, and moderately educated—creates a respondent profile capable of providing informed perspectives on organisational conflicts in sports clubs.

4.2 Perceived Conflict Types: Board Members' and Presidents' Perspectives

The research examined the types of perceived conflict in Jordanian sports organisations, gathering insights from board members and presidents. This analysis distinguishes between the two viewpoints, emphasising key trends, differences, and implications for governance and conflict management. The results are presented in Table 2.

Table 2: Board Members' Conflict Type Perceptions

No	Item(s)	Mean	S. D	Degree
1	President vs. individual member	2.04	0.78	low
2	President vs. a group of members	2.31	0.94	low
3	President vs. vice president	1.66	0.57	low
4	Between groups within the board	2.39	0.78	moderate
5	Between individual members	2.18	0.91	low
6	Individual member vs. group	1.95	0.68	low
Total		2.15	0.60	low

Source: Author computation

The table above shows that board members rated intergroup conflict as the primary concern, with a mean score of 2.39, indicating a moderate level of apprehension. This finding supports Forsyth's (2019) group dynamics theory, which suggests that coalition building during elections can lead to the establishment of entrenched factions. Conversely, the least conflict was reported between the president and the vice president ($M = 1.66$), highlighting a strong respect for hierarchy, in line with leadership norms prevalent in Arab cultures (Al-Krenawi, 2021). With an overall average conflict score of 2.15, the findings suggest low overall conflict; nonetheless, the moderate levels of intergroup tension could signal potential issues that, if unattended, might worsen (De Dreu & Weingart, 2003). These observations emphasise the importance of proactive governance and strategies to mitigate group-level conflicts that could negatively impact organisational performance.

In contrast to board members, presidents reported a significantly higher level of conflict across all categories, resulting in a total mean score of 3.17, as shown in Table 3.

Table 3: Presidents' Conflict Type Perceptions

No	Item(s)	Mean	S. D	Degree
1	President vs. individual member	2.80	1.02	moderate
2	President vs. a group of members	3.22	1.13	moderate
3	President vs. vice president	3.28	1.33	moderate
4	Between groups within the board	3.76	1.45	moderate
5	Between individual members	3.02	1.09	moderate
6	Individual member vs. group	2.91	1.19	moderate
Total		3.17	0.84	moderate

Source: Author computation

In the table above, the most notable perceived conflict was found among groups within the board ($M = 3.76$), emphasising that intergroup dynamics are a key concern for both levels of leadership. This observation aligns with Coleman's (2021) assertion that organisations should prioritise intergroup mediation. Furthermore, presidents noted heightened conflict between themselves and vice presidents ($M = 3.28$), which differs from the reports of board members and supports the idea of the "leadership paradox" (Thompson, 2022)—the concept that leaders often recognise tensions that might go unnoticed by others. This discrepancy also

highlights the “leader amplification effect,” which explains how leaders, due to their extensive oversight roles, are more capable of identifying and internalising organisational conflict (Higgs, 2018). Such heightened awareness necessitates specialised leadership development programmes that emphasise conflict management.

A comparison of Tables 2 and 3 reveals significant perceptual differences. Both groups recognised intergroup conflict as the main issue; however, presidents perceived it to be much more severe (3.76 versus 2.39). This discrepancy may stem from their considerable responsibilities and obligation to ensure board harmony. Furthermore, board members generally downplayed hierarchical conflicts, while presidents regarded them as moderate to significant. This disparity suggests possible communication breakdowns or misalignment in addressing and highlighting conflicts within leadership frameworks.

4.3 Perceived Conflict Strategies in Jordanian Sports Organisations

A descriptive analysis was conducted to explore conflict management practices in Jordanian sports organisations, drawing on the views of club presidents and board members. This method provides a comprehensive understanding of existing conflict resolution strategies, incorporating both leadership and administrative perspectives.

4.3.1 Board members’ perspectives on conflict strategies

Table 4 presents the responses of board members regarding the conflict strategies employed by club presidents. The analysis encompasses three primary strategies: avoidance, competition, and cooperation.

Table 4: Board Members’ Perception of Club Presidents’ Conflict Strategies

Strategy	Item	Statement	Mean	SD	Level
Avoiding	7	The president avoids addressing daily disputes among board members.	1.93	1.16	Low
	8	Ignores disagreements within the board.	1.96	1.02	Low
	9	Avoids discontent with board members.	2.07	1.01	Low
	10	Avoids listening to complaints related to disputes.	1.50	0.69	Low
	11	Avoids forming relations with disputing board members.	2.01	1.21	Low
	12	Avoids dialogue with those holding different opinions.	2.07	1.06	Low
Competing	13	Stubbornly sticks to opinions.	1.59	0.75	Low
	14	Treats disputes as win-lose situations.	1.37	0.70	Low
	15	Uses threats in conflicts.	1.37	0.77	Low
	16	Uses internal regulations to resolve disagreements.	2.49	1.37	Low
	17	Intensifies supervision of dissenters.	1.56	1.02	Low
	18	Monopolises conversations.	1.51	0.80	Low
Cooperative	19	Finds appropriate solutions to problems.	4.41	1.17	High
	20	Inquires about problems facing the club.	4.75	0.71	High
	21	Combining experience with others for decision-making.	4.55	0.70	High
	22	Remains impartial in conflicts.	4.46	0.91	High
	23	Understands others’ viewpoints.	4.59	0.68	High
	24	Sets shared goals.	4.64	0.92	High

Source: Author computation

The findings reveal a clear preference for cooperative strategies, which received notably high ratings for inquiry-based engagement ($M = 4.75$), shared goal-setting ($M = 4.64$), and understanding others’ perspectives ($M = 4.59$). In contrast, avoidance (e.g., $M = 1.93$ for avoiding disputes) and competitive behaviours (e.g., $M = 1.37$ for using threats) were rarely supported. When the responses are aggregated, the average scores across

the three strategies further emphasise these trends: cooperative strategy = 4.56, competing strategy = 1.81, and avoiding strategy = 1.92. These results indicate a strong inclination towards constructive and inclusive conflict resolution methods among sports club presidents, as seen by their board members.

This aligns with the findings of Al-Sabah (2015), which revealed that cooperative conflict management strategies in Middle Eastern organisations greatly enhance communication and team cohesion. Their findings support the idea that collaborative approaches foster a more constructive environment for decision-making and bolster organisational unity, particularly in team-focused settings such as sports clubs.

4.3.2 Club presidents' perspectives on conflict strategies

Table 5 illustrates the self-reported utilisation of conflict management strategies by club presidents. Unlike board members, presidents assessed their use of both avoidance and competition strategies more positively, although cooperative strategies continued to receive the highest endorsement.

Table 5: Self-reported utilisation of conflict management strategies by club presidents

Strategy	Item	Statement	Mean	SD	Level
Avoiding	7	Avoids addressing daily disputes.	3.74	1.34	High
	8	Ignores and neglects disagreements.	3.96	1.21	High
	9	Avoids discontent from board members.	3.91	1.11	High
	10	Avoids listening to complaints.	4.02	1.29	High
	11	Avoids forming relationships with disputing members.	4.24	1.02	High
	12	Avoids dialogue with opposing members.	4.26	1.27	High
Competing	13	Sticks to opinions until others concede.	4.13	1.24	High
	14	Treats conflicts as win-lose.	4.63	0.90	High
	15	Threatens dissenters.	4.87	0.62	High
	16	Uses regulations in conflicts.	3.93	1.22	High
	17	Increases control over dissenters.	4.17	1.22	High
	18	Monopolises meetings.	3.96	1.19	High
Cooperative	19	Finds solutions collaboratively.	4.91	0.28	High
	20	Inquiries about problems.	4.96	0.21	High
	21	Share experiences for decisions.	4.83	0.49	High
	22	Remains impartial in disputes.	4.89	0.31	High
	23	Understands others' viewpoints.	4.80	0.40	High
	24	Sets common goals cooperatively.	4.89	0.31	High

Source: Author computation

The analysis indicates that all three strategies achieved high average scores, with cooperative behaviours consistently leading. The top-rated item was "inquiring about the problems facing the club" (Item 20, M = 4.96), closely followed by "finding appropriate solutions" (Item 19, M = 4.91) and "setting a common goal with everyone's cooperation" (Item 24, M = 4.89). These ratings reflect a proactive and inclusive leadership approach.

Interestingly, although cooperative strategies received the highest ranking overall, avoidance and competing strategies also scored notably well. For example, items such as "you threaten others who disagree with you" (Item 15, M = 4.87) and "you avoid discussion with opposing members" (Item 12, M = 4.26) garnered unexpectedly high support. This implies that some club presidents might employ both assertive and avoidant behaviours, depending on the situation. The combined average scores for all strategies were as follows:

- Cooperative strategy = **4.89**
- Avoiding strategy = **4.02**
- Competing strategy = **4.45**

These findings show that club presidents consider cooperation key to resolving conflicts, though they also recognise a considerable reliance on authoritative and avoidance strategies.

This viewpoint largely corresponds with the perspectives of board members discussed earlier, indicating a common preference for collaborative methods. Nevertheless, the presidents' greater self-reported use of competitive and avoidance strategies hints at a potential gap between their intended actions and how others perceive them. These results align with Al-Zahrani (1999), who highlighted that although cooperative methods foster organisational harmony, leadership styles in hierarchical cultures can still include authoritative tactics for conflict resolution.

5. Independent T-Test Analysis

An independent samples t-test was conducted to address the research question and examine whether statistically significant differences exist between the perceptions of club presidents and board members regarding the types and strategies of organisational conflict that occur within sports clubs in Amman, the capital city.

5.1 Conflict Types

Table 6 shows the results of the t-test, which aimed to address the research question: "Are there statistically significant differences between the views of club presidents and board members regarding the types of organisational conflict present in sports clubs?"

Table 6: Independent T-test Results on Perceptions of Conflict Types in Sports Clubs

Conflict Type	Item NO	Respondents	No of Respondents	M	S. D	T- Value	Sig (p-value)
Interpersonal conflict	1	President	46	2.80	1.02	5.74	00.00
		members	244	2.04	0.78		
	3	President	46	3.76	0.57	16.84	
		members	244	1.66	1.45		
	5	President	46	3.02	1.09	5.56	
		member	244	2.18	0.91		
	Total	President	46	3.20	0.77	12.24	
		members	244	1.96	0.60		
Individual conflict with a group	2	President	46	3.28	1.33	6.28	00.00
		members	244	2.39	0.78		
	6	president	46	2.91	1.19	7.76	
		members	244	1.95	0.68		
	Total	president	46	3.10	1.04	7.97	
		member	244	2.17	0.65		
Intragroup conflict	4	President	46	3.22	1.13	5.82	00.00
		members	244	2.31	0.94		
Total		President	46	2.83	3.17	9.86	00.00
		members	244	3.91	2.15		

Source: Author computation

As indicated in Table 6, the p-values for interpersonal conflict, individual conflict with the group, and intragroup conflict are all 0.000. This demonstrates statistically significant differences between the perceptions of presidents and board members across all types of conflict examined. The findings reveal that club presidents and board members possess significantly different views regarding the nature and prevalence of organisational conflict types within their respective roles.

5.2 Conflict Strategies

An independent samples t-test was also conducted to address the research question: “Are there statistically significant differences between the views of club presidents and board members regarding the strategies used in managing organisational conflict?”

Table 7: Results of Independent T-test on Perceptions of Conflict Management Strategies in Sports Clubs

Strategy type	Respondent Groups	No	M	S. D	T-Value	Sig (p-value)
Avoidance	President	46	4.02	0.75	16.65	0.000*
	Members	244	1.92	0.79		
Competitive	President	46	4.28	0.34	28.76	0.000*
	Members	244	1.65	0.60		
Cooperative	President	46	4.88	0.15	3.05	0.002*
	Members	244	4.57	0.69		
Total	President	46	0.31	4.39	32.89	0.000*
	Members	244	0.32	2.71		

Source: Author computation

As illustrated in Table 7, there are statistically significant differences in the perceptions of conflict management strategies held by club presidents and board members. Specifically, the significance levels for the avoidance strategy, competitive strategy, and cooperative strategy are 0.000, 0.000, and 0.002, respectively. Additionally, the overall evaluation of conflict strategies produced a significance level of 0.000.

These results suggest that board members perceive the application and effectiveness of conflict strategies differently from presidents. The variation in perspectives may be attributed to their differing responsibilities, levels of authority, and direct exposure to conflict within club operations. Overall, the findings confirm that the two groups exhibit significantly divergent viewpoints regarding both the types of conflict and the strategies used to resolve them.

6. Conclusions

This study aimed to explore the types of conflict present in Jordanian sports clubs and the strategies employed to manage them, as perceived by board members and club presidents. It also sought to determine whether there were significant differences in their views on conflict types and strategies within sports clubs in Amman, the capital. Based on the findings, the following conclusions can be drawn.

- **Conflict Types:** From the perspective of club presidents, the most prominent type of organisational conflict in sports clubs is intergroup conflict, followed by interpersonal conflict and individual conflict within a group. Board members agree that intergroup conflict is the most significant, followed by individual conflict within a group, and interpersonal conflict is the least important. This was found to be a continuation of the alliances formed during the electoral stage.
- **Conflict Strategies:** Club presidents indicate that the primary conflict strategy employed is cooperation, followed by avoidance and competition. Board members similarly view cooperation as the most prevalent strategy, with competition next, while avoidance ranks as the least utilised.
- **Consistency in Perspectives:** The study found statistically significant differences between club presidents and board members in their perceptions of interpersonal, individual, and intergroup conflict. Additionally, differences in their views on the strategies used to manage organisational conflict are also statistically significant. Board members demonstrate a deeper awareness of conflict management strategies compared to club presidents. These results suggest that the varying perspectives of club presidents and board members may stem from their distinct roles, responsibilities, and varying experience levels within the club.
- **Additional research** can explore the factors driving intergroup conflict in Jordanian sports clubs and their implications. Additionally, a comparative study could analyse conflict management practices in these clubs relative to those in other regions or countries, pinpointing potential areas for enhancement.
- **To improve conflict management** in sports clubs, it is recommended to strengthen communication between club presidents and board members. Additionally, offering training programmes on conflict

management for both presidents and board members can enhance their effectiveness in resolving conflicts. It is also crucial to reinforce governance within sports clubs, ensuring inclusive decision-making processes that foster cooperation and support constructive conflict resolution.

Ethical Considerations: This research upheld ethical standards. Participants were informed of the study's objectives, provided their voluntary consent, and strict measures were taken to ensure their anonymity and confidentiality. Data was stored securely, and no identifiable personal information was collected. The study received approval from the relevant authority and adhered to both institutional and international ethical guidelines.

AI Declaration: AI tools have been utilised for language editing and grammar checks. The content and analysis remain the author's original work.

References

- Al-Daaja, S. & Szabados, G. (2018). Governance challenges in Jordanian sports clubs. Amman: Jordan Sports Press.
- Al-Hussein, M. (2020) 'Educational attainment and leadership in Jordanian sports organisations', *Journal of Sports Governance*, 8(2), pp. 45–60.
- Al-Krenawi, A. (2021) 'Conflict resolution in Arab organisations: Cultural and structural influences', *International Journal of Conflict Management*, 32(3), pp. 412–430. doi:10.1108/IJCM-01-2021-0012
- Al-Sabah, F. (2015). An empirical investigation of Middle East conflict management styles (Doctoral dissertation, Brunel University London).
- Al-Zahrani, M. (1999) . Organisational conflict in non-profit sectors. Riyadh: King Fahd University Press.
- Anestaki, A. (2016) 'Win-win strategies in organisational conflict', *Conflict Resolution Quarterly*, 33(4), pp. 501–520. doi:10.1002/crq.21170
- Cogburn, J., Rahm, D. & Farris, E. (2012) 'Conflict and innovation in public organisations', *Public Administration Review*, 72(2), pp. 241–250. doi:10.1111/j.1540-6210.2011.02500.x
- Coleman, P. (2021) The five percent: Finding solutions to seemingly impossible conflicts. New York: PublicAffairs.
- De Dreu, C. & Weingart, L. (2003) 'Task versus relationship conflict and team effectiveness', *Journal of Applied Psychology*, 88(4), pp. 741–749. doi:10.1037/0021-9010.88.4.741
- Forsyth, D. (2019). Group dynamics. 7th edn. Boston: Cengage Learning.
- Higgs, M. (2018) 'Leadership and the perception of conflict', *Leadership Quarterly*, 29(1), pp. 101–113. doi: 10.1016/j.leaqua.2017.12.003
- Lee, S. (2009) 'Collaborative conflict management: A meta-analysis', *Negotiation Journal*, 25(3), pp. 297–315. doi:10.1111/j.1571-9979.2009.00229.x
- Liu, S., & Chen, G. M. (2002). Collaboration over avoidance: Conflict management strategies in state-owned enterprises in China. In G. M. Chen & Ringo Ma (Eds.), *Chinese conflict management and resolution* (pp. 163-182). Westport, CT: Ablex
- Mohamed, A. (2017) 'Intergroup conflict in sports boards: A Jordanian case study', *International Journal of Sport Management*, 18(3), pp. 210–225.
- Rahim, M. (2002) 'Toward a theory of managing organisational conflict', *International Journal of Conflict Management*, 13(3), pp. 206–235. doi:10.1108/eb022874
- Rahim, M. (2011). Managing conflict in organisations. 4th edn. New Brunswick: Transaction Publishers.
- Rouhani, N. M. (2018). Women's sport participation in the United Arab Emirates: A case study (Doctoral dissertation, Deakin University). <https://hdl.handle.net/10536/DRO/DU:30112376>.
- Santos, J. (1999) 'Cronbach's alpha: A tool for assessing reliability', *Journal of Consumer Psychology*, 8(2), pp. 303–308.
- Somech, A., Desivilya, H. & Lidogoster, H. (2009) 'Team conflict management and team effectiveness', *Journal of Organisational Behaviour*, 30(3), pp. 359–378. doi:10.1002/job.537
- Thomas, K. (2002) 'Conflict and negotiation processes in organisations', *Handbook of Industrial and Organisational Psychology*, 3, pp. 651–717.
- Thompson, L. (2022). The mind and heart of the negotiator. 7th edn. London: Pearson.
- Weingart, L. & Jehn, K. (2009) 'Manage intra-team conflict through collaboration', *Research in Personnel and Human Resources Management*, 28, pp. 1–48. doi:10.1108/S0742-7301(2009)0000028004

What Makes an Academic Leader Top of the Class?

Cedric Bardowieck and Joachim Prinz

University of Duisburg-Essen, Germany

cedric.bardowieck@uni-due.de

joachim.prinz@uni-due.de

Abstract: The increasingly data-driven research on leadership continues to explore the question of what constitutes effective leadership in the eyes of subordinates. One major challenge in this field lies in the limited availability of systematic and publicly accessible data on upward feedback. While prior research has extensively examined leadership effectiveness in private sector contexts – especially concerning CEOs – there remains a notable gap regarding top-level academic leadership, particularly university presidents. This study addresses that gap by analysing a unique and novel data source: publicly available ratings of German university presidents (rectors) submitted by their subordinate faculty members between 2009 and 2025 (N = 785). These ratings provide a rare, large-scale form of upward feedback and allow for an empirical investigation into the factors that shape perceptions of leadership effectiveness within higher education institutions. The analysis of possible determinants of the rectors' performance ratings operates on both the individual and organizational levels. On the individual level, we include detailed measures of the rectors' specific human capital, such as the years of working experience, internal organizational experience, external promotions and prior higher education management experience. On the organizational level, we draw on a set of performance indicators, including third-party funding volumes, student data and university rankings. The empirical strategy relies on panel data models with ordered logit fixed effects estimations. Our preliminary findings strongly indicate that institutional research performance is among the most significant predictors of positive performance evaluations. These findings highlight the importance of aligning academic leadership with institutional performance goals and suggest that perceptions of effective leadership of academic staff are closely tied to quantifiable organizational success. By leveraging publicly available evaluation data and combining it with institutional performance metrics, this study contributes to a better understanding of leadership effectiveness in the academic sector and opens new avenues for empirical leadership research.

Keywords: Leadership effectiveness, Performance management, Higher education management, Human capital

1. Introduction

In the face of the growing complexity of the international academic landscape and increasing external pressure on higher education institutions, the question of the right fit for leaders in higher education becomes increasingly relevant. It is shown that job expectations of modern university presidents changed drastically from the role of respected scholars to quasi-heroic leaders of continuously changing organizations (Lavigne, Cowley & Sá, 2021). Crises like the Covid pandemic (e.g., Pekkola et al., 2021), sociopolitical challenges, such as recent politically motivated budget cuts in the US (Brooks & Shakil, 2025), and rapid technological adaptation needs, especially the AI revolution (e.g., Ting & Wan, 2023), further emphasize the need for capable and resilient academic leadership. While recent studies highlight drastically differing leadership effectiveness of university presidents (e.g., Christensen, 2024), research on academic leadership performance remains limited – especially when compared to the extensive literature on CEOs in the private sector (e.g., Månsson, Qasim & Söderberg, 2025; Kleindienst et al., 2024). Universities are multimillion-dollar institutions with their performance largely depending on the human capital of their staff. Despite this – and several studies showing the relevance of upward feedback for performance outcomes (e.g., Cotrim & Da Silva Gomes, 2024; Gimbar, Saucedo & Wright, 2024; Souki, Aaad & Karkoulia, 2025) – little attention has been paid to executive evaluations of academic leaders by their academic staff. Systematic literature overviews on academic leadership, such as Tight (2022) and Mantry et al. (2023), similarly observe a lack of literature on several key aspects of leadership effectiveness. Scholars further criticize the stark focus on qualitative research (Badillo-Vega, Krücken & Pineda, 2021) as well as the predominant focus on university presidents from Anglo-Saxon countries (Liu et al. 2020).

This study addresses this research gap by analysing panel data on German university presidents' performance evaluations by academic staff. The dataset covers 16 years (2009 to 2025) and 785 average grade rates, encompassing more than 100 university presidents. While the data-driven research on leadership is usually constrained by the lack of publicly available data on executive evaluations, the German Association of University Professors and Lecturers (DHV) publishes annual results of their feedback survey (Krüger & Rudinger, 2025). This provides a rare opportunity to examine upward feedback in academia, long demanded by researchers (e.g., Gruber et al., 2007), even though the nationally specific context may limit the generalizability of results to other higher education systems. In order to examine the research question of which individual characteristics and organizational key performance indicators influence leadership evaluations, this study employs panel data analysis using fixed effects models. The study provides context-sensitive, empirically robust evidence for

research on university management and leadership, while also generating exploratory insights for the broader field.

2. Theoretical and Empirical Foundations

2.1 Theoretical Framework

Economic theory provides theoretical insights on the question of why some university presidents might have superior leadership effectiveness than others. According to the well-established Human Capital Theory by Gary S. Becker (1964), knowledge, skills, competencies and other characteristics relevant to a person's economic activity not only increase their income, but also their labor productivity. While general human capital, such as formal education, is relatively homogenous among university presidents, specific human capital can differ widely. These factors remain central in recent studies on successful academic leadership (Lavigne & Sá, 2022; Pekkola et al., 2021; Baruch et al., 2025). In general, the theory suggests that more experienced or better-qualified leaders should demonstrate stronger performance as reflected in their evaluations. However, the causal link between leadership traits and organizational outcomes remains contested. The Upper Echelon Theory (Hambrick & Mason, 1984) states that top executives shape performance outcomes through their characteristics and decisions. Though refined by the authors themselves (Hambrick, 2007) and expanded by a substantial body of literature (Abatecola & Cristofaro, 2020), empirical studies show mixed results. Some studies detect a CEO effect on firm performance (e.g., Månsson, Qasim & Söderberg, 2025), while others find the effect overstated (e.g., Rönkko, Maheshwaree & Schmidt, 2023) or statistically insignificant (e.g., Shimao et al., 2023). In the academic context, similar inconsistencies prevail. While some studies report a link between university presidents' traits and institutional outcomes (e.g., Yu et al., 2024; Ioannidis, 2025), others do not (Breakwell & Tytherleigh, 2010). According to the theories mentioned above, the individual human capital might be a determinant of the work performance of a university president and top management effectiveness can be seen as a partially proven influential factor on organizational performance. Therefore, one might consider these as possible determining factors influencing objective leadership evaluations.

2.2 Empirical Background and Development of Hypotheses

Empirical studies on the human capital of university and college presidents present a relatively homogeneous picture regarding educational backgrounds while also highlighting a clear set of expected core competencies for effective leadership. Although most hold third-level degrees, there is a marked dominance of Ivy League graduates in the United States (Selingo, Chheng & Clark, 2017) and of Oxford or Cambridge alumni in the United Kingdom (Breakwell & Tytherleigh, 2010). With regard to essential capabilities, the literature points to an increasing emphasis on strategic management competencies (Gearhart, Nadler & Miller, 2020; Lavigne, Cowley & Sá, 2022). In addition, the results of a survey of U.S. college and university presidents by Burmicky, McClure and Ryu (2024) highlight the importance of internal communication management skills. In regard to the students' perspective, the findings by Corder and Timm (2021) align with these results. A recent bibliometric analysis of higher education leadership research further identifies management skills as the key competencies for academic leaders (Ghasemy, Siwei & Sirat, 2023), supported by the findings of Perich et al. (2024). Regarding German academic top management, calls for a further emphasis on hands-on managerial and interpersonal skills rather than research expertise have been addressed in the literature for decades (e.g., Nickel & Ziegele, 2006; Kleinmann, 2017; Scherm, 2019). Based on the theoretical framework of the Human Capital Theory and the empirical evidence presented, we formulate the following hypothesis:

H1: The higher the management-specific human capital of a university president, the higher their performance evaluation.

Studies applying Upper Echelons Theory to academic leadership yield heterogeneous results. For instance, Breakwell and Tytherleigh (2010) found no direct link between the leadership of British university presidents and key performance indicators such as research funding, research quality and student completion rates. This stands in contrast to other studies finding significant influences of proactive leadership on long-term research performance (Leih & Teece, 2016). Whereas charismatic leadership by college presidents in the US has been identified as a significant determinant of student applications and alumni donations (Bastedo, Samuels & Kleinman, 2014). Recent quantitative studies link the university presidents' leadership effectiveness as a direct factor of institutional performance (Christensen, 2024). Similarly, studies focusing on German universities report a direct influence of university presidents on academic staff performance (Freyaldenhoven, 2015). Recent qualitative research emphasizes strategic alignment and institutional transformation as considerable spheres of influence of university presidents rather than direct performance metrics (Bennett, Papatsiba & Stephens,

2024). Overall, these findings in the academic context reflect the varying results of studies on the CEO effect in the private sector. As the majority of the findings still show a tendency favoring the theoretical framework, we posit that:

H2: The better the universities' key performance indicators, the higher the university presidents' performance ratings.

3. Empirical Analysis

3.1 Data and Descriptive Statistics

The data on the average evaluation grade of university professors is based on the annual ranking published by the German Association of University Professors and Lecturers (Krüger & Rudinger, 2025). Each German university president is eligible for evaluation, provided they receive at least 30 votes from their academic staff. As Scherm (2024) describes, these are more indicative of upward feedback from subordinates than an external ranking, which makes the data suitable for our purposes. Individual data on university presidents was extracted from official university websites and public CVs. Key performance indicators on the organizational level were partly inspired by Breakwell and Tytherleigh (2010), Christensen (2024) and the German Centre for Higher Education (CHE 2024). Official data on research funding and students was collected from the Federal Statistical Office of Germany database. Information on the Excellence Initiative of the German Council of Science and Humanities and the German Research Foundation (DFG) as well as data on the Times Higher Education Ranking was gathered from the respective official websites.

In this study, the average grade functions as the dependent variable. Table 1 shows 785 evaluations of 134 German university presidents, based on several thousand individual grades by their respective academic staff. The mean is 2.73, with a best average of 1.39 and a lowest of 3.81. The distribution is near normal, with a relatively small standard deviation of 0.57. Around 28% of presidents were externally appointed, indicating a trend toward external promotion compared to earlier findings (e.g., Röbbken, 2006). Just over 3% had previous experience as president at another institution. The average tenure is 6.63 years (SD = 4.33), ranging from one to 24 years. Regarding organizational key performance indicators, 18% of universities were granted by the German Universities Excellence Initiative at the time of evaluation. Research performance was further measured via third-party funding granted by the German Research Foundation over three years. Grants varied widely, averaging 114 million euros (SD = 98.99 million). Some grant values were averaged due to non-matchable institutional data. Student entrant numbers, a debated issue in German higher education due to declining enrollments, averaged 3,666 per year (SD = 1,518.89). Missing data in the last three variables reduced the number of valid observations.

Table 1: Descriptive Statistics

Data on University Presidents						
	Mean	Standard Deviation	Min	Max	Scaling	N
Evaluation/Grade (0 to 6)	2.73	0.57	1.39	3.81	Ordinal	785
External (if yes = 1; otherwise = 0)	0.28	0.45			Dummy	785
Years in Office	6.63	4.33	1	24	Metric	785
Former University President Elsewhere (if yes = 1; else = 0)	0.03	0.17			Dummy	785
Excellent Research University (if yes = 1; else = 0)	0.18	0.39			Dummy	785
Third-Party Research Funds (in Mio. €)	114.29	98.99	4.95	369	Metric	687
University Ranking	24.49	13.73	1	47	Ordinal	737
University Entrants	3665.82	1518.89	332	9085	Metric	727

3.2 Method and Empirical Model

A series of model specification tests determined the most appropriate empirical strategy for our panel data. As determinants of the average grades of the executive evaluations are examined, the ordinal scaling of the

dependent variable has to be considered. The Breusch-Pagan Lagrange Multiplier test as well as the F-test provided strong evidence that fixed effects and random effects are respectively preferred over a pooled OLS model. The subsequent Hausman test did not reject the null hypothesis, suggesting that the random effect estimator could be valid. However, given that within-unit relationships are the focus of our analysis and fixed-effects models generally provide more robust estimates, a fixed-effect ordered logit model was used in this study. Due to the model selection for the research question, time-invariant variables relating to individual characteristics such as personality traits, which can influence certain leadership styles, are excluded from the model. In regard to the independent variables, management-specific human capital is proxied as years of working experience as a university president in an institution as well as the status of being a university president prior at another university. Although this measure represents an imperfect proxy and poses interpretive challenges, it was adopted in consideration of data availability, model design, and the orientation of the research question. The fact of whether they were promoted internally or externally is considered to account for further knowledge of internal processes and its possible influence on their performance evaluation. Furthermore, research performance as one of the proxies for key performance indicators is operationalized by the status as an excellent research university and third-party research funds. Still, it has to be taken into account that third-party research funds are often driven by faculty- or field-level activities. Further, first-year student entrants are used as a proxy for study attractiveness. Lastly, the comparative overall university rankings of German universities in the Times Higher Education Ranking should serve as a combinatory proxy for research and teaching quality. Given the contested nature of the ranking, however, it should be interpreted primarily as a proxy for visibility and perception, while also serving as an imperfect indicator of quality.

3.3 Empirical Results and Discussion

Table 2 displays the results of our fixed-effects ordered logit models. Model 1 includes the individual characteristics, providing a variety of significant effects on the performance evaluation. Firstly, externally appointed presidents are significantly more likely to receive lower performance ratings ($p < 0.1$), initially suggesting an influence of internal knowledge. However, this significant effect diminishes in Model 2, which indicates that the relationship between mode of recruitment and leadership evaluation is mediated or confounded by the organizational key performance indicators. A notable effect emerges for years in office, which shows a statistically significant increase in the log-odds of receiving a lower rating by 0.193 ($p < 0.01$) in Model 1 and by 0.161 ($p < 0.05$) in Model 2. As longer tenure could entail more years of organization-specific work experience and leadership experience – thus interpreted as a proxy for management-specific human capital in our models – this finding challenges our Hypothesis 1. One potential explanation is that longer tenure is not necessarily linked to leadership effectiveness but may instead reflect reappointment decisions not based on performance criteria. Nonetheless, tenure represents only one possible proxy for management-specific human capital, while additional variables not included thus far could yield further insights for a more robust confirmation of Hypothesis 1. Generally, these findings are in line with critiques of rigid governance structures in German academia (Scherer, 2019; Kleinmann, 2017).

Table 2: Fixed effects ordered logit models

VARIABLES	(1) Performance Evaluation	(2) Performance Evaluation
<i>Individual Characteristics:</i>		
External (if yes = 1; otherwise = 0)	3.273* (1.754)	0.00437 (1.600)
Years in Office	0.193*** (0.0496)	0.161** (0.0661)
Former University President Elsewhere (if yes = 1; else = 0)	-3.414*** (1.312)	-3.794** (1.623)
<i>Organizational KPIs:</i>		
Excellent Research University (if yes = 1; else = 0)		-1.373* (0.718)
University Ranking		0.0697*** (0.0263)

VARIABLES	(1) Performance Evaluation	(2) Performance Evaluation
Third-Party Research Funds (in Mio. €)		0.00407 (0.00637)
University Entrants		9.09e-05 (0.000249)
Observations	764	615
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1		

Contrastingly, having served as a university president at another institution is strongly associated with better performance evaluations. The negative coefficients, -3.414 in Model 1 and -3.794 in Model 2, indicate a substantially lower likelihood of receiving poor ratings. This highlights the potential value of transferable executive experience and supports the argument that management-specific human capital proxied by prior top-level leadership is positively recognized in performance assessments. This finding is in line with recent research emphasizing the relevance of practical leadership skills (Burmicky, McClure & Ryu, 2024; Corder & Timm, 2021; Gearhart, Nadler & Miller, 2020; Ghasemy, Siwei & Sirat, 2023). In sum, the findings concerning individual characteristics provide ambiguous results and do not allow for a precise confirmation of Hypothesis 1. The persistent, significantly positive effect of prior academic leadership experience might indicate that the quality of leadership experience outweighs mere time in office, especially since tenure duration might also be skewed by rigid or even nepotistic reassignment processes. This is in line with literature focusing on the need for a more complex framework of leadership qualities and context-sensitive managerial expertise in academia (Breakwell & Tytherleigh, 2010; Bennett, Papatsiba & Stephens, 2024; Christensen, 2024).

Regarding organizational key performance indicators, the status as an excellent research university under the German Excellence Initiative shows a significant effect on more favorable leadership evaluations in Model 2. The title of an excellent research university corresponds to a 1.373 decrease in the log-odds of receiving a lower performance rating ($p<0.1$). This is in line with the findings of Leih and Teece (2016), stating that capable academic leadership can significantly improve research performance. Similarly, worse positions in the institutional ranking significantly increase the log-odds of receiving poorer performance ratings by 0.0697 ($p<0.01$). These results are consistent with the expectations outlined in Hypothesis 2, as both measures of organizational reputation significantly influence the university presidents' performance assessments. It should be acknowledged that both the Excellence Strategy and the THE rankings are subject to controversy and can only be regarded in this context as proxies for research quality and visibility. This further supports the findings of Bennett, Papatsiba and Stephens (2024) that emphasize the essential relevance of visibility for university presidents.

Nevertheless, third-party research funding does not exhibit a statistically significant effect, which is in agreement with the findings of Breakwell in Tytherleigh (2010). One possible explanation is that the accumulation of research funding is such a complex dynamic and is often raised at the professorial and faculty-level level, leading subordinates to not associate it directly with the individual leadership performance of the university presidents. Despite ongoing public and political debates around declining student enrollment in German universities, the number of annual new student entrants likewise does not show significant effects on the university presidents' performance evaluation.

This relationship might be taken into further consideration in future studies, as Bastedo, Samuels and Kleinmann (2014) concluded that charismatic leaders increase student applications. More broadly, leadership styles and communication may constitute important determinants warranting further investigation in future studies. In summary, the effects of proxied key performance indicators on the university presidents' performance evaluations partially confirm Hypothesis 2. Whereas prestige-orientated indicators are clearly influencing the executive evaluations, third-party research funding and enrollment figures do not show similar significant effects. On the one hand, the context-dependency of research funding and mediating factors affecting basic enrollment figures could explain the absence of significant effects for these institutional performance indicators. On the other hand, the academic staff may place greater emphasis on institutional prestige as well as visibility and attribute it more directly to the university president as the institutional figurehead.

4. Conclusion

As external pressures and job expectations on academic top management increase rapidly, this study provides novel empirical insights on what makes a successful academic leader in the eyes of their subordinates. We analyze the influence of relevant individual characteristics and organizational key performance indicators on 16 years of performance evaluation of over 100 German university presidents. Our findings suggest that transferable leadership skills of university presidents with prior experience in the same position at another university are associated with significantly better performance evaluations. Whereas longer tenure leads to increases in the likelihood of worse performance evaluations. Taken both together, these findings align with scholarly calls for performance-based appointments that prioritize actual managerial experience over traditional reappointments made out of habit rather than conviction. Research funding and student entrants do not show significant effects. Whereas prestige-related determinants, such as excellence status and ranking positions, significantly increase the likelihood of better performance evaluations. This suggests the critical importance of organizational reputation for the perceived performance of university presidents. As a whole, our findings strongly support the argument of university presidents are increasingly expected to navigate an expanding set of managerial responsibilities instead of just being outstanding scholars. With the results showing how especially prestige-orientated key performance is directly associated with the executive evaluations, we can further identify an inherent representative role of academic leaders. Focusing on practical implications, our results indicate a substantial need for more performance-orientated appointment processes in academic top management. When interpreting the results, it should be noted that the study is embedded in a national context and cannot be readily transferred from the German case to the international higher education landscape. Owing to the available data, not all relevant factors could be considered and some important variables had to be approximated. Future insights may be gained by incorporating additional rankings and reliable reputation measures, as well as a broader set of management competencies. Moreover, leadership behaviors and communication styles represent promising areas for further exploration, for which mixed-methods designs appear particularly suitable. Future research could further expand the study on other possible determinants, study longitudinal trends in institutional performance and further analyze cross-national differences.

Ethics declaration: This study is based exclusively on secondary data from publicly available sources. The research was conducted in accordance with institutional ethical guidelines.

AI declaration: All ideas, writing, analyses and interpretations were conducted by the authors themselves. To support the writing process, standard tools such as Microsoft Word and Scribbr were used for grammar and spelling checks. DeepL was consulted for the translation of individual terms where needed and ChatGPT was occasionally used to explore synonyms. No content generated by AI tools was directly adopted without authorial review and adaptation.

References

- Abatecola, G. and Cristofaro, M. (2020) "Hambrick and Mason's 'Upper Echelons Theory': evolution and open avenues", *Journal of Management History*, Vol 26, No 1, pp 116-136. <https://doi.org/10.1108/JMH-02-2018-0016>
- Badillo-Vega, R., Krücken, G. and Pineda, P. (2021) "Changing analytical levels and methods of leadership research on university presidents", *Studies in Higher Education*, Vol 46, No 4, pp 677-689. <https://doi.org/10.1080/03075079.2019.1647417>
- Baruch, Y., Nguyen, H.T.L., Point, S. and Thomas, L. (2025) "Becoming a University President: An accidental meritocratic career trajectory", *British Journal of Management*, Vol 00, pp 1-20. <https://doi.org/10.1111/1467-8551.12905>
- Bastedo, M.N., Samuels, E. and Kleinman, M. (2014) "Do charismatic presidents influence college applications and alumni donations? Organisational identity and performance in US higher education", *Higher Education*, Vol 68, pp 397-415. <https://doi.org/10.1007/s10734-014-9719-z>
- Becker, G.S. (1964) *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. New York: Columbia University Press for National Bureau of Economic Research.
- Bennett, B., Papatsiba, V. and Stephens, S. (2024) "Presidential leadership in higher education: balancing collaboration and competition in a time of systemic change", *Higher Education Quarterly*, Vol 78, No 4, pp 1-16. <https://doi.org/10.1111/hequ.12527>
- Breakwell, G.M. and Tytherleigh, M.Y. (2010) "University leaders and university performance in the United Kingdom: is it 'who' leads, or 'where' they lead that matters most?", *Higher Education*, Vol 60, pp 491-506. <https://doi.org/10.1007/s10734-010-9311-0>
- Burmicky, J., McClure, K.R. and Ryu, W. (2024) "Competencies for the college presidency: a national study of effective leadership in higher education", *Academic Search*.
- Christensen, C. (2024) "A Crisis in Leadership? Examining the Successes and Failures of University Presidents", American Enterprise Institute.

- CHE (2024) "Projektdokumentation Hochschulmanager*in des Jahres 2024", Centrum für Hochschulentwicklung.
- Corder, M. and Timm, D.M. (2021) "Student impressions of community college presidents", *Journal of Research on the College President*, Vol 5, No 1, pp 3-16. <https://doi.org/10.54119/jrcp.2021.501>
- Cotrim, F.S. and Da Silva Gomes, J.F. (2024) "Longitudinal studies of leadership development: a scoping review", *Current Psychology*, Vol 43, pp 29558-29586. <https://doi.org/10.1007/s12144-024-06567-4>
- Freyaldenhoven, I. (2015) "Auswirkungen transformationaler, transaktionaler und passiver Führung von Rektoren/Präsidenten auf das affektive Commitment und die Arbeitszufriedenheit von Professoren: Ergebnisse einer empirischen Untersuchung in Universitäten", *Hochschulmanagement*, Vol 10, No 3+4, pp 90-95.
- Gearhart, G.D., Nadler, D.P. and Miller, M.T. (2020) "The effectiveness and priorities of the American college president: perceptions from the faculty lounge", *Journal of Research on the College President*, Vol 4, pp 62-71. <https://doi.org/10.54119/jrcp.2020.407>
- Ghasemy, M., Siwei, L. and Sirat, M. (2023) "Academic leaders navigating change: a comprehensive bibliometric review of crucial leadership capabilities and managerial competencies", *International Journal of Leadership in Education*. <https://doi.org/10.1080/13603124.2023.2267029>
- Gimbar, C., Saucedo, G. and Wright, N.S. (2024) "A value to voice? An examination of auditor upward feedback", *Managerial Auditing Journal*, Vol 39, No 4, pp 321-343. <https://doi.org/10.1108/MAJ-01-2023-3802>
- Gruber, S., Köster, A., Zechlin, L. and Kerres, M. (2007) "Evaluation der Hochschulleitung – Vorbild oder Ausnahme? Ein Erfahrungsbericht der Rektoratsevaluation an der Universität Duisburg-Essen", *Hochschulmanagement*, Vol 2, No 3, pp 73-78.
- Hambrick, D.C. and Mason, P.A. (1984) "Upper echelons: the organization as a reflection of its top managers", *The Academy of Management Review*, Vol 9, No 2, pp 193-206. <https://doi.org/10.2307/258434>
- Hambrick, D.C. (2007) "Upper echelons theory: an update", *The Academy of Management Review*, Vol 32, No 2, pp 334-343.
- Ioannidis, J.P.A. (2025) "Leading researchers in the leadership of leading research universities: meta-research analysis", *Research Policy*, Vol 54. <https://doi.org/10.1016/j.respol.2024.105121>
- Kleindienst, I., Haj Youssef, M., Harakeh, M. and Yu, M. (2024) "Does the CEO effect differ in times of crisis? Evidence from the US and China during the global financial crisis", *Journal of Business Research*, Vol 182. <https://doi.org/10.1016/j.jbusres.2024.114807>
- Kleinmann, B. (2017) "Leader, Manager, Mediator? Selbstbeschreibungen deutscher Universitätspräsidenten im Licht der universitären Organisationsstruktur", *Beiträge zur Hochschulforschung*, Vol 39, pp 62-79.
- Krüger, T. and Rudinger, G. (2025) "Rektor und Wissenschaftsminister des Jahres 2024", *Forschung & Lehre*, No 3/25, pp 30-33.
- Lavigne, E. and Sá, C.M. (2021) "The changing roles and qualifications of Canadian university presidents and provosts", *Higher Education*, Vol 81, pp 537-550. <https://doi.org/10.1007/s10734-020-00555-w>
- Lavigne, E., Cowley, S. and Sá, C.M. (2022) "Scholarship, management, and leadership in academic administration: the case of Canadian university presidents and provosts", *Tertiary Education and Management*, Vol 28, pp 121-134. <https://doi.org/10.1007/s11233-022-09089-5>
- Leih, S. and Teece, D.J. (2016) "Campus leadership and the entrepreneurial university: a dynamic capabilities perspective", *Academy of Management Perspectives*, Vol 30, No 2 pp 182-210. <https://doi.org/10.5465/amp.2015.0022>
- Liu, L., Hong, X., Wen, W., Xie, Z. and Coates, H. (2020) "Global university president leadership characteristics and dynamics", *Studies in Higher Education*, Vol 45, No 10, pp 2036-2044. <https://doi.org/10.1080/03075079.2020.1823639>
- Mantry, A., Pradhan, B., Tak, S., Lalotra, S. and Islam, M.T. (2023) "The trend of leadership research in higher education: a bibliometric overview and visualization", *Journal of Higher Education Theory and Practice*, Vol 23, No 8, pp 244-255. <https://doi.org/10.33423/jhetp.v23i8.6078>
- Månsson, K., Qasim, M. and Söderberg, M. (2025) "Are CEOs judged on how cost efficient their firms are?", *Energy Economics*, Vol 143. <https://doi.org/10.1016/j.eneco.2025.108289>
- Nickel, S. and Ziegele, F. (2006) "Profis ins Hochschulmanagement – Plädoyer für die Schaffung von hauptamtlichen Karrierewegen für Hochschul- und Fakultätsleitungen", *Hochschulmanagement*, Vol 1, No 1, pp 2-7.
- Pekkola, E., Siekkinen, T., Kujala, E.-N., Kanninen, J.P. and Laihonon, H. (2021) "An assessment of COVID-19's impact on Finnish university leadership", *Knowledge Management Research & Practice*, Vol 19, No 4, pp 510-516. <https://doi.org/10.1080/14778238.2021.1906773>
- Perich, R., Rageth, L., He, D. and Lakhno, M. (2024) „General-Management-Kompetenzen von Führungspersonen an Schweizer Hochschulen: Empirische Erkenntnisse aus einer nationalen Forschungsstudie“, Schweizerisches Observatorium für Bildung.
- Rönkkö, M., Maheshwaree, P. and Schmidt, J. (2023) "The CEO effect and performance variation over time", *The Leadership Quarterly*, Vol 34, No 5. <https://doi.org/10.1016/j.leaqua.2023.101733>
- Röbken, H. (2006) "Profile deutscher Universitätsleitungen", *Beiträge zur Hochschulforschung*, Vol 28, No 4, pp 6-29.
- Scherm, E. (2019) "Entwicklungen des Managements in Unternehmen und Universitäten – eine Paradoxie", *Hochschulmanagement*, Vol 14, No 2+3, pp 43-48.
- Scherm, E. (2024) "Die Wahl zum 'Rektor des Jahres'. Kein Ranking (der Eignung) deutscher Universitätsrektoren", *Das Hochschulwesen*, Vol 72, No 4-5, pp 142-146.

- Selingo, J.J., Chheng, S. and Clark, C. (2017) "Pathways to the University Presidency: The Future of Higher Education Leadership" *Deloitte Center for Higher Education Excellence and Georgia Tech*.
- Shimao, H., Kim, S.J., Khern-am-nuai, W. and Cohen, M.C. (2024) "Revisiting the CEO effect through a machine-learning lens", *Management Science*, pp 1-13. <https://doi.org/10.1287/mnsc.2023.03625>
- Souki, K., Aad, S.S. and Karkoulia, S. (2025) "The impact of 360-degree feedback on innovative behavior within the organization: the mediating role of organizational justice", *The International Journal of Organizational Analysis*, Vol 33, No 3, pp 584-602. <https://doi.org/10.1108/IJOA-12-2023-4146>
- Tight, M. (2022) "Research into leadership in higher education: a systematic review" *International Perspectives on Higher Education Research*, Vol 15, pp 5-22. <https://doi.org/10.1108/S1479-362820220000015001>
- Ting, L. and Wan, K.J. (2023) "Leadership of the university president in the higher-education informatics era", *International Research Journal of Education and Sciences*, Vol 7, No 2, pp 21-27.
- Yu, N., Dong, Y., de Jong, M. and Yue, J. (2024) "How do new university presidents affect research performance? Measuring the impact of previous career paths in China", *Research Policy*, Vol 53, No 2. <https://doi.org/10.1016/j.respol.2023.104946>

Stress Management Among University Students in Security and Defence Fields

Kristýna Binková and Eva Štěpánková

University of Defence, Brno, Czech Republic

kristyna.binkova@unob.cz

eva.stepankova@unob.cz

Abstract: The aim of the paper is to explore the sources of stress among university students and to examine their coping strategies for managing stress. Particular attention is given to identifying which coping mechanisms are most frequently employed and how they relate to students' educational and professional contexts. A quantitative research design was adopted, employing the standardized Brief COPE inventory. The research instrument consisted of 28 closed-ended items measured on a Likert scale and two open-ended qualitative questions. Data collection took place in 2024. The sample included 221 students enrolled at the Faculty of Military Leadership and Faculty of Military Technology, University of Defence in the Czech Republic. Specifically, it comprised 178 military students from the Management and Employment of the Armed Forces program, 26 civilian students from the Security and Defence program, and 17 civilian students from the Technology for Defence and Security program. Findings suggest that students perceive academic demands (e.g., school workload and exams), family-related issues, romantic relationships and breakups, public speaking, unexpected events, time pressure, health concerns, social situations, financial problems, and major life changes as their most significant sources of stress. Analysis of the Brief COPE responses revealed that the most commonly used coping strategies include active coping, humor, planning, acceptance, and positive reframing. In contrast, the least frequently used strategies were religious coping, substance use, behavioral disengagement, denial, and venting. Qualitative responses to open-ended questions highlighted the role of physical activity and sports, social interaction, engagement in hobbies and leisure activities, a rational and problem-solving approach, as well as rest and relaxation as additional strategies for stress management. Overall, problem-focused coping strategies emerged as the most dominant among all categories (problem-focused, emotion-focused, and avoidant strategies). Differences in coping preferences between military and civilian students are discussed in detail, reflecting on the influence of military training and context. Finally, the paper proposes steps to integrate stress management education into university curricula, particularly for students preparing for careers as military commanders or crisis managers, where resilience and effective stress coping are essential competencies.

Keywords: Stress, Coping strategies, Brief COPE inventory, University students, Defence

1. Introduction

University life represents a demanding period marked by academic, personal, and social challenges. In addition to coursework, exams, and deadlines, students often face the pressure of becoming independent, managing finances, and adapting to new social environments. These demands can cause high levels of perceived stress, negatively impacting students' psychological well-being, academic performance, and quality of life. Understanding how students cope with stress is crucial for designing effective institutional support systems that promote both academic success and mental health.

Psychological stress is defined as a relationship between an individual and their environment appraised as exceeding personal resources and threatening well-being (Lazarus & Folkman, 1987). When individuals perceive external demands as overwhelming, distress arises, triggering a cognitive and emotional appraisal process (Lazarus & Folkman, 1984).

Coping refers to the cognitive and behavioral efforts made to manage stressful situations (Lazarus & Folkman, 1984). These efforts may target the stressor itself or the emotional response to it. Coping is a dynamic, self-regulatory process (González-Cabanach et al., 2018; Gonzalez Casas, Dorado Barbe & Galvez Nieto, 2025), involving a complex interplay of cognitive, emotional, behavioral, and physiological components (Balcar, Trnka & Kuška, 2011). The terms coping strategies and coping styles are often used interchangeably (Hatunoğlu, 2020). In psychological and educational research, coping strategies are typically classified as problem-focused or emotion-focused. Problem-focused coping aims to address stressors through active strategies like goal-setting or planning and is linked to lower distress and better outcomes (Gustems-Carnicer & Calderón, 2013; Sagone & De Caroli, 2014; Wang, Ng & Siu, 2023; Zaman & Ali, 2019). Emotion-focused strategies regulate emotional responses. While physical activity or relaxation can be beneficial (Vidas et al., 2021), denial, self-blame, or withdrawal are associated with poorer outcomes (Akbar & Aisyawati, 2021; Rice et al., 2021). Coping strategies are also categorized as behavioral vs. cognitive (Khademian et al., 2021), active vs. passive (Graves et al., 2021), or positive vs. negative (Fedorková, Nekvapilová & Mikulka, 2020). Their selection and effectiveness depend on gender, age, resilience, self-efficacy, and culture. Inadequate coping can lead to

maladaptive behaviors and impaired performance (Okoro, 2018), while active coping is linked to reduced distress (Wolf, Stidham & Ross, 2015). A lack of coping skills can hinder the ability to choose appropriate strategies (Jensen et al., 2016).

This study aims to identify the main stressors among university students in security and defence programs and examine their preferred coping strategies, highlighting the most and least frequently used approaches.

Research Questions:

- What are the most common sources of stress among students in security and defence fields?
- Which coping strategies are most and least frequently used by these students?

2. Theoretical Background

2.1 Student Stressors in Higher Education

Understanding student stressors is fundamental before examining coping strategies. Khademian et al. (2021) classify these stressors into two categories: individual and social. Common academic stressors include high workloads, assignment pressure, academic transitions, poor teaching quality, time constraints, and collaborative assessments (Alsaqri, 2017; Waterhouse & Samra, 2025; Clark et al., 2014; Deasy et al., 2014; Hilliard et al., 2020).

Personal and psychological stressors encompass the desire for high achievement, parental expectations, low self-esteem, loneliness, and fear of failure (Graf, Melton & Gonzalez, 2010; Nivethitha & Rita, 2016; Aan, Ar & Mi, 2009). Social stressors include interpersonal conflicts, adapting to new relationships, and managing faculty-student dynamics (Adams, Meyers & Beidas, 2016; Denovan & Macaskill, 2013). Challenges in life transitions, such as moving away from home, gaining independence, or cultural adjustment—especially for international students—are significant sources of stress (Seyedfatemi, Tafreshi & Hagani, 2007; Majumdar & Ray, 2010; Waterhouse & Samra, 2025).

Economic and practical stressors, including financial difficulties, transportation issues, inadequate sleep, and balancing study-life commitments, further exacerbate student distress (Okoro, 2018; Bamuhair et al., 2015; Aan, Ar & Mi, 2009). The pressure to meet broader personal and professional expectations often results in chronic stress (Ersig, 2019; Deasy et al., 2014).

2.2 Coping Strategies among University Students

Waterhouse and Samra (2025) reviewed 165 studies on student coping in higher education, noting a concentration of research in health-related fields, primarily in Asia and North America. Gaps include insufficient representation of diverse populations, limited longitudinal research, and inadequate examination of students' subjective evaluations of coping strategies' effectiveness.

Students address academic and life stressors using adaptive or maladaptive strategies. Smart et al. (2025) grouped Australian students into four coping profiles: no effective/no coping, problem-focused, emotion-focused, and religion-dominant emotion-focused coping. Problem-focused coping was associated with lower distress levels, whereas those lacking effective strategies reported the highest levels. These findings underscore the benefits of active coping for student well-being.

Proactive coping strategies are particularly protective. Aloka et al. (2024) highlighted their buffering effects, while Bedoya Cardona (2021) found adaptive coping correlated with better emotional regulation, lower stress, and improved health outcomes among Colombian students. Oyewobi, Oladosu, and Jimoh (2020) demonstrated that coping style influences academic performance; positive coping improves outcomes, whereas maladaptive coping worsens them. Similarly, Anicama et al. (2024) reported problem-focused coping reduces risk behaviors among Peruvian students, whereas emotion-focused coping enhances vulnerability, particularly in males.

Differences in coping arise between student groups. Mushtaq et al. (2024) compared active-duty military and civilian graduate students, revealing distinct stress sources and coping mechanisms. Military students faced greater academic pressure but emphasized technical preparedness and personal responsibility, while civilians dealt more with financial stress, relying on self-care and compassion. This variation illustrates the influence of institutional context and training on coping strategies.

2.3 Coping Strategies in the Czech Context

In the Czech Republic, several studies have examined university students' approaches to stress management. Chýlová and Natovová (2012) examined the coping strategies used by bachelor's students at the Czech University of Life Sciences and compared the results with normative data from the Czech general population. Although students frequently employed positive coping mechanisms, they demonstrated comparatively lower engagement with the most constructive and sustainable methods. Their use of optimal coping tools appeared inconsistent, suggesting gaps in practical coping skills despite theoretical knowledge.

Expanding upon these findings, Chýlová and Natovová (2013) conducted a follow-up study involving a larger sample of 387 students. The results showed that students reported significantly higher levels of self-efficacy but lower life satisfaction compared to the general population. Moreover, higher perceived self-efficacy was strongly associated with the increased use of adaptive coping strategies and a decreased reliance on maladaptive behaviors. These findings suggest that belief in one's ability to manage challenges is a key driver of constructive stress management.

Fedorková, Nekvapilová, and Mikulka (2020) focused on first-year military students at the University of Defence, identifying that the highest stress levels were associated with military obligations and the regimented academic system. Academic assessments – especially those with limited choice of specialization – were also a major stressor. Nevertheless, students reported frequent use of positive coping strategies such as self-instruction, situational control, and response control. These findings are consistent with the structured and disciplined environment of military education, which may foster more goal-oriented and self-regulated coping behaviors.

3. Methodology

A quantitative research design was adopted, utilizing the standardized Brief COPE inventory (Carver, 1997), which enables the assessment of various strategies people use to cope with stress. The authors employed a shortened version of the previously validated and reliable COPE inventory (Carver, Scheier, & Weintraub, 1989).

The research instrument consists of 28 items, grouped into 14 distinct coping strategies, following the framework proposed by Carver (1997). These strategies are categorized into three broader domains:

- Problem-Focused Coping: Active coping, Use of Informational Support, Planning, Positive Reframing
- Emotion-Focused Coping: Venting, Use of Emotional Support, Humour, Acceptance, Self-Blame, Religion
- Avoidant Coping: Self-Distraction, Denial, Substance Use, Behavioral Disengagement

The quantitative data from the standardized questionnaire were analyzed using descriptive statistics, allowing for the identification of general patterns in students' use of individual coping strategies.

In addition to the standardized items, the authors included one open-ended qualitative question: *"What situations are stressful for you?"* This question aimed to capture students' subjective perceptions of stress sources and allowed for more nuanced responses beyond the structured format. The qualitative data were analyzed using open coding, applying the principles of grounded theory, which enabled the categorization and interpretation of students' responses based on recurring themes emerging from the data.

Data collection was conducted online in 2024 through a questionnaire. A purposive sampling method was applied, targeting a specific population of university students in the field of security and defence. Participation was voluntary and involved an element of self-selection sampling. Prior to data collection, the purpose and aim of the study were clearly communicated to all participants, along with a full assurance of anonymity.

The final sample consisted of 221 students enrolled at the University of Defence in the Czech Republic, specifically from the Faculty of Military Leadership and the Faculty of Military Technology. This included 178 military students from the Management and Employment of the Armed Forces program, 26 civilian students from the Security and Defence program, and 17 civilian students from the Technology for Defence and Security program. The sample comprised 78% men and 22% women, with participants aged between 19 and 25 years. The proportion of military and civilian students in the sample reflects the actual structure of the university, where civilian students form a smaller share of the student population. Therefore, despite the numerical imbalance, the sample is considered adequate and representative of the institution's composition.

4. Results

Responses to the open-ended question “What situations are stressful for you?” were analyzed using open coding based on the principles of grounded theory. The analysis revealed eleven recurring categories of stressors, which are presented in Table 1 along with frequency counts and illustrative quotes. The data illustrate that academic stressors – particularly those related to exams, studying, and deadlines – represent the most prominent challenge for students. Nevertheless, the sources of stress extend well beyond the classroom. Many respondents pointed to emotionally demanding personal experiences, such as family tensions, relationship breakdowns, and health-related concerns. Several categories highlight internal pressures linked to performance expectations, time constraints, and fear of failure. Others reflect discomfort in social or unfamiliar settings, including public speaking, new environments, and unexpected challenges. While financial concerns and life transitions were reported less frequently, they still contribute to the overall stress burden. The variety of stressors suggests that students face a complex interplay of academic, emotional, social, and situational demands. This confirms the need for institutional support systems that go beyond academic assistance and consider the broader context of students’ lives.

Table 1: Categories of Stressful Situations Based on Open Coding of Qualitative Responses

Category	Keywords	N	Example Responses
School and Exams	Exams, tests, credits, exam period, studying, submitting work, academic pressure, school deadlines	121×	“Exam period, tests in general.” “PE credit tests.” “Math exam.”
Family Problems	Death of a close person, illness in the family, arguments in the family, family relationships	68×	“Death of close friends.” “Illness in the family.” “Arguments between parents.”
Relationships and Breakups	Breakup with a partner, arguments with close ones, relationship problems, social relationship stress	56×	“Relationship problems.” “Fights with friends.” “Breakup.”
Public Speaking	Presentations, speaking in front of a large audience, public speaking, communication stress	51×	“Speaking in front of people.” “Public presentation.” “Presenting in front of a group.”
Unexpected Situations	Sudden changes, unknown situations, things done for the first time, new environments	45×	“Sudden negative change.” “Doing something challenging for the first time.”
Work and Performance Pressure	Performance pressure, workload, unmet expectations, failure, poor structure, disorganization	37×	“Workload, urgent unstructured problems.” “Negative behavior from other people.” “Failure in teamwork.”
Time Pressure	Falling behind, lack of time for responsibilities, last-minute submissions, poor time management	35×	“When I can’t finish everything I planned.” “Bad time management.”
Health Problems	Illnesses, injuries, stressful medical visits	34×	“Illness.” “Injury.” “Visiting the doctor.”
Social Interactions	Meeting new people, communication with superiors, negotiation, argumentation	29×	“Communication with superiors.” “Waiting for entrance exam results.”
Financial Problems	Lack of money, difficulties managing finances	15×	“Financial problems.” “Lack of money.” “Less money in my account than my safe amount.”
Life Changes	Moving, new environments, important life events, crowds, competitive settings	13×	“Moving to a new place.” “New important tasks I’ve never done.” “Waiting for something unknown.”

Table 2 presents the average scores, medians, and standard deviations for each coping strategy measured by the Brief COPE inventory. The mean values reflect the overall tendency of students to use specific coping strategies, while medians provide information about the central point of responses. The standard deviations indicate how much the responses varied among students. Among all the strategies, the three most frequently used were *Active Coping*, *Humor*, and *Planning*. In contrast, the least frequently used strategies were *Religion*, *Substance Use*, and *Behavioral Disengagement*.

Table 2: Descriptive Statistics for Coping Strategies Used by University Students

Coping Strategy	Mean	STD	Median
Active coping	3.12	0.722	3
Humor	3.12	0.877	3
Planning	3.06	0.808	3
Acceptance	2.94	0.587	3
Positive Reframing	2.79	0.825	3
Use of Informational Support	2.74	0.929	3
Self-Distraction	2.73	0.885	3
Use of Emotional Support	2.57	0.990	3
Self-Blame	2.54	0.940	3
Venting	2.46	0.968	2
Denial	1.76	0.803	2
Behavioral Disengagement	1.74	0.802	2
Substance Use	1.68	0.930	1
Religion	1.56	0.921	1

Figure 1 complements the descriptive statistics by visualizing the percentage distribution of responses for each coping strategy. The graph reveals that *Active coping*, *Humor*, and *Planning* are not only among the strategies with the highest average scores, but also show a strong tendency toward more frequent use. Specifically, the proportion of students who reported using these strategies either “a medium amount” or “a lot” reached 84 % for *Active coping*, 80 % for *Planning*, and 77 % for *Humor*. *Humor* had the highest share of students selecting “I’ve been doing this a lot” (40 %), while *Acceptance* had the highest share choosing “a medium amount” (75 %), suggesting that *Humor* is used more intensely by a subset of students, whereas *Acceptance* is more moderately but broadly applied.

In contrast, strategies such as *Religion*, *Substance Use*, and *Behavioral disengagement* show the opposite pattern. For example, 68 % of students reported not using religion at all, and 58 % stated the same for substance use. Avoidant strategies such as *Denial* and *Behavioral Disengagement* were also used rarely, with over 40 % of responses in the lowest category. Another notable observation is the strategy *Self-blame*, where responses were relatively evenly distributed across all four categories. This suggests a high degree of variability in how students approach this strategy – some using it frequently, others not at all. Similarly, *Venting* shows a balanced distribution, indicating no clear preference within the group.

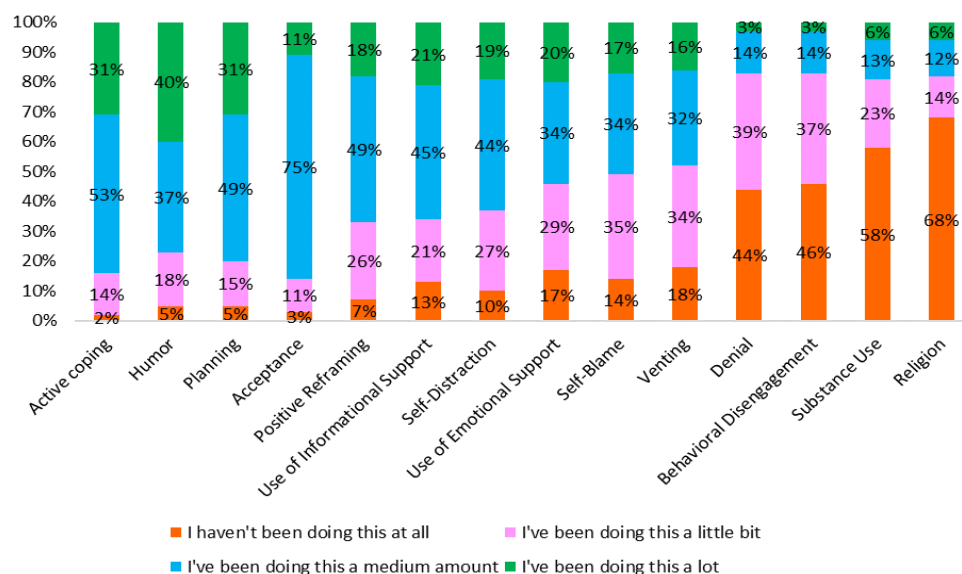


Figure 1: Percentage Distribution of Responses for Individual Coping Strategies

The above evidence suggests that students prioritize adaptive coping strategies over maladaptive ones. To gain deeper insight, coping strategies were grouped into three overarching categories – see Figure 2. The analysis reveals that Problem-Focused coping is clearly the most dominant: 25 % of students reported using these strategies “a lot” and 49 % “a medium amount,” totaling 74 % of respondents who engage in them regularly.

In contrast, Emotion-Focused strategies show a more balanced distribution: 18 % reported using them “a lot,” 37 % “a medium amount,” while 24 % indicated “a little bit,” and 21 % did not use them at all. This suggests a moderate and varied use, likely reflecting individual preferences and emotional coping styles.

Avoidant strategies, often considered less adaptive, were the least utilized overall. Only 8 % of students reported using them “a lot,” while 39 % stated they do not use them at all, and another 32 % selected “a little bit.” This further supports the conclusion that students predominantly favor constructive coping mechanisms, particularly those aimed at actively addressing the source of stress.

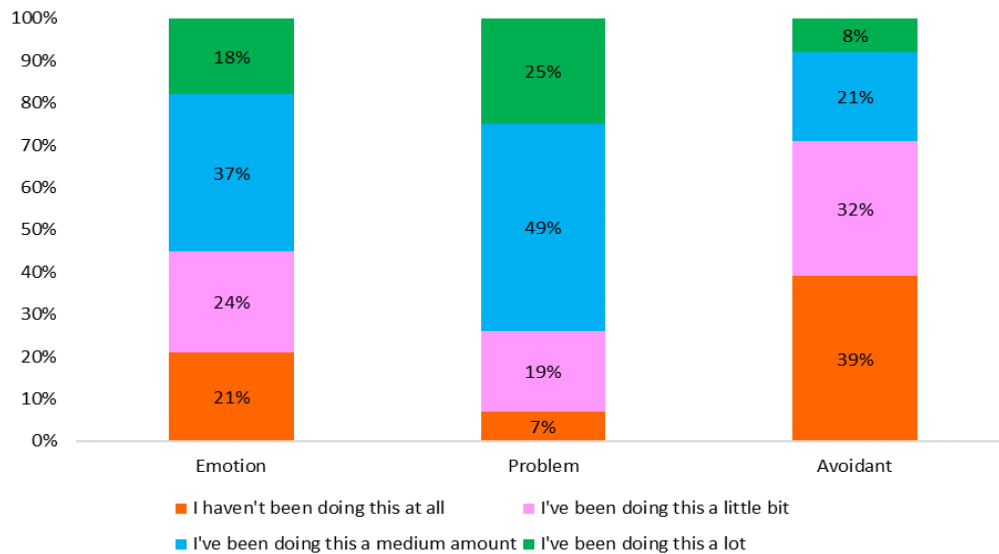


Figure 2: Use of Coping Strategies by Type: Problem-Focused, Emotion-Focused, and Avoidant Strategies

5. Discussion and Conclusion

This study addressed two primary research questions: “What are the most common sources of stress among university students in the field of security and defence?” and “Which stress-coping strategies are most and least frequently used by these students?”

Regarding the first research question, the qualitative analysis of students’ open-ended responses revealed a wide range of stressors. The most frequently reported were academic demands such as exams, test performance, assignment deadlines, and time pressure. These findings align with previous studies (e.g., Adams et al., 2016; Aloka et al., 2024; Smart et al., 2025), confirming that academic overload and performance anxiety are among the main stressors for university students across cultural and institutional contexts. However, our study also identified several non-academic sources of stress – family-related issues, relationship difficulties, public speaking, unfamiliar situations, and health problems. This broader range supports the argument by Aan, Ar, and Mi (2009) that student stress must be understood not only in academic terms but also through social, emotional, and situational dimensions.

In response to the second research question, the analysis of Brief COPE data showed that students predominantly used adaptive coping strategies, especially problem-focused ones. Active coping, planning, humor, and acceptance were among the most commonly employed. These results are consistent with Fedorková, Nekvapilová, and Mikulka (2020), who found that first-year military students at the University of Defence relied on constructive approaches like self-instruction and situational control. Similarly, Mushtaq et al. (2024) noted that military students favored structured, task-oriented, and responsibility-driven strategies. Although our sample included both military and civilian students, no substantial differences in coping patterns emerged, which may reflect the University of Defence’s shared institutional culture emphasizing discipline, resilience, and goal orientation across programs.

Emotion-focused strategies such as positive reframing and acceptance were also widely used, suggesting students combine cognitive and emotional techniques to manage stress. However, self-blame and venting varied considerably among individuals, indicating differences in emotional regulation. This observation aligns with Bedoya Cardona (2021), who emphasized the context-dependent nature of emotional coping and its link to subjective well-being. In contrast, avoidant strategies – substance use, denial, and behavioral disengagement – were reported infrequently, reinforcing students' preference for active engagement with stressors. This trend supports the warnings of Anicama et al. (2024) against excessive reliance on avoidant or reactive coping in high-pressure academic settings.

Several limitations of this study must be acknowledged. First, the sample consisted exclusively of students from the University of Defence, limiting the generalisability of results to other institutional or cultural environments. Second, the research was conducted within the Czech socio-cultural context, which may influence perceptions of acceptable or effective coping mechanisms. Third, although the Brief COPE inventory captures general coping tendencies, it does not provide deeper insight into the contextual or dynamic aspects of coping behavior. Lastly, the study did not explore students' subjective evaluations of coping strategy effectiveness, which limits interpretation of their real-world impact.

Despite these limitations, the study provides valuable insight into how students preparing for careers in security and defence deal with stress. It shows a strong preference for problem-focused coping, moderate use of emotion-focused strategies, and minimal reliance on avoidant approaches. It also illustrates that student stress is multifaceted, extending beyond academic pressure to include personal and social stressors.

Based on these findings, we recommend that universities – especially those training future crisis leaders and professionals in demanding fields – establish support systems that promote adaptive coping. These might include mental health literacy programs, time management training, and cognitive-behavioral techniques to strengthen self-regulation. In line with Smart et al. (2025), targeted support should also be offered to students who struggle to adopt effective strategies, helping them replace maladaptive responses with more constructive alternatives. Strengthening coping capacity is vital not only for academic success and mental health but also for long-term professional readiness in high-stress domains like security and defence.

Ethic declaration: This research was conducted in accordance with the ethical standards of the University of Defence. Participation in the study was fully voluntary, and informed consent was obtained from all respondents. The data were collected anonymously, and no personally identifiable information was recorded. In accordance with institutional policies, the study did not require formal ethical clearance.

AI declaration: The authors take full responsibility for the content of this manuscript and confirm that no artificial intelligence tools were used in its generation or editing.

References

- Aan, R., Ar, S. and Mi, Z. (2009) „Stress and coping strategies among management and science university students: A qualitative study.“ *International Medical Journal*, 8, pp.11–15.
- Adams, D.R., Meyers, S.A. and Beidas, R.S. (2016) „The relationship between financial strain, perceived stress, psychological symptoms, and academic and social integration in undergraduate students.“ *Journal of American College Health*, 64, pp.362–370.
- Akbar, Zarina, and Maratini Shaliha Aisyawati (2021) “Coping Strategy, Social Support, and Psychological Distress Among University Students in Jakarta, Indonesia During the COVID-19 Pandemic.” *Frontiers in Psychology* 12:694122. <https://doi.org/10.3389/fpsyg.2021.694122>.
- Alsaqri, S.H., (2017) Stressors and coping strategies of the Saudi nursing students in the clinical training: a cross-sectional study. *Education Research International*, 2017, pp.1–7. <https://doi.org/10.1155/2017/4018470>
- Aloka, P., Ooko, M.A., Oraro, R., Onyango, T.K. and Owuor, E.A. (2024) “Proactive and Preventive Adjustment Mechanisms to Stress Among University Students”, in Aloka, P. (ed.) *Student Stress in Higher Education*, IGI Global Scientific Publishing, pp. 108–121. doi:10.4018/979-8-3693-0708-3.ch007.
- Anicama, J., Caller, J., Catter, A., Villanueva, L., Caballero, G., Talla, K. and Chauca, M. (2024) ‘Risk behaviors in university students: A study on the influence of stress and coping strategies’, *Behavioral Psychology*, 32(3), pp. 471–485. doi:10.51668/bp.8324303n.
- Balcar, K., Trnka, R. and Kuška, M. (2011) ‘How many ways to deal with stress? Stress coping factors in the SVF 78’, *Activitas Nervosa Superior*, 53(1/2), pp.27–34.
- Bamuhair, S.S., Al Farhan, A.I., Althubaiti, A., Agha, S. and Ibrahim, N.O. (2015) „Sources of stress and coping strategies among undergraduate medical students enrolled in a problem-based learning curriculum.“ *Journal of Biomedical Education*, 2015(10), pp.1–8.

- Bedoya Cardona, E.Y., (2021) 'Estrés, regulación cognitivo-emocional, adaptación y salud en universitarios colombianos', *Praxis & Saber*, 12(30), pp.1–16. <https://doi.org/10.19053/22160159.v12.n30.2021.11534>
- Carver, C.S. (1997) „You want to measure coping but your protocol's too long: Consider the Brief COPE.“ *International Journal of Behavioral Medicine*, 4, pp. 92–100.
- Carver, C.S., Scheier, M.F. and Weintraub, J.K. (1989) „Assessing coping strategies: A theoretically based approach.“ *Journal of Personality and Social Psychology*, 56(2), pp. 267–283.
- Clark, C.M., Nguyen, D.T. and Barbosa-Leiker, C. (2014) 'Students' perceptions of stress, coping, relationships and academic civility: A longitudinal study', *Nurse Educator*, 39(4), pp. 170–174. <https://doi.org/10.1097/NNE.0000000000000049>
- Deasy, C., Coughlan, B., Pironom, J., Jourdan, D. and Mcnamara, P.M. (2014) 'Psychological distress and lifestyle of students: Implications for health promotion', *Health Promotion International*, 30(1), pp. 77–87. <https://doi.org/10.1093/heapro/dau086>
- Denovan, A. and Macaskill, A. (2013) 'An interpretative phenomenological analysis of stress and coping in first year undergraduates', *British Educational Research Journal*, 39(6), pp. 1002–1024. <https://doi.org/10.1002/berj.3019>
- Ersig, A.L. (2019) 'An exploratory study: Transition for college students with type 1 diabetes and their parents', *Journal of Pediatric Nursing*, 46, pp. 12–17. <https://doi.org/10.1016/j.pedn.2019.01.008>
- Fedorková, J., Nekvapilová, I. and Mikulka, Z. (2020) 'Study Load at the Beginning of Studies at Military University and Coping Strategies', *International Journal of Education and Information Technologies*, 14, pp.83–96. <https://doi.org/10.46300/9109.2020.14.11>
- Gonzalez Casas, D., Dorado Barbe, A.I. and Galvez Nieto, J.L. (2025) "Profiles of coping strategies in university students in relation to personal and academic variables", *Educación XX1*. doi:10.5944/educxx1.39618.
- González-Cabanach, R., Souto-Gestal, A., González-Doniz, L. and Franco-Taboada, V. (2018) Perfiles de afrontamiento y estrés académico en estudiantes universitarios. *Revista de Investigación Educativa*, 36(2), pp.421–433. <https://doi.org/10.6018/rie.36.2.290901>
- Graf, H., Melton, B. and Gonzalez, S. (2010) „A qualitative study of stressors, stress symptoms, and coping mechanisms among college students using nominal group process.“ *Journal of Georgia Public Health Association*, 5, pp.24–37.
- Graves, B.S., Hall, M.E., Dias-Karch, C., Haischer, M.H. and Apter, C. (2021) 'Gender differences in perceived stress and coping among college students', *PLoS ONE*, 16(8), e0255634. <https://doi.org/10.1371/journal.pone.0255634>
- Gustems-Carnicer, Josep, and Caterina Calderón (2013) "Coping Strategies and Psychological Well-being Among Teacher Education Students: Coping and Well-being in Students." *European Journal of Psychology of Education*, Vol 28, pp. 1127–40. <https://doi.org/10.1007/s10212-012-0158-x>
- Hilliard, J., Kear, K., Donelan, H. and Heaney, C. (2020) 'Students' experiences of anxiety in an assessed, online, collaborative project', *Computers & Education*, 143, 103675. <https://doi.org/10.1016/j.compedu.2019.103675>
- Hatunoğlu, B.Y. (2020) Stress coping strategies of university students. *Cypriot Journal of Educational Science*, 15(5), pp.1320–1336. <https://doi.org/10.18844/cjes.v15i5.5171>
- Chýlová, H. and Natovová, L. (2012) 'Stress coping strategies at university students - part I: Gender differences', *Journal on Efficiency and Responsibility in Education and Science*, 5(3), pp. 135–147. doi: 10.7160/eriesj.2012.050303.
- Chýlová, H. and Natovová, L. (2013) 'Stress, self-efficacy and well-being of the university students', *Journal on Efficiency and Responsibility in Education and Science*, 6, pp. 190–202. doi: 10.7160/eriesj.2013.060306.
- Jensen, C., Forlini, C., Partridge, B. and Hall, W. (2016) „Australian university students' coping strategies and use of pharmaceutical stimulants as cognitive enhancers.“ *Frontiers in Psychology*, Vol. 7, p.277.
- Khademian, F., Aslani, A., Ravangard, R., Nami, M., Abbasi, S. and Bastani, P. (2021) 'Iranian University students' stressors and coping strategies: A qualitative study.', *Journal of Education and Health Promotion*, 10, p.244. https://doi.org/10.4103/jehp.jehp_1278_20
- Lazarus, R.S. and Folkman, S. (1984) *Stress, appraisal, and coping*. New York: Springer Publishing Company.
- Lazarus, R.S. and Folkman, S. (1987) 'Transactional theory and research on emotions and coping', *European Journal of Personality*, 1(3), pp.141–169. <https://doi.org/10.1002/per.2410010304>
- Majumdar, B. and Ray, A. (2010) Stress and coping strategies among university students: A phenomenological study. *Indian Journal of Social Science Research*, 7, pp.100–111.
- Mushtaq, O., Soh, M., Dong, T. et al. (2024) Perceived stress among graduate students in health sciences at a military university: a mixed-method approach. *BMC Med Educ* 24, 1343 (2024). <https://doi.org/10.1186/s12909-024-06326-w>
- Nivethitha, P. and Rita, S. (2016) „A study on stress management among student community.“ *International Journal of Engineering Science Research and Technology*, 5(11), pp.481–483.
- Okoro, E. (2018) *Assessment of stress-related issues and coping mechanisms among college students*. All Theses, Dissertations, and Other Capstone Projects, 825. <https://cornerstone.lib.mnsu.edu/etds/825>
- Oyewobi, L., Oladosu, N. and Jimoh, R. (2020) „Influence of stress and coping strategies on undergraduate students' performance.“ *Journal of Applied Research in Higher Education*, 13(4), pp.1043–1061. doi:10.1108/JARHE-03-2020-0066.
- Rice, Kylie, Adam J. Rock, Elizabeth Murrell, and Graham A. Tyson (2021) "The Prevalence of psychological Distress in an Australian TAFE Sample and the Relationships Between Psychological Distress, Emotion-focused Coping and Academic Success." *Australian Journal of Psychology* 73 (2): 231–42. <https://doi.org/10.1080/00049530.2021.1883408>.

- Sagone, Elisabetta, and Maria Elvira De Caroli (2014) "A Correlational Study on Dispositional Resilience, Psychological Well-being, and Coping Strategies in University Students." *American Journal of Educational Research* 2 (7): 463–71. <https://doi.org/10.12691/education-2-7-5>.
- Seyedfatemi, N., Tafreshi, M. and Hagani, H. (2007) Experienced stressors and coping strategies among Iranian nursing students. *BMC Nursing*, 6(11).
- Smart, I., McCabe, M., Bird, L. J., Byrne, M. L. and Cornish, K. (2025) "Australian university student coping profiles and psychosocial distress: a latent profile analysis", *Studies in Higher Education*, Vol. 50, No. 1, pp. 93–106. doi:10.1080/03075079.2024.2329748.
- Vidas, Dianna, Joel L. Larwood, Nicole L. Nelson, and Genevieve A. Dingle. (2021) "Music Listening as a Strategy for Managing COVID-19 Stress in First-year University Students." *Frontiers in Psychology* 12:647065. <https://doi.org/10.3389/fpsyg.2021.647065>.
- Wang, Haobi, Ting Kin Ng, and Oi-ling Siu (2023) "How does Psychological Capital Lead to Better Well-Being for Students? The Roles of Family Support and Problem-focused Coping." *Current Psychology* 42 (26): 22392–403.
- Waterhouse, P. and Samra, R. (2025) „University students’ coping strategies to manage stress: A scoping review“. *Educational Review*, pp.1–41. <https://doi.org/10.1080/00131911.2024.2438888>
- Wolf, L., Stidham, A.W. and Ross, R. (2015) „Predictors of stress and coping strategies of US accelerated vs. generic Baccalaureate Nursing students: An embedded mixed methods study.“ *Nurse Education Today*, 35, pp.201–205.
- Zaman, Noshi Iram, and Uzma Ali (2019) "Autonomy in University Students: Predictive Role of Problem Focused Coping." *Pakistan Journal of Psychological Research* 34 (1): 101–14. <https://doi.org/10.33824/PJPR.2019.34.1.6.1061>.

Collaborative Innovation Ecosystems as Platforms for Sustainable Entrepreneurship: A Regional Case from Lappeenranta, Finland

Olga Bogdanova

Lab University of Applied Sciences, Finland

olga.bogdanova@lab.fi

Abstract: Regional innovation governance plays a critical role in aligning economic development with sustainability objectives. According to Systems of Innovation theory, regional actors, including municipalities, research institutions, and businesses, form interconnected systems that shape the generation, diffusion, and commercialization of knowledge. Effective governance within these systems is essential for enabling regions to respond to societal transitions, including the shift toward green and circular economies. This paper explores how regional innovation ecosystems can serve as enablers of sustainable entrepreneurship and corporate development. Focusing on a pilot project led by the City of Lappeenranta, in partnership with Ikigaia and Servitium, and supported by Sitra, the study examines how cross-sectoral collaboration can be structured to address shared sustainability challenges and stimulate innovation in green growth sectors. Drawing on Innovation Ecosystem Theory and the Triple Helix Model, the research investigates how public, private, and academic actors co-develop governance models, pilot initiatives, and communication platforms that support entrepreneurship in emerging fields such as biomaterials, hydrogen (Power2X), and small modular reactors. The project's methodology includes stakeholder interviews, participatory workshops, and comparative benchmarking with other Finnish "InnoCities" to co-create new collaboration models. Through the lens of Stakeholder Theory, Collaborative Governance, and Dynamic Capabilities, the paper reveals how shared leadership and adaptive processes foster a culture of sustainable innovation. It also identifies persistent challenges such as fragmented funding, misaligned organizational timescales, and knowledge accessibility, offering actionable strategies to overcome them. The findings contribute to ongoing discourse on sustainable innovation governance by presenting a replicable and flexible model for ecosystem-based co-creation. It offers insights for local governments, innovation intermediaries, and corporate leaders seeking to align entrepreneurial activity with long-term environmental and societal objectives.

Keywords: Innovation ecosystems, Regional innovation governance, Sustainable entrepreneurship, Collaborative governance, Triple Helix model

1. Introduction

In the face of accelerating environmental degradation, technological disruption, and economic uncertainty, regions are increasingly called upon to act as engines of sustainability-oriented innovation (Jay and Gerard, 2015). As national governments decentralize responsibilities and global competition intensifies, cities and regions must harness the collaborative potential of their local innovation ecosystems to drive transformative growth (Braga and Souza, 2019). This imperative is particularly acute in small and mid-sized regions, where institutional coordination, stakeholder engagement, and strategic resource alignment are often underdeveloped yet critically needed (Andersson and Karlsson, 2004).

Innovation Ecosystem Theory provides a comprehensive lens for examining how diverse actors, public, private, academic, and civic, collaborate within territorially bounded systems to produce and diffuse new knowledge, technologies, and practices (Autio et al., 2018). Within this framework, innovation is not a linear process but emerges from dynamic, interdependent interactions among multiple organizations embedded in shared socio-economic and institutional contexts. The effectiveness of such ecosystems is determined not only by the presence of individual actors, but also by the quality of their linkages, trust relations, coordination mechanisms, and collective vision.

The Triple Helix Model (Etzkowitz & Leydesdorff, 2000) further sharpens this focus by conceptualizing the co-evolutionary relationships between academia, industry, and government. In this model, innovation emerges when the institutional spheres converge and take on hybrid roles; for example, universities becoming entrepreneurial, firms investing in basic research, and governments facilitating knowledge-intensive development. However, the model also warns that such convergence requires well-developed governance capabilities to manage institutional tensions and align divergent objectives.

In tandem, Stakeholder Theory (Freeman, 1984) underscores the normative and practical significance of inclusive governance. It posits that effective innovation systems must be accountable not only to economic actors but also to social and environmental stakeholders. This perspective is essential in sustainability-driven innovation, where societal legitimacy, environmental stewardship, and intergenerational equity must be balanced against short-term commercial objectives.

To operationalize such complexity, Collaborative Governance frameworks (Ansell & Gash, 2008) offer practical guidance on how multi-actor decision-making can be structured. These frameworks emphasize shared leadership, joint agenda-setting, and deliberative dialogue as foundations for cross-sector coordination. They are particularly useful in regional contexts where administrative fragmentation and institutional silos hinder the pursuit of collective goals.

Complementing these perspectives, the Dynamic Capabilities approach (Teece, 2007) explains how organizations develop the ability to sense opportunities, seize them through strategic alignment, and reconfigure internal and external competencies to sustain innovation over time. Within regional ecosystems, the distribution and activation of such capabilities are critical to ensuring not only participation but also absorptive capacity among smaller and less resourced actors.

This article applies this integrated theoretical framework to analyze the state of the innovation ecosystem in South Karelia, a Finnish region undergoing a green transition. Drawing on data from a 2025 regional survey and two collaborative workshops, the study investigates how public, private, and academic stakeholders perceive the current enablers and barriers to research, development, and innovation (RDI) collaboration. In doing so, it addresses three core questions: (1) What structural and relational features define the regional innovation ecosystem in South Karelia? (2) What mechanisms support or hinder cross-sectoral engagement in sustainability-oriented RDI activities? (3) How can governance models be redesigned to enhance the region's capacity for sustainable entrepreneurship and innovation?

By linking empirical findings to contemporary theoretical insights, the study contributes to a deeper understanding of how ecosystem governance can be made more inclusive, adaptive, and capable of addressing complex societal transitions.

2. Methodology

This study was conducted as part of Sitra's *Sustainable Growth Innovations* programme in Spring 2025 (InnoCities, 2025). The objective was to map the current state, achievements, and development needs of research, development, and innovation activities (RDI) in the South Karelia region of Finland. A mixed-methods approach was adopted, combining a region-wide quantitative survey with a qualitative stakeholder workshops to capture diverse perspectives across the innovation ecosystem.

2.1 Data Collection

2.1.1 Online survey

An online survey was conducted from May 8 to May 25, 2025, facilitated by the research agency Servitium. The survey targeted regional stakeholders across sectors, including private enterprises, public authorities, and academic institutions. A total of 1,826 personalized invitations were sent via email, resulting in 303 responses (response rate: 12%). Respondents included 210 representatives from the private sector, 62 from the public sector, and 31 from research or educational institutions. This balanced participation ensured that the perspectives of industry, academia, and the public sector were all reflected in the findings. The survey was also disseminated via the City of Lappeenranta's official channels to increase accessibility and reach. The questionnaire comprised both closed and open-ended items, enabling the collection of statistical data as well as rich qualitative insights.

2.1.2 Stakeholder workshops

Two workshops were conducted by innovation consultancy Ikigaia Oy to complement the survey findings and facilitate participatory scenario planning and idea generation. Workshop 1 (May 19, 2025) involved 15 participants from public sector organizations and higher education. The session included scenario-based group work focusing on strategic RDI priorities and practical collaboration models. Workshop 2 (June 2025) brought together a wider range of actors, including companies, city officials, and innovation intermediaries. The workshop emphasized the identification of concrete RDI pilot concepts, ecosystem-building, and scaling strategies. Discussions were structured around two key tasks: selecting priority development themes and co-designing actionable innovation experiments.

2.2 Data Analysis

The data collected in this study was analyzed and interpreted by external expert organizations commissioned for the project. Quantitative survey responses were processed and statistically summarized by Servitium Oy, a

professional research agency, using descriptive statistical methods, and results were sent to the participants of survey, including author. Qualitative data, transcripts from both stakeholder workshops, was analyzed thematically by Ikigaia Oy, which also facilitated the workshops. Their analysis focused on identifying recurring themes, stakeholder priorities, practical barriers to cooperation, and innovative proposals for enhancing RDI activities in the region. Thematic synthesis was structured around ecosystem development needs, strategic scenarios, and collaborative opportunities. The results of the analysis were acquired by the author via unstructured interview with representative of Ikigaia.

3. Results

3.1 Survey Results

3.1.1 Interest and opportunities in RDI

A notable outcome is that a majority of respondent organizations are open to expanding their RDI engagement. Over half (52.4%) of business respondents indicated they are willing to increase RDI collaboration in the future (only ~4% said “no,” with the remainder uncertain). This suggests considerable untapped enthusiasm for joint innovation efforts. Furthermore, many respondents highlighted the benefits and successes already experienced through RDI activities in the region. Commonly cited positives included the establishment of trust, smooth communication, and committed partners, leading to naturally well-functioning cooperation between companies and universities. When projects had clear shared needs, well-defined goals and good planning, respondents felt roles, schedules and management were effective. RDI cooperation was seen to bring new perspectives and external expertise, yielding fresh ideas and solutions that “would not have emerged otherwise”. In addition, initiatives like student thesis projects and open innovation challenges have produced tangible results. RDI was also credited with networking benefits, spawning new partnerships and inter-organizational networks, and with enabling projects via funding that made development work possible which “otherwise would not have been feasible”. These successes underscore the opportunity for further leveraging RDI: the groundwork of trust, ideas and networks exists to build upon.

3.1.2 Key challenges and barriers

Despite the encouraging signs of willingness and interest in RDI engagement, the survey revealed a number of critical challenges that continue to hinder effective collaboration within the regional innovation ecosystem. These challenges are primarily structural and informational in nature and were especially emphasized by respondents from the private sector.

The most frequently cited obstacle was the lack of awareness about existing RDI opportunities and relevant actors in the region. Approximately 45% of respondents indicated that companies—particularly small and medium-sized enterprises—remain largely uninformed about available programs, funding instruments, or potential collaboration partners. This informational asymmetry significantly limits the ability of firms to engage in joint research or innovation initiatives. Secondly, around 37% of respondents reported misalignment of schedules and resource constraints as a barrier. Many companies, especially smaller ones, struggle to allocate the necessary time and personnel to participate in RDI projects, which often require sustained involvement over extended periods. These resource mismatches make it difficult for firms to commit to collaborative processes, even when the strategic value of participation is recognized.

Another widely noted issue was the excessive administrative burden associated with publicly funded RDI projects. About 36% of participants highlighted bureaucratic complexity as a major impediment, arguing that administrative tasks often divert focus from core development work. Respondents called for a significant simplification of funding procedures and reporting requirements. A further challenge relates to the difficulty in identifying suitable partners for collaboration, reported by approximately 28% of survey participants. Fragmentation within the regional ecosystem and limited matchmaking services have resulted in missed opportunities for synergy, particularly between industry and academia.

In addition, weak communication and outreach towards companies was identified by roughly 25% of respondents. The dissemination of information about RDI initiatives, success stories, and potential engagement channels was perceived as insufficiently targeted or accessible, underscoring the need for improved dialogue between innovation actors. Approximately 21% of participants also pointed to unclear or poorly defined goals in joint projects as a barrier to effective cooperation. When objectives are misaligned or inadequately articulated, mutual trust and commitment tend to deteriorate, ultimately compromising project outcomes. Lastly, a smaller but still significant segment—around 12%—expressed a lack of perceived need for

RDI within their organizations. These respondents did not view RDI collaboration as directly beneficial or strategically necessary, reflecting either a disconnect between innovation discourse and everyday business realities or limited prior exposure to positive RDI experiences.

Together, these findings highlight the need for more structured, transparent, and user-friendly collaboration mechanisms that lower entry thresholds and foster trust among regional innovation actors. Addressing these barriers is essential to unlocking the full potential of South Karelia's innovation ecosystem.

3.1.3 Support needs

When asked how to improve the accessibility and effectiveness of RDI, stakeholders across all sectors highlighted the need for clearer information, simplified funding processes, and better partner matchmaking. SMEs and solo entrepreneurs, in particular, expressed frustration with the complexity of existing innovation programs, describing them as opaque and burdensome. Many emphasized the value of hands-on guidance and low-threshold support, someone to explain processes in plain terms and walk them through engagement steps.

There was strong demand for more agile and business-friendly RDI models that prioritize outcomes over paperwork. Respondents suggested lighter application procedures and pilot-focused funding accessible even to micro-enterprises. Overall, the message was clear: the region has strong RDI capacity and willingness, but activating it requires better coordination and a shared commitment to lowering participation barriers.

Each sector brought distinct perspectives to these shared concerns. Private sector respondents (especially from SMEs) highlighted the potential of RDI collaboration, but stressed the need for models that are agile, transparent, and business-oriented. They want partnerships grounded in real-world problems, quick to show results, and free from excessive bureaucracy. Trust, equal-footing collaboration, and relevance to company needs were central priorities. As one noted, "I hope for a model where universities, the public sector and companies genuinely work side by side."

Public sector actors, including municipalities, focused on clearer communication, low-threshold participation mechanisms, and stronger coordination. They emphasized that innovation efforts should respond to genuine business needs and be better integrated into everyday public services. Fragmented initiatives and competitive models were seen as counterproductive; instead, a unified platform for cooperation and inclusive participation was encouraged. Academic institutions echoed the need for transparency and coordination, advocating for a centralized "one-stop shop" for RDI information and partner discovery. They stressed the importance of long-term partnerships over one-off projects, and called for greater integration of students and startups into the ecosystem. Academic actors also pointed to a critical gap in early-stage funding, suggesting the creation of seed mechanisms or "validation pipelines" to help promising ideas reach commercial viability.

3.2 RDI Workshop Outcomes

3.2.1 Strategic RDI themes for the region

Through facilitated scenario exercises and discussions (guided in part by Ikigaia's innovation experts and Sitra's foresight input), the workshops converged on a set of strategic spearhead themes that leverage South Karelia's strengths and respond to future opportunities. Three priority themes were highlighted for the region's RDI-driven growth over the next decade.

First, embracing the green transition, South Karelia should focus on technologies for carbon neutrality in industry. This includes initiatives in CO₂ capture and utilization and Power-to-X solutions (e.g. using captured carbon with renewable energy to create fuels or materials). Developing climate-friendly industrial processes and expertise (such as modular hydrogen and novel bioenergy systems) can position the region at the forefront of sustainable industry.

Second, building on the local pulp, paper, and bioeconomy legacy, the region aims to innovate in new bio-based materials and the circular economy. For example, participants identified opportunities in agricultural fibers and bio-based plastics (Bio-PE) production, as well as creating EU-compliant fiber products for textiles and packaging. By valorizing local biomass and waste streams into high-value materials, South Karelia can become a hub for sustainable biomaterials innovation.

To translate innovations into practice, the region needs an infrastructure for large-scale demonstration. The workshops proposed establishing a pre-commercial pilot testing platform attached to LUT University. This would be an RDI hub where new technologies (e.g. in clean energy or process industry) can be tested and

validated in an industrial setting. Such an environment would connect research, rapid prototyping, and investor involvement in one physical/virtual space. It effectively provides a bridge from lab to industry – enabling scale-up of promising innovations locally.

These three themes were seen as interrelated pillars of a regional innovation strategy. They align with broader European trends and funding priorities (e.g. the EU Green Deal emphasis on climate tech and circular economy), while also capitalizing on South Karelia's existing capabilities. Focusing RDI efforts around these domains could give the region a distinctive competitive edge and attract talent and investment into the area.

3.2.2 Identified bottlenecks in the ecosystem

The workshops also openly confronted the bottlenecks and pain points that were impeding RDI collaboration, many of which mirrored the survey findings, namely: fragmentation of collaboration, uneven participation and resource gaps, and lack of agility and experimental culture. Participants agreed that the regional innovation landscape was too fragmented and project-based, relying heavily on individual short-term projects or personal networks. There is a lack of coordinated, systemic collaboration. This siloed approach prevents scaling up good ideas, successful pilots often remain one-offs, and knowledge isn't widely shared.

It was noted that SME involvement in RDI is relatively weak, leading to an imbalanced ecosystem. RDI activities tend to concentrate in a few larger organizations or specific sub-regions, which undermines inclusivity and broad-based impact. Smaller companies and outlying communities struggle to engage, often due to limited resources or awareness, creating an "innovation divide." This uneven distribution of expertise and RDI capacity means much potential talent and many ideas remain untapped.

Current collaboration and funding models are seen as too rigid and slow to respond to emerging ideas. The workshops flagged a shortage of agile, experimental approaches - "current operating models do not support rapid ideation and piloting". New funding mechanisms and more flexible processes are needed to allow quick trials of innovative concepts to meet local needs.

In addition to these general issues, the voice of student entrepreneurs (LUTES) in the second workshop shed light on specific bottlenecks faced by startups and young innovators. From the LUTES and student perspective, entry into the RDI ecosystem is particularly challenging. They reported that support for startup teams is fragmented and "invisible". As a result, student entrepreneurs spend excessive time just trying to locate the right mentor or funding source, since there is no clear matchmaking system. Another issue is that typical RDI or research projects are far too heavy for small student-led ideas – the threshold to join formal projects is high. This leaves early-stage student innovations in a void, unable to access RDI resources until they've matured (by which time some have already left the region). Compounding this is the "campus bubble" effect: many student teams have no contact with local companies, development companies, or the city government. Lastly, the students highlighted a critical funding gap at the very start of the innovation journey: from idea to prototype (MVP), there is "no sufficient low-threshold funding mechanism" available in the region.

3.2.3 Co-Developed solutions and initiatives

Both workshops prioritized brainstorming solutions to the above challenges. Participants collectively proposed a range of measures, from structural fixes to new collaborative platforms and pilot projects. Some of the key solutions that emerged included "Warm Gateways" for startups into RDI, clear path from idea to pilot to customer, "One-Stop Shop", improved RDI Visibility and information sharing, flexible funding and support mechanisms,

To lower barriers for startups and small firms, the idea of establishing easy entry points was championed. This means creating simple, low-bureaucracy mechanisms for startups to engage in RDI activities. For example, the group envisioned a program or office that proactively welcomes early-stage innovators offering them a streamlined process to pitch ideas, join ongoing projects, or get seed support without the usual formalities.

Hand-in-hand with the above, the workshops stressed designing a clear pipeline that guides innovators from the concept stage through pilot testing to first reference customers. Currently, many ideas fall into cracks between stages. Participants suggested mapping out and actively supporting this trajectory: for instance, after a student or SME develops a prototype, there would be a defined route to connect them with a pilot opportunity (perhaps at a local company or testbed), and then to an early adopter customer (even the city could serve as a "first customer" for local innovations). Importantly, the City of Lappeenranta was urged to take an encouraging role.

A recurring proposal was to establish a common platform or hub organization that links all the actors in continuous collaboration. This would go beyond one-off networking events: the vision is a permanent collaborative forum (physical, digital, or both) acting as the region's innovation nexus. Such a hub could host regular meetups, maintain an up-to-date database of who is doing what, and broker partnerships in real time. Essentially, it implements the "one clear forum" concept requested in the survey, breaking down silos between academia and business.

To address the information deficit, participants called for dramatically increasing transparency about ongoing and past RDI projects in the region. They proposed creating a shared information repository that would answer questions like: What projects are happening? Where can one participate? Where are fresh ideas needed? Likewise, this repository or database should document past projects: what has been tried in South Karelia, what succeeded, and what failed, so that lessons aren't lost and new entrants can learn from history. In practice, this could tie into the above one-stop platform as an online portal listing active RDI and a library of case studies. More robust outreach and communication was also emphasized.

Responding to the need for agility, the workshops discussed experimenting with new funding models to support quick trials. Ideas included a "regional RDI micro-grant" scheme for prototyping and a shared seed fund or accelerator targeting student and researcher-founded startups. The notion of a "validation pipeline" was raised, wherein promising early-stage concepts get a small pot of funding to produce a proof-of-concept, and successful ones then connect to larger investors or national program. Another idea was to set up a consortium-based mentoring and funding network (a kind of local innovation fund) that draws contributions from multiple channels (public, private, EU) to de-risk investment in regional pilots.

Several pilot projects were also brainstormed as concrete next steps. For instance, one pilot concept was a "reference ecosystem" in a specific domain: focusing on a few high-potential clean-tech innovations and fast-tracking them through local pilot use to global markets, supported by a novel regional fund. Another pilot idea was an "investment attraction program" that would package a set of regional pilot projects (in e.g. hydrogen or bio-based materials) to pitch to external funders and industrial investors as a bundle – thereby drawing in capital and partners from outside the region. The role of LUTES was also considered in implementation: the student entrepreneurs made it clear that they are ready to act as bridge-builders, e.g. by providing course assistants for RDI projects, organizing hackathons or innovation challenges, and mobilizing student teams for pilots, but they need to be invited as equal partners in planning, not just used in execution.

3.2.4 Visionary goals and future outlook

Beyond immediate fixes, the workshops fostered a shared long-term vision for South Karelia's RDI ecosystem. The region aspires to become a national and European "sustainable industry forerunner", recognized for pioneering clean technologies and circular economy solutions. Participants envisioned a thriving Triple Helix collaboration, where universities, companies, and public agencies work hand-in-hand to create an agile growth platform for developing, testing, and scaling innovation.

To reach this future, bold and differentiating initiatives are needed. One such proposal is a "world-class unique growth environment" that brands South Karelia as a global innovation cluster. A key feature would be a modular RDI platform for industrial production: a flexible system that can rapidly test and scale innovations from biofuels to AI-enabled manufacturing helping to bridge the "scaling up" gap for deep-tech.

Another cornerstone of the vision is forming strong international partnerships. By linking to EU flagship programs and top universities, the region's innovators can access global funding and expertise, keeping South Karelia at the cutting edge.

Ultimately, this vision positions Lappeenranta as a launchpad for globally competitive startups that address sustainability challenges. The workshops provided more than tactical ideas, they offered a strategic direction.

4. Discussion and Conclusion

This study contributes to the evolving discourse on regional innovation governance by offering an empirically grounded case of how South Karelia, a mid-sized Finnish region, is reimagining its innovation ecosystem to support sustainable entrepreneurship. Using an integrated framework of Innovation Ecosystem Theory, the Triple Helix Model, Stakeholder Theory, Collaborative Governance, and Dynamic Capabilities, the research highlights both structural barriers and emerging opportunities.

The study findings, drawn from surveys and participatory workshops, reveal a strong but underutilized RDI capacity in the region. While there is considerable interest in cross-sectoral collaboration, the full potential of ecosystem-driven innovation is constrained by fragmentation, information gaps, and limited coordination mechanisms.

4.1 Structural Weaknesses in Ecosystem Coordination

The research affirms that innovation activity in South Karelia is often dominated by public and academic institutions, while private-sector engagement—especially from SMEs and startups—remains sporadic. Innovation efforts tend to be siloed and project-based, lacking systemic coordination or shared platforms. As previous studies have noted (Autio et al., 2018; Tödtling & Trippl, 2005), ecosystems without integrative institutions often fail to achieve sustained impact. South Karelia's lack of a unified RDI hub limits inclusivity and system-level functionality.

4.2 Emerging Alignment with Collaborative Governance and Triple Helix Models

Despite these structural gaps, the study also captured a nascent shift toward collaborative governance and Triple Helix integration. The co-creative workshops initiated inclusive agenda-setting and the design of hybrid institutional models, such as a modular piloting platform and a shared RDI portal. These efforts indicate growing alignment with the principles of joint leadership, hybrid roles, and ecosystem openness, suggesting the emergence of governance capabilities necessary for systemic innovation.

4.3 Dynamic Capabilities and Innovation Readiness

The concept of dynamic capabilities (Teece, 2007) helps explain the region's latent innovation potential. While key actors possess individual strengths, the region lacks coordinated pathways to sense, seize, and scale innovation opportunities. Survey findings highlight strong willingness among firms to engage in RDI, but also point to complex funding landscapes and the absence of "idea-to-impact" pipelines. Proposed initiatives such as public procurement for regional innovations and early-stage pilot support aim to build this dynamic capability infrastructure.

4.4 Gaps in Inclusive Governance

From a Stakeholder Theory perspective, the current governance model only partially integrates marginalized or under-resourced actors, such as micro-enterprises, student entrepreneurs, and peripheral communities. Workshop insights, especially from LUTES representatives, underscored the high entry barriers these groups face: from unclear mentorship pathways to funding voids for early-stage innovation. These gaps challenge the normative principle that all stakeholders should be empowered to co-create the innovation processes that shape their futures.

4.5 Toward a Replicable Model for Sustainability-Driven Innovation

Despite persistent bottlenecks, South Karelia's pilot initiative demonstrates a credible pathway toward a replicable, mission-oriented innovation model (Mazzucato, 2018). The region's strategic focus on carbon-neutral industry, biomaterials, and piloting infrastructure aligns well with both EU Green Deal priorities and local strengths. Notably, the workshops catalyzed actionable proposals: an inclusive RDI hub, agile funding mechanisms, and stronger links between academia, industry, and government. These reflect a broader reconceptualization of innovation as a systemic, inclusive, and purpose-driven endeavor.

4.6 Final Reflections

This study illustrates that small and mid-sized regions can play a pivotal role in sustainable innovation if they invest in inclusive governance, dynamic collaboration models, and responsive support structures. The South Karelia case extends theoretical frameworks into a real-world context, showing how deliberate ecosystem-building—rooted in shared leadership and adaptive governance—can activate untapped potential.

Practically, the research suggests that lowering participation thresholds, coordinating support, and fostering a culture of rapid experimentation are critical to mobilizing diverse actors. The strong engagement of stakeholders—from student entrepreneurs to municipal leaders—during this project bodes well for future efforts. If the region sustains this momentum and institutionalizes its emerging governance models, it is well-positioned to become a model innovation cluster for sustainability transitions in Europe and beyond.

Ethical declaration: All participation was voluntary and anonymous, with respondents and interviewees informed about the study's aims and the use of collected data. The representativeness of survey responses

across sectors and the inclusion of expert reflection through interview support the validity and reliability of the findings. The dual-sourced methodology enabled both breadth and depth in capturing the region's RDI dynamics.

AI declaration: Artificial intelligence tools were used in the preparation of this manuscript to support language editing.

References

- Andersson, M. and Karlsson, C. (2004) *Regional Innovation Systems in Small & Medium-Sized Regions: A Critical Review & Assessment*, Working Paper Series in Economics and Institutions of Innovation 10, Royal Institute of Technology, CESIS.
- Ansell, C. and Gash, A. (2008) "Collaborative governance in theory and practice", *Journal of Public Administration Research and Theory*, Vol. 18, No. 4, pp.543–571, [online], <https://doi.org/10.1093/jopart/mum032>.
- Autio, E., Nambisan, S., Thomas, L.D. and Wright, M. (2018) "Digital affordances, spatial affordances, and the genesis of entrepreneurial ecosystems" *Strategic Entrepreneurship Journal*, Vol. 12, No.1, pp.72–95, [online], <https://doi.org/10.1002/sej.1266>.
- Braga, N. and Souza, Y. (2019) "The role of cities in decentralization of national policies on Science, Technology and Innovation", *Sinergie Italian Journal of Management*, [online], <https://doi.org/10.7433/s105.2018.01>.
- Etzkowitz, H. and Leydesdorff, L. (2000) "The dynamics of innovation: From National Systems and "Mode 2" to a Triple Helix of university–industry–government relations", *Research Policy*, Vol. 29, No. 12, pp.109–123, [online], [https://doi.org/10.1016/S0048-7333\(99\)00055-4](https://doi.org/10.1016/S0048-7333(99)00055-4).
- Freeman, R.E. (1984), *Strategic Management: A Stakeholder Approach*, Boston: Pitman Publishing.
- Ikigaia Oy (2025) *Interview on regional innovation ecosystem development in South Karelia*, conducted by author.
- InnoCities (2025) *InnoCities programme overview*, [online], <https://innokaupungit.fi/en/innokaupungit/>.
- Jay, J. and Gerard, M. (2015) "Accelerating the theory and practice of sustainability-oriented innovation", *SSRN Electronic Journal*, [online], <https://doi.org/10.2139/ssrn.2629683>.
- Mazzucato, M. (2018) "Mission-oriented innovation policy: Challenges and opportunities", *Industrial and Corporate Change*, Vol. 27, No. 5, pp.803–815, [online], <https://doi.org/10.1093/icc/dty034>.
- Servitium Oy (2025) *Etelä-Karjalan alueen TKI-tilannekuvan kartoitus 2025*.
- Teece, D.J. (2007) "Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance", *Strategic Management Journal*, Vol. 28, No. 13, pp.1319–1350, [online], <https://doi.org/10.1002/smj.640>.
- Tödtling, F. and Tripl, M. (2005), "One size fits all? Towards a differentiated regional innovation policy approach", *Research Policy*, Vol. 34, No. 8, pp.1203–1219, [online], <https://doi.org/10.1016/j.respol.2005.01.018>.

Does Corporate Governance Drive the Narrative Tone of Sustainability Reporting?

Andreea Madalina Bojan and Camelia Iuliana Lungu

Bucharest University of Economic Studies, Romania

bojanandreea17@stud.ase.ro

camelia.lungu@cig.ase.ro

Abstract: Extensive research on corporate governance has led to a greater focus on disclosure (financial and narrative) in sustainability reporting, with the company's primary goal of winning over and maintaining the support of stakeholders to gain competitive advantage. Managers could choose to present information using a qualitative approach rather than a quantitative one, manipulate the rhetoric, and influence investors' perceptions. This study investigates whether corporate governance influences the tendency of companies to use particular textual narratives, as part of impression management techniques, to expose a favourable projection of overall activity. Three specific characteristics measure the propensity to employ impression management in sustainability reporting, while corporate governance is quantified considering board gender diversity. Additionally, company-level control variables are included. Research hypotheses are asserted in line with previous literature and tested based on a sample of non-financial companies from Eastern European countries, for the time frame between 2022 and 2023. Data on narrative tone is collected using textual analysis of sustainability reports, while corporate governance characteristics and control variables are extracted from the Thomson Reuters Eikon database. Descriptive statistics, correlation analysis, and multilevel regression estimation are employed to analyse the panel data. Mixed findings are highlighted, depending on the proxy used to measure impression management. They show that textual characteristics of sustainability reports are impacted by corporate governance. Empirical evidence emphasises that in boards with greater representation of women, the tendency of impression management strategies in the narrative tone of sustainability disclosure decreases. Women directors are associated with more balanced, precise, and clear, but not extensive reports. Results may represent an original and valuable resource for academic and business environments. First, this study adds to the existing literature and contributes to the debate on corporate governance mechanisms from the perspective of impression management, as a basis for present and future research horizons. Second, due to a thorough understanding of the tone of narrative disclosure, business representatives, regulators, and policymakers will be fully aware of potential opportunistic behaviours, as well as corporate governance mechanisms that exert significant influence and could lead to high-quality reporting. Third, impression management measurements as well as sample specifics and methodological insights support the originality of the investigation.

Keywords: Corporate governance, Impression management, Sustainability reports, Narrative disclosure, Textual analysis

1. Introduction

Although narrative disclosure may be associated with a challenge for policymakers and regulatory bodies from the perspective of setting the requirements, the quality of reporting is closely monitored by investors, regulators, and society as a crucial aspect of accountability and transparency (Leung, Parker & Courtis 2015). In this context, the accounting and finance literature has paid more attention to textual analysis in the past decade (Loughran & McDonald, 2016). Textual assessments, understood as narrative disclosures, are found in information exposed by companies addressed to their internal and external stakeholders and could be represented by financial statements, annual reports, corporate social responsibility (CSR) reports, environmental, social and governance (ESG) reports, or Management Discussion and Analysis (Bassyouny, Abdelfattah & Tao, 2022).

A threat to narrative disclosure could consist of using impression management techniques as a result of opportunistic management behaviour. This fact may alter the balanced and accurate exposure of corporate reporting. Scientific literature (Hamza & Jarboui, 2024; Albitar, Abdoush & Hussainey, 2022; Ben-Amar et al, 2022; Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero, 2019; Osma & Guillamon-Saorin, 2011) addresses this concern, drawing attention to corporate governance mechanisms as underlying practices used to mitigate impression tendency.

Aiming to fill the gaps in the accounting literature, this empirical investigation is approached as a cross-sectional analysis on the relationship between corporate governance and impression management, for a sample of non-financial companies, in the period between 2022 and 2023. Originality is ensured by the specific geographical area analysed, consisting of developing countries. Moreover, novelty is represented by the quantitative approach, including different proxy for impression management and focussing on board gender diversity as a key mechanism of corporate governance.

This research provides exploratory information that enables cross-country and cross-industry comparability by analysing data for a particular sample. This sample reduces the variability of the results and allows for a thorough investigation of a specific geographical area. Research methodology, which combines primary and secondary data, is similar to Bojan (2025) and Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero (2019), and provides an alternative perspective to earlier qualitative-orientated studies (Melloni et al, 2016; Solomon et al, 2013). Furthermore, the investigation expands the body of knowledge on corporate governance and sustainability, shedding new light on several textual characteristics as proxies for impression management.

Hence, this study contributes to the existing scientific literature and is conducted in light of a multi-theoretical framework. The impression management theory is complemented by the agency, voluntary disclosure, and social identity theories, to provide a comprehensive understanding of the impact exerted by gender diversity on the narrative tone used in sustainability reporting.

The remainder of the paper is structured as follows. Section 2 summarises relevant studies underlying the design of research hypotheses. Section 3 covers the methodology, data collection, sample, and regression estimation. Section 4 debates the empirical results, while the findings, main conclusions, limitations, and future research directions are discussed and addressed in Section 5.

2. Literature Review and Hypotheses Assertion

Corporate disclosure could be associated with the core of financial communication, filling the gap between companies and their stakeholders. Investors, regulatory bodies, and policymakers are increasingly concerned about the accuracy and reliability of financial reporting as global markets call for increased responsibility and transparency. Financial reporting has always been dominated by quantitative disclosures, but these often do not provide the nuanced understanding required for challenging decision-making. In this sense, narrative disclosures, especially the tone used in the textual content of corporate reports, have become essential instruments for improving the interpretive depth of business communications, especially given the global focus on sustainability (Kayed & Alta'any, 2025; Yang, Bao & Zhang, 2024).

Corporate governance is important for accurate, consistent, and transparent data exposure in order to balance information asymmetries and agency costs, to align interests to mitigate the extent of the conflict raised between stakeholders and management, as well as to improve financial reporting procedures and disclosure practices. Moreover, corporate governance mechanisms, such as those related to audit committee independence, financial expertise, and women representation (Makhlouf, 2022), board independence, CEO duality, number of board meetings and board size (Osma & Guillamon-Saorin, 2011), or several board chairman characteristics (Al-Sayani et al, 2024) are key elements in meeting shareholders expectations and may reduce opportunistic disclosure practices in corporate reports (Al-Shaer, Malik & Zaman, 2022).

Sustainability reports may be understood as documents that seek to inform all stakeholders on the effects that company actions have on the economy, society, and environment over a specific time frame. Given that these reports are available to all internal and external stakeholders, they serve as a means for managers to share evidence on company performance in terms of sustainability. From this perspective, transparency could lead to a decrease in information asymmetry between managers and investors, which influences the decision-making processes (Monteiro & Goncalves, 2025; Albitar, Abdoush & Hussainey, 2022; Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero, 2019). Monteiro & Goncalves (2025) emphasise that information asymmetries seek to avoid detrimental implications and promote favourable ones based on impression management strategies. Management may adopt these strategies to portray economic events in a way that provides material and social advantages and keeps them protected, particularly with respect to sustainability reporting. For example, companies could use sustainability disclosure to legitimise themselves in front of stakeholders, hiding concerns regarding their sustainable development plans and typically giving a better-than-real picture of their overall status. Likewise, narrative strategy may be considered a challenge for accounting research in an increasingly complex and rich information environment.

Perkiss et al (2021) associate impression management with a strategy to control the pressure of stakeholders, as well as to match business goals with society trends. The use of impression management techniques offers managers a significant and expanding potential to benefit from published information. Sustainability reports increase the likelihood of opportunistic discretionary disclosure because they include narrative content that may be extensive and more complex. In these circumstances, managers aim to minimise and hide inadequate socially responsible performance to reduce and avoid potentially risk associated with lower performance, such

as a decline in reputation, loss of market value, and customer satisfaction (Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero, 2019; Osma & Guillamon-Saorin, 2011).

Impression management theory (Goffman, 1959) represents a basis for manipulating user views through narrative disclosure. Similar assumptions are emphasised by Yang, Bao & Zhang (2024). Agency theory draws attention to the conflict of interest that may exist between managers and stakeholders. Information asymmetry will result from the ability of managers to take advantage of several data that stakeholders cannot access. Then, information asymmetry could have several repercussions, including a decline in trusting accounting data and the dissemination of inappropriate decisions among stakeholders (Monteiro & Goncalves, 2025; Makhoulouf, 2022). The theory of voluntary disclosure asserts that managers tend to provide more favourable information and less negative evidence (Monteiro & Goncalves, 2025). Social identity theory asserts that individuals act similarly within a group with which they identify. Multiple social identities will be present in the person's self-concept as they perform various social roles and identify with various social categories. All these theoretical approaches combined support the statement that women directors could change the group dynamics and extend the horizons, being receptive to multiple perspectives (Albitar, Abdoush & Hussainey, 2022; Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero, 2019).

Researchers' approach on the relationship between corporate governance and impression management varies by addressing topics that consider both financial and non-financial dimensions. For example, Osma & Guillamon-Saorin (2011) investigate annual results press releases for a sample of Spanish companies between 2005 and 2006 and notice that impression management is limited by strong corporate governance policies. According to Makhoulouf (2022), audit committee characteristics such as independence, financial knowledge, and women directors, have a negative influence on impression management. The author suggests that these mechanisms reduce financial reporting manipulation. Yang, Bao & Zhang (2024) draw attention to the relationship between ESG performance and abnormal positive tone in annual reports, concluding that strong ESG performance motivates managers to expose information using an overly positive tone. Furthermore, Kayed & Alta'any (2025) study a sample of Jordanian banks for the period between 2010 and 2019, demonstrating that financial performance is negatively associated with the tone of disclosure in annual reports, while Solomon et al (2013), through a qualitative approach using interview as the main research method, address the theoretical basis of Goffman, analysing social and environmental reporting. Their main results highlight that companies tend to present a positive overview, mainly because they are afraid of looking unprofessional to their investors.

With significant research identified in the preceding scientific literature, there are still gaps to be filled in, due to various impression management techniques and corporate governance mechanisms previously analysed. Thus, this research concentrates on different specific proxies and a particular geographic setting for which the research hypotheses asserted below are verified.

RH1. A higher percentage of women directors is associated with decreased impression management techniques.

RH2. A higher percentage of women directors has a significant impact on the optimism level in sustainability reporting.

3. Research Methodology

This study aims to examine the impact of board women directors, used as a proxy for corporate governance, on the narrative tone of sustainability reporting, by examining several specific impression management strategies. According to previous literature (Ben-Amar et al, 2022; Makhoulouf, 2022; Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero, 2019), women directors are associated with a higher degree of transparency in sustainability reporting, ethical behaviour, and lower risk of disclosure manipulation. In addition, several control variables are considered in the analysis to reflect a clear picture of company-level characteristics.

3.1 Sample and Data Collection

This research includes primary and secondary data. The secondary data source is represented by Thomson Reuters Eikon database, which compiles financial and non-financial information at the company-level, while primary data is represented by sustainability reports disclosed by companies and manually collected from their official websites. The initial sample consists of records for the time frame between 2022 and 2024. However, by filtering the results, a scarcity of the data reported for 2024 is noticed. Second, the geographical area is limited to the Eastern European region due to its specific political and economic characteristics, and

companies from the financial industry are dropped. Third, companies with missing data are eliminated and the two databases are merged, resulting in a final sample of 50 valid observations for the years 2022 and 2023. Primary and secondary data collection and processing are performed in *Microsoft Excel*. Then, *NVIVO15* is used for the content analysis of the reports, while *STATA19* facilitates statistical analysis and panel regression estimation to verify the two research hypotheses.

3.2 Research Variables

The research variables are presented in Table 1. This study includes three dependent variables, as proxies for impression management, computed based on the number of pages (LENGTH_PAGES), total number of words (LENGTH_WORDS), as well as positive and negative words. To identify positive and negative words, the dictionary developed by Loughran & McDonald (2011) was used. Their classification of optimistic versus pessimistic words is created especially for business text analysis. Then, in line with prior studies (Al-Sayani et al, 2024; Yang, Bao & Zhang, 2024; Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero, 2019), the level of optimism (OPTIMISM_LEVEL) is computed based on the specific formula displayed in Table 1.

Table 1: Research variables

Variables	Name	Description
Dependent variables		
LENGTH_PAGES	Length pages	Total number of pages (natural logarithm)
LENGTH_WORDS	Length words	Total number of words (natural logarithm)
OPTIMISM_LEVEL	The level of optimism in company's report	(positive words – negative words) divided by (positive words + negative words)
Independent variable		
BOARD_DIVERSITY	Board gender diversity	Percentage of women directors in the board
Control variables		
ROA	Return on Assets Ratio	Net income divided by total assets
LEV	Financial Leverage	Total liabilities divided by total assets
SIZE	Company size	Total assets (natural logarithm)
BOARD_SIZE	Board size	Total number of board members

The independent variable is measured based on a corporate governance mechanism, the percentage of women in board (BOARD_DIVERSITY), while control variables are both related to financial (ROA, LEV, SIZE) and non-financial (BOARD_SIZE) characteristics. Furthermore, industry and country dummies are considered, similar with previous research (Yang, Bao & Zhang, 2024; Hamza, Mezgani & Jarboui, 2023; Ben-Amar et al, 2022; Makhoulouf, 2022 and Osma & Guillamon-Saorin, 2011).

3.3 Regression Estimation

Three random-effects GLS regression models are estimated to identify the influence exerted by corporate governance on the narrative tone in sustainability reporting. In Model 1 the proxy for impression management is LENGTH_PAGES, the equation being presented as follows:

$$\text{LENGTH\_PAGES}_{it} = \beta_0 + \beta_1 \text{BOARD\_DIVERSITY}_{it} + \beta_2 \text{ROA}_{it} + \beta_3 \text{LEV}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{BOARD\_SIZE}_{it} + \mu_{it} + \varepsilon_{it}.$$

where the dependent variable (LENGTH_PAGES) may be associated with the transparency level, β_0 is the constant, t represents the period, while i is the company. Industry and country fixed-effects are reflected by μ_{it} , and ε_{it} is the error term. They are considered to control for the unobservable heterogeneity that affects managers' decisions, also operationalised in previous studies (Yang, Bao & Zhang, 2024; Ben-Amar et al, 2022; Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero, 2019).

In Model 2 the dependent variable is replaced by LENGTH_WORDS which may suggest concise and clear information disclosed by companies. The regression equation is exposed as follows:

$$\text{LENGTH\_WORDS}_{it} = \beta_0 + \beta_1 \text{BOARD\_DIVERSITY}_{it} + \beta_2 \text{ROA}_{it} + \beta_3 \text{LEV}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{BOARD\_SIZE}_{it} + \mu_{it} + \varepsilon_{it}.$$

Model 3 includes the level of optimism (OPTIMISM_LEVEL) as the dependent variable. This indicator promotes an accurate assessment of overall disclosure and balanced exposure of information. The equation is estimated as follows:

$$\text{OPTIMISM\_LEVEL}_{it} = \beta_0 + \beta_1 \text{BOARD\_DIVERSITY}_{it} + \beta_2 \text{ROA}_{it} + \beta_3 \text{LEV}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{BOARD\_SIZE}_{it} + \mu_{it} + \varepsilon_{it}.$$

All variables are described in Table 1.

4. Results

4.1 Descriptive Statistics and Correlation Analysis

Descriptive summary of the main statistical indicators (mean, standard deviation, minimum and maximum) is presented in Table 2 for all variables included in the analysis, except for industry and country dummies.

Table 2: Descriptive statistics

Variables	Mean	Standard Deviation	Min	Max
LENGTH_PAGES	4.465	0.742	2.833	5.733
LENGTH_WORDS	10.478	0.710	8.572	11.572
OPTIMISM_LEVEL	-0.036	0.185	-0.485	0.382
BOARD_DIVERSITY	19.427	13.629	0.000	57.143
ROA	0.059	0.105	-0.309	0.405
LEV	0.562	0.244	0.107	1.047
SIZE	21.591	1.538	17.952	24.549
BOARD_SIZE	8.740	3.669	2.000	24.000

Two proxies for impression management are represented by the number of pages for each report (LENGTH_PAGES) and the number of words, respectively (LENGTH_WORDS), measured as natural logarithms. Their average values and standard deviation are comparable with those exposed by Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero (2019). Moreover, impression management is measured based on the optimism level (OPTIMISM_LEVEL) that has a negative average value of -0.036, which could be explained by the lower number of positive words compared to negative words in company reports, similar to Kayed & Alta'any (2025), and contrary to Al-Sayani et al (2024), Yang, Bao & Zhang (2024), Albitar, Abdoush & Hussainey (2022), and Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero (2019). The average value for the percentage of women within board of directors (BOARD_DIVERSITY) is 19.427 and the board has on average less than 9 members (BOARD_SIZE).

In Table 3 Pearson coefficients and their statistical significance at 5% are reported. The correlation matrix indicates a low or moderate level of correlation between the variables for all dependent and independent variables. Corporate governance mechanisms (BOARD_DIVERSITY and BOARD_SIZE) are not correlated, excluding multicollinearity and supporting their use in regression models. These results are contrary to those of Osma & Guillamon-Saorin (2011), who find a strong correlation between several corporate governance variables they used. The positive and statistically significant correlation (0.891**) between LENGTH_PAGES and LENGTH_WORDS is similar to Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero (2019), but it does not represent a significant issue, given the fact that for each variable a different regression model is estimated. Additionally, the positive correlation of financial leverage (LEV) and company size (SIZE) with the level of optimism (OPTIMISM_LEVEL) is similar with Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero (2019) and contrary to Yang, Bao & Zhang (2024).

Table 3: Correlation analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) LENGTH_PAGES	1.000							
(2) LENGTH_WORDS	0.891**	1.000						
(3) OPTIMISM_LEVEL	-0.146	-0.057	1.000					
(4) BOARD_DIVERSITY	-0.186	-0.066	0.149	1.000				
(5) ROA	0.045	0.081	-0.129	-0.094	1.000			
(6) LEV	0.116	0.072	-0.022	-0.032	-0.354**	1.000		
(7) SIZE	0.437**	0.570**	-0.123	0.002	0.244	0.299**	1.000	

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(8) BOARD_SIZE	-0.079	0.028	0.065	0.126	0.037	-0.076	0.406**	1.000

** p<0.05.

The findings suggest that, for Eastern European companies, gender diversity of the board and the narrative tone used in sustainability reports are not directly correlated. The econometric approach is further implemented to bring clarity to these results.

4.2 Regression Results

Random-effects GLS panel regressions are estimated to test research hypotheses. This approach is similar to Hamza & Jarboui (2024), considering industry and country dummies, in line with Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero (2019). Table 4 shows mixed results for the influence exerted by corporate governance, measured based on board gender diversity (BOARD_DIVERSITY) on the narrative tone used in sustainability reporting, measured through three specific impression management variables. The main findings draw attention to the reduced risk aversion, conservative style, and ethical dedication of women directors.

Table 4: Regression analysis

Independent and control variables	Dependent variable: LENGTH_PAGES (Model 1)	Dependent variable: LENGTH_WORDS (Model 2)	Dependent variable: OPTIMISM (Model 3)
	β (t-stat)	β (t-stat)	β (t-stat)
BOARD_DIVERSITY	-0.007 (-0.767)	-0.008 (-0.856)	0.005*** (3.162)
ROA	-1.808* (-1.700)	-1.529 (-1.509)	0.607*** (2.917)
LEV	-1.434** (-2.186)	-1.368** (-2.202)	-0.522*** (-3.109)
SIZE	0.278*** (2.795)	0.360*** (3.876)	-0.009 (-0.249)
BOARD_SIZE	-0.026 (-0.685)	-0.051 (-1.399)	-0.018** (-2.553)
Constant	-1.737 (-0.935)	3.104* (1.791)	0.304 (0.424)
Observations	50	50	50
Number of companies	42	42	42
R-squared	0.7194	0.7086	0.3950
Country fixed-effects	Yes	Yes	Yes
Industry fixed-effects	Yes	Yes	Yes

*** p<0.01, ** p<0.05

Model 1 and Model 2 emphasise the negative influence exerted by the gender diversity mechanism of corporate governance on the number of pages (LENGTH_PAGES) and number of words (LENGTH_WORDS) in Eastern European companies reports. These results suggest that boards with a higher proportion of women directors provide sustainability reports with shorter and less extensive information. These results may be explained in the light of the social identity theory discussed by Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero (2019). This theory asserts that gender stereotypes impact the way men and women lead a company and the authors' findings support the idea that there are significant differences in language and communication styles. Thus, the first research hypothesis (RH1. A higher percentage of women directors is associated with decreased impression management techniques) is validated in terms of direction, the negative

coefficient showing an inverse proportionate relationship. However, it could not be validated in terms of significance for neither the number of words nor the number of pages.

Even if in Model 1 and Model 2 the influence of gender diversity is negative, Model 3 shows a positive and significant impact exerted on the level of optimism in sustainability reporting, the coefficient being 0.005 ($p < 0.01$). These results are contrary to Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero (2019) and outline that board gender diversity is directly linked with a higher optimistic tone. This tone may suggest better sustainability performance, avoid information asymmetry between managers and stakeholders, and increase credibility. Consequently, the narrative information presented in the reports underscores the higher quality of sustainability data found in companies with more diverse boards, henceforth, increasing confidence among stakeholders. Therefore, the results in Model 3 empirically support the second research hypothesis (RH2. A higher percentage of women directors has a significant impact on the optimism level in sustainability reporting), being comparable with Albitar, Abdoush & Hussainey (2022), who emphasise that positivity of CSR tone is significantly impacted by women on the board.

Related to the control variables, it is found that the number of board members (BOARD_SIZE) does not influence the narrative tone of sustainability reporting, regardless of which impression management variable is used. These findings are in line with Albitar, Abdoush & Hussainey (2022). Financial leverage (LEV) exerts a negative and statistically significant influence in all three regression models, contrary to Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero (2019).

Multicollinearity is checked for each estimated regression model based on the variance inflation factor (VIF). Regarding tolerable VIF levels, prior research exposes mixed evidence. Although 10 is the most commonly used level, the economic literature also suggests a maximum of 5 or even 4 to be considered. Therefore, a VIF of 1 is typically interpreted as indicating that there is no association between a predictor and the other predictor variables, while a VIF of 4 or 5 indicates significant multicollinearity issues (Kayed & Alta'any, 2025; Al-Sayani et al, 2024; Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero, 2019). In this research, the VIF values are lower than 2, complying with the general accepted limits and indicating that multicollinearity does not represent a significant concern in the analysis.

Overall, empirical evidence emphasises that a higher percentage of women on the board may be associated with a lower use of impression management. Particularly, in line with assumptions from social identity theory, it is highlighted that boards with more women directors are more orientated towards diminishing the length of sustainability reports and disclosing information with an optimistic tone.

The social identity theory states that having women on corporate boards improves group dynamics by encouraging more receptivity to diverse perspectives, adding heterogeneity in decision-making processes. From this perspective, gender could be associated with a social identity, since women behave according to the gender group with which they identify. Therefore, because they believe that their features are indicative of a specific social category, women directors are less likely to act unethically in the workplace (Albitar, Abdoush & Hussainey, 2022; Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero, 2019).

Therefore, Model 1 and Model 2 draw attention to the idea that women playing managerial roles exhibit more collaborative language and communication styles than men, which is consistent with the transformational leadership style and the role of women in gender. Women directors restrict the tendency of managers to present a more positive representation of their sustainability reporting by limiting their use of the freedom associated with narrative disclosures. From this perspective, Model 3 complements the overview and outlines that board diversity increases the use of an optimistic tone that may support a clearer understanding of sustainability reports.

5. Conclusion

Using the lens of impression management, this research examines the leading and controlling role attributed to women directors, connected to the quality of information disclosed in sustainability reports. Specifically, this study analyses the influence of women directors on the narrative tone of sustainability information in terms of conciseness, clarity, and balance.

According to research hypotheses, it may be summarised that diversity-related mechanisms of corporate governance reduce the risk of impression management techniques in sustainability reporting. Women directors are associated with a more balanced information. Furthermore, this study links the impact of women directors with agency, voluntary disclosure, and social identity theories, emphasising that the presence of

women within board could reduce conflict of interest and information asymmetry driven by management opportunistic behaviours and impression management, respectively (Monteiro & Goncalves, 2025; Makhoul, 2022). Additionally, considering the social identity theory, Model 1 and Model 2 suggest that boards with more women directors tend to disclose clearer and shorter (hence, more concise) but less complex sustainability reports, characterised through a higher level of optimism, according to Model 3 (Albitar, Abdoush & Hussainey, 2022; Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero, 2019).

This research contributes to the literature in several ways. First, it shows that a strong corporate governance mechanism, namely gender diversity, leads to less manipulation of narrative disclosure. To our knowledge, there is a scarcity of studies investigating board diversity characteristics correlated with impression management techniques. Second, the contribution is ensured by complementing existing studies with different measures for impression management. In this regard, it may be considered that this study is complementary to previous research conducted by Yang, Bao & Zhang (2024) and Garcia-Sanchez, Suarez-Fernandez & Martinez-Ferrero (2019). Third, the results may be useful for managers, investors, and government representatives in their attempt to assess how board diversity impacts sustainability disclosure.

In conclusion, several limitations and future research directions could be briefly highlighted. First, the sample is restricted to a limited number of countries given the geographical region of Eastern Europe analysed. Second, this study examined a short period, represented by the reporting years 2022 and 2023. These limitations need to be addressed in future research that may extend the sampled countries and companies, as well as the time frame. Second, this research draws attention to a single corporate governance mechanism that may influence the narrative tone of sustainability reporting. Future studies could include complementary gender proxies, which may strengthen the topics analysed. Third, research perspectives could be extended by including other measures for impression management, complementing the approach with an in-depth content analysis of the sampled reports.

Acknowledgements

This paper was co-financed by the Bucharest University of Economic Studies during the PhD program.

Ethics declaration: The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report. They certify that the submission is original work and is not under review in any other publication.

AI declaration: During the preparation of this study, the authors did not use any Generative AI or AI-assisted technologies.

References

- Albitar, K., Abdoush, T. and Hussainey, K. (2022) "Do corporate governance mechanisms and ESG disclosure drive CSR narrative tones?", *International Journal of Finance & Economics*, Vol. 28, No. 4, pp 3876-3890.
- Al-Sayani, Y.M., Al-Matari, E.M., Nor, M.N.M., Amran, N.A. and Alsayani, M.A. (2024) "Board chairman characteristics and impression management: an empirical investigation. Further analysis", *Corporate Governance*, Vol. 24, No. 1, pp 198-223.
- Al-Shaer, H., Malik, M.F. and Zaman, M. (2022) "What do audit committees do? Transparency and impression management", *Journal of Management and Governance*, Vol. 26, pp 1443-1468.
- Bassyouny, H., Abdelfattah, T. and Tao, L. (2022) "Narrative disclosure tone: A review and areas for future
- Ben-Amar, W., Bujaki, M., McConomy, B. and McIlkenny, P. (2022) "Disclosure transparency and impression management: A textual analysis of board gender diversity disclosures in Canada", *Corporate Social Responsibility and Environmental Management*, Vol. 29, No. 5, pp 1247-1265.
- Bojan, A.M. (2025) "Disclose or Not Disclose? An Investigation into The Relationship between Corporate Governance Mechanisms and Impression Management in The Sustainability Reporting", *International Journal of Accounting and Economics Studies*, Vol. 12, No. 5, pp 43-52.
- Garcia-Sanchez, I.M., Suarez-Fernandez, O. and Martinez-Ferrero, J. (2019) "Female directors and impression management in sustainability reporting", *International Business Review*, Vol. 28, pp 359-374.
- Goffman, E. (1959) *The presentation of self in everyday life*, Doubleday Anchor Books, New York.
- Hamza, S. and Jarbou, A. (2024) "ESG performance and disclosure quality: does a well-balanced board of directors matter when impression management occurs?", *EuroMed Journal of Business*, Vol. ahead-of-print, No. ahead-of-print.
- Hamza, S., Mezgani, N. and Jarbou, A. (2023) "CSR as an impression-management strategy: the joint effect of disclosure tone management and earnings management", *Sustainability Accounting, Management and Policy Journal*, Vol. 14, No. 6, pp 1126-1149.
- Kayed, S. and Alta'any, M. (2025) "Disclosure tone: information or obfuscation? Evidence from an emerging market", *Accounting Research Journal*, Vol. ahead-of-print, No. ahead-of-print.

- Leung, S., Parker, L. and Curtis, J. (2015) "Impression management through minimal narrative disclosure in annual reports", *The British Accounting Review*, Vol. 47, No. 3, pp 275-289.
- Loughran, T. and McDonald, B. (2011) "When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks", *The Journal of Finance*, Vol. 66, No. 1, pp 35-65.
- Loughran, T. and McDonald, B. (2016) "Textual Analysis in Accounting and Finance: A Survey", *Journal of Accounting Research*, Vol. 54, No. 4, pp 1187-1230.
- Makhlouf, M.H. (2022) "Audit committee and impression management in financial annual reports: evidence from Jordan", *EuroMed Journal of Business*, Vol. 19, No. 3, pp 462-485.
- Melloni, G., Stacchezzini, R. and Lai, A. (2016) "The tone of business model disclosure: an impression management analysis of the integrated reports", *Journal of Management & Governance*, Vol. 20, pp 295-320.
- Monteiro, A.F. and Goncalves, R.S. (2025) "Impression management in sustainability disclosures and information asymmetry: The case of Brazilian public companies", *Journal of Cleaner Production*, Vol. 486, 144483.
- Osma, B.G. and Guillamon-Saorin, E. (2011) "Corporate governance and impression management in annual results press releases", *Accounting, Organizations and Society*, Vol. 36, pp 187-208.
- Perkiss, S., Bernardi, C., Dumay, J. and Haslam, J. (2021) "A sticky chocolate problem: Impression management and counter accounts in the shaping of corporate image", *Critical Perspectives on Accounting*, Vol. 81, 102229.
- research", *Journal of International Accounting, Auditing and Taxation*, Vol. 49, 100511.
- Solomon, J., Solomon, A., Joseph, N.L. and Norton, S.D. (2013) "Impression management, myth creation and fabrication in private social and environmental reporting: Insights from Erving Goffman", *Accounting, Organizations and Society*, Vol. 38, pp 195-213.
- Yang, X., Bao, J. and Zhang, K. (2024) "Environmental, social and governance (ESG) performance and abnormal positive tone", *Sustainability Accounting, Management and Policy Journal*, Vol. 16, No. 2, pp 351-388.

Leadership Traits Maintaining Work Engagement During Change Negotiations

Kristiina Brusila-Meltovaara¹, Lasse Torkkeli² and Johanna Pennanen

¹LAB University of Applied Sciences, Lahti, Finland

²LAB University of Applied Sciences, Lappeenranta, Finland

kristiina.brusila-meltovaara@lab.fi

lasse.torkkeli@lab.fi

johanna.elina.p@gmail.com

Abstract: Work engagement, defined as a positive, motivational state of dedication and absorption in one's work, is important for both occupational well-being and for organizational performance. Individuals experiencing work engagement are motivated to develop and voluntarily act in a way that benefits the workplace. From an organizational perspective, work engagement enhances the financial success of an organization and the commitment of its employees. However, during times of organizational change, particularly in restructuring scenarios involving layoffs or redundancies, work engagement is often diminished, which can lead to less well-being and decreased organizational commitment and poor overall performance. This study looks at how leadership can actively maintain employee work engagement during and after change negotiations. It is conducted via an online survey of members of the Finnish Academic Engineers and Architects Association. This study explores how leadership traits can help sustain employee engagement during and after change negotiations. The research utilizes survey data from members of the Finnish Academic Engineers and Architects Association to identify leadership behaviors that support engagement amid uncertainty. Work engagement is found to be closely linked to well-being, which is enhanced by a positive work environment and opportunities for meaningful contribution. Leadership traits fostering clarity, empathy, and recognition play a critical role in maintaining engagement during change negotiations. The study adds to the understanding of employee-centered strategies in order to sustain motivation and commitment. It also offers insights into how leadership can promote organizational resilience during change negotiations and offers practical insights to organizations undergoing change negotiations and wanting to maintain the motivation of the employees throughout. The importance of leadership in maintaining employee engagement is also highlighted by this study.

Key words: Leadership, Leadership traits, Work engagement, Organizational change

1. Introduction

Work engagement constitutes a positive, fulfilling state of mind, characterized by vigor, dedication, and absorption, and it is widely recognized as important for organizational performance. Engagement is a motivational state fueled by job resources. (Schaufeli & Bakker, 2003; Bakker & Demerouti, 2007). Yet, models such as the Job Demands–Resources (JD-R) model have seldom been applied to coercive change contexts, which constitutes a notable omission in literature, since large-scale restructuring undermines employee well-being regardless of job cuts. Moreover, corporate downsizing creates uncertainty and anxiety among workers (Cartwright & Holmes, 2006).

Despite these risks, research has, until now, not addressed how engagement can be sustained during enforced change. This study contributes to addressing that gap by linking the JD-R framework with psychological contract and organizational trust theories. JD-R suggests that abundant job resources foster engagement, yet downsizing often depletes resources and breaches psychological contracts of the employees affected, which in turn can undermine trust (Cartwright & Holmes, 2006). Organizational trust is known to boost engagement; therefore, the present study examines how fulfilling promises and building trust during change negotiations helps employees stay engaged. Applying the empirical context of change negotiations in Finland, these findings on sustaining engagement under duress contribute to the literature by addressing the aforementioned gaps. This study looks at work engagement changes during a change negotiation process for individuals working in an organization and aims to provide recommendations which support work engagement during the change negotiation process, at both the supervisor and organizational levels.

2. Literature Review

Work engagement is a commonly used term describing the level of well-being at work. (Nunes, Proença & Carozzo-Todaro, 2024). The term work engagement has been defined as a state where a person commits and immerses oneself in his/her role in the organization (Khan, 1990). In the work environment of the 2020s, employee roles have evolved to be more autonomous, requiring broader responsibility and commitment (Nešić et al, 2020). To achieve high performance in terms of financial and customer satisfaction metrics, organizations generally expect their employees to take an initiative-driven, committed, collaborative approach that strives for

high performance standards (Manimegalai & Baral, 2018). A measurable state of employee engagement that corresponds to broadly committed, autonomous, and responsible work can be seen as work engagement (Manimegalai & Baral, 2018; Nešić et al, 2020). Work engagement is also a state of emotional and motivational fulfillment experienced during work, more enduring than flow, which is a state where one is completely absorbed in what they are doing, losing track of time and external distractions (Schaufeli & Bakker, 2003).

Work-related flow can be defined as a brief, peak experience, marked by three key elements: enjoyment of work, deep absorption, and intrinsic motivation (Bakker, 2008). Work-related flow is positively influenced by supervisory support, meaning that increased support from supervisors enhances employees' flow experiences at work (Wang, 2014). Bakker (2008) also demonstrated that the intrinsic motivation aspect of flow is positively associated with extra-role performance. As a short-term peak experience, flow can boost intrinsic motivation satisfaction. Flow is a state of intense focus and immersion in a specific task, often leading to high productivity and creativity. Work flow occurs when the challenge of the task matches the individual's skills, resulting in a feeling of being in the flow (Csikszentmihalyi, 2013; Farina, Rodrigues, & Hutz, 2018). Work engagement, on the other hand, is a more sustained, overall state of mind, characterized by vigor, dedication, and absorption in one's work. It reflects a deeper connection and commitment to the job, influenced by factors like workplace environment and leadership (Bakker & Albrecht, 2018). In essence, flow is about short-term peak experiences during tasks, while engagement is about long-term positive involvement with one's work; both can be seen to correlate with one another (Medhurst & Albrecht, 2016).

Work engagement can affect employee and organizational levels. Engaged employees are more productive than non-engaged employees (Baldoni, 2013), with less involved employees often reporting higher burnout and lower resilience (Meynaar et al, 2021). An association between work engagement, ostracism, and turnover prevails: ostracism decreases the engagement of less resilient employees but can increase the engagement of more resilient employees. Moreover, while time pressure is positively associated with both work engagement and emotional exhaustion, resilient capabilities, such as emotional coping and focused action, can mitigate the negative effects of time pressure, thus enhancing employees' ability to maintain engagement despite high demands (Kunzelmann & Rigotti, 2020).

Doughy and Casper (2021) observed a decline in work engagement as a result of staff reductions. Samreen et al (2022) noted that stress related to job insecurity increases following staff reductions, thereby weakening affective commitment through the stress associated with job insecurity. Hopkins and Weathington (2006) also found a decrease in affective commitment due to staff reductions. There is a positive relationship between affective commitment and work engagement (Choi et al, 2015)

3. Methodology

This paper seeks to establish whether work engagement changes during the change negotiation process among individuals working in the organization undergoing the change process. In doing so, it identifies leadership methods that can support work engagement during a change negotiation process. To identify leadership methods that support work engagement, a mixed methods approach, leading to a qualitative in-depth analysis, was applied as follows: First, an anonymous online survey was conducted using the Webropol software, with invitation e-mails sent to the participants - members of the Academic Engineers and Architects in Finland (TEK), which is a benefits and service organization. TEK's members are architects, engineers, and other individuals with equivalent university education in natural sciences or technology. The questionnaire was sent to individuals working in an organization where change negotiations were being conducted at the time of response, or where change negotiations had been conducted and the outcome communicated within a year prior to responding to the questionnaire. The responder could be an employee subject to the change negotiations or alternatively be working in an organization subject to change negotiations.

The basis of the questionnaire was the Work Engagement Survey (UWES) developed by Schaufeli & Bakker (2003). The survey has been validated in Finnish and has been widely used in Finnish work engagement research (Hakanen, 2009). The version of the UWES survey with 9 questions, based on a Likert scale, was used (Schaufeli, Bakker & Salanova, 2003). The questions were presented to the respondent twice in the questionnaire: first, the respondent was asked to answer the questions while recalling the time prior to the change negotiation, and after which the respondent was asked to answer the questions again based on the feelings at the time of the response. Out of the respondents, 70% worked in an expert role, 17% worked in managerial roles, 12% were white-collar workers, and 1% of respondents had other roles. The respondents were divided into different groups to further examine differences in work engagement between different respondent groups. The groups are depicted in Table 1.

Table 1: Description of Groups

Number	Description of group
1	The respondent's organization is undergoing change negotiations at the time of the survey. The respondent is not the subject of the negotiation.
2	The respondent's organization has undergone change negotiations, the outcome of which has been communicated within a year of the questionnaire. The respondent was not subject to change negotiations.
3	The respondent's organization is undergoing change negotiations at the time of the questionnaire. The respondent is the subject of the change negotiations.
4	The respondent's organization has undergone change negotiations, the outcome of which has been communicated within a year of the questionnaire. The respondent was subject to the change negotiations. The respondent's employment continues. There is no change in the content of the work/ work description.
5	The respondent's organization has undergone change negotiations, the outcome of which has been communicated within a year of the questionnaire. The respondent was the subject to the change negotiations. The respondent's employment continues and there is a change in the work content/work description.
6	The respondent's organization has undergone change negotiations, the outcome of which has been communicated within a year of the questionnaire. The respondent is employed by the organization until the end of his/her fixed-term contract or until the end of a period determined in a termination agreement following the change negotiations.
7	The respondent's organization has undergone change negotiations, the outcome of which has been communicated within a year of the questionnaire, and the person has been dismissed or has been given notice of dismissal due to the change negotiations.
not included	The respondent's organization is not undergoing change negotiations at the time of the questionnaire, and the respondent is not aware that their workplace is undertaking change negotiations. The respondent no longer works in an organization where change negotiations are undertaken or have been undertaken within a year prior to the survey. The respondent has begun working for an organization whilst change negotiations have started or finished prior to commencing employment there.

The responses to the survey are based on the Likert scale. Averages and standard deviations were calculated for the Likert scale. It should be noted that the intervals between the ratings on the Likert scale are not necessarily equal (Vehkalahti, 2019). Therefore, when examining changes in work engagement, absolute rather than relative changes are considered. Since the dimensions of work engagement have been found to be strongly correlated, an average-based composite variable can be calculated for work engagement, which serves as an overall measure of work engagement (Hakanen, 2009). In each group, the change in work engagement during the change negotiation process for each respondent is determined by the difference between the total composite variables of work engagement at the end and the beginning of the process.

4. Results

The average changes, standard deviations, standard errors of the means, group sizes, p-values produced by the paired t-test and the statistical significance of the average change in work engagement for the separate groups and the entire sample were obtained (Table 2). For Group 2, the paired t-test statistics were examined both as a separate group and as part of the combined Group 1 & 2, as Group 2 is suitable for independent examination due to the number of respondents. Based on the paired t-test, the change in work engagement measured in Group 2 was not statistically significant. In the combined Group 1 & 2, the change was statistically significant. The change was also statistically significant in all other groups and the entire sample. In Group 6 & 7, the standard deviation of the change was smaller than the average change. In other groups and the entire sample, the standard deviation was larger than the change. The standard error of the change was smaller than the average change in each group and the entire sample.

Table 2: Statistical results

Group	$\Delta\Sigma\text{IMU}$	$SD(\Delta\Sigma\text{IMU})$	$SE(\Delta\Sigma\text{IMU})$	N	p	Statistically Significant
Groups 1 & 2	-0.48	1.06	0.23	22	0.0437	Yes
Group 2	-0.36	0.97	0.24	17	0.1472	No
Group 3	-0.99	0.83	0.21	16	0.0002	Yes
Group 4	-0.78	0.98	0.11	73	2.69E-09	Yes
Group 5	-0.54	1.03	0.20	27	0.0106	Yes

Group	Δ SIMU	SD(Δ SIMU)	SE(Δ SIMU)	N	p	Statistically Significant
Groups 6 & 7	-3.04	1.11	0.37	9	3.59E-05	Yes
Entire sample	-0.85	1.14	0.09	147	8.28E-11	Yes

The results of the survey indicate that work engagement decreased significantly amongst all respondents apart from Group 2. In the combined Group 1 & 2, a statistically significant change can be observed. The change was also statistically significant in all other groups and in the total sample. The standard deviation of the change was smaller than the mean change. In the other groups and in the total sample, the standard deviation was greater than the mean change for Group 6 & 7. The standard error of the change was smaller than the mean change in every group and in the total sample. Work engagement for respondents whose employment contract was terminated due to the change negotiations, or whose fixed term employment ended, saw more significant decline in work engagement as compared to respondents who were working in organizations with ongoing change negotiations or whose employment continued after the change negotiation. Furthermore, it had no significant statistical effect on work engagement, if the respondent was under change negotiation or if the change negotiations occurred elsewhere in the organization; nor did the state of the change negotiations have a statistically significant effect. It did not matter if the change negotiations were ongoing or had ended. A change in job content due to change negotiations had no effect on work engagement. Work engagement decreases during the change negotiation process when examining the level of work engagement during and within a year after the negotiations. It is possible to maintain work engagement during and after the change negotiation process through actions by supervisors and organizational leadership, services provided by the organization, and at the daily work level.

Response data based on open-ended questions can be analyzed by identifying significant themes in the answers, which can then be categorized (Hirsjärvi et al, 2000). In a data-driven analysis, the data is broken down into simplified expressions, which are then organized into categories. Categorization can be done in such a way that the analysis results in subcategories, main categories, and super categories (Tuomi & Sarajärvi, 2018). The analysis observes the saturation of results, meaning the repetition of the same issues in the responses (Hirsjärvi Remes & Sajavaara, 2000). The analysis of data collected through open-ended questions began by mapping the number of respondents to each question. For each question, the number of respondents who answered in terms of factors supporting work engagement, the number of non-respondents, and the number of those who answered that their work engagement was not supported by the entity referred to in the question were calculated. Additionally, responses that did not answer the actual question were separated from the respondents; these were classified as unclear responses. Responses suspected of containing sarcasm and responses detailing factors that weakened work engagement were also separated. Therefore, the actual analysis only considered responses describing factors that supported work engagement. The classification of question responses is presented in Table 3, where the numbers belonging to different response categories are divided into responses related to supervisor actions, services provided by the organization, actions of the organization's leadership/management level, and daily work. Most of the responses were related to daily work factors (76%), and the least to factors related to the organization's leadership (22%).

Table 3: Response classifications

	Supervisor actions		Available services		Management level		Daily work		Wishes	
Replies	Number	%	Number	%	Number	%	Number	%	Number	%
empty/does not know	24	16	47	32	54	37	26	18	59	40
Nothing	29	20	31	21	56	38	8	5	17	12
Unclear answers	2	1	0	0	4	3	1	1	0	0
Answers	92	63	69	47	33	22	112	76	71	48
total	147	100	147	147	100	100	147	100	147	100

When inquiring about factors related to supervisors' actions that support work engagement, 92 individuals responded to the question. Six categories were identified from the responses, which saturated the answers. The highest prevalence was in the categories of 'Communication, messaging, and discussions,' 'Style of operation,' and 'Feedback and interest.'

Several wishes emerged from the results regarding communication as well as encounters and recognition (Table 4). The wishes by the employees undergoing change negotiations regarding communication included preventing rumors within the organization, communication about the change negotiations at an earlier stage, more openness, clarity and information about the process, the necessary changes, the reasons for the changes, and the future outlook. Creating team spirit during the change negotiations was also regarded as desirable with respect to wishes from employees. The results also indicate several wishes towards the encounters within the organization and the recognition by the employers, i.e., employees wish that a sense of significance is created in relation to the work the employees undertake, also in the case where the employee's contribution is no longer needed and humanity in encounters, creating a sense of empathy.

Table 4: Wishes from employees

Wishes Regarding Communication	Wishes Regarding Encounters and Recognition
More openness, clarity, and information about the process progress, changes, reasons, and future outlook.	Creating a sense of importance for the employee in relation to the work they do.
Communication at an earlier stage.	Creating a sense of significance even in situations where the employee's contribution is no longer needed in the organization due to work termination.
Preventing rumors.	Humanity in encounters, for example, a sense of empathy.
Creating a sense of team spirit.	

The results indicate actions which positively affect work engagement during change negotiations, both at the organizational level and the supervisor level. The themes of organizational-level leadership recommendations include communication, clarification, creating team spirit, treatment of employees, supporting holistic health, and work peace. At the supervisor level, recommendations relate to communication, supporting work performance and role functioning, strengthening the experience of meaningfulness, presence, and enhancing team spirit (Table 5). Recommendations in both cases, supervisor and organizational level, emphasize creating clarity in change, communication, team spirit, strengthening the sense of continuity, and recognizing the employee and their work.

Table 5: Supervisor's & Organization Level Ways to Support Work Engagement During Organizational Change

Recommendations for Supervisors	Recommendations for Organizational-level Leadership
Communicate openly and timely. Clarify the change process.	Clarify the background, reasons, goals, and progress of the change. Realistically create a sense of continuity.
Clarify priorities and goals. Support changes in work roles.	Enable a conversational atmosphere.
Strengthen the experience of meaningful work. Thank, encourage, and provide feedback	Ensure respectful, fair, and humane treatment of every employee.
Enable to act as an expert in one's own work.	Support health and mental well-being.
Be present and interested in the employee's well-being.	Offer flexible work arrangements and other support options.
Create faith in the future. Strengthen the team and group spirit.	Ensure the possibility to work in peace and to be able to focus on your work.
	Show that every employee is valuable, regardless of any changes affecting their work.

To summarize, recommendations can be drawn from this research aimed at both supervisors and the organizational level during change negotiations. For both, emphasis is placed on creating clarity in change, communication, team spirit, strengthening the sense of continuity, and recognizing the employee and their work.

5. Discussion

This study sought to clarify how leadership can help sustain employee work engagement during legislated change negotiations (Decuyper & Schaufeli, 2020; Kahn, 1990). Using the empirical country context of Finland as the example, we showed that, on average, engagement declines, and the decline is statistically steeper for employees whose contracts will be ending. As a result, this work helps in integrating leadership misbehaviors with the JD-R and psychological-contract traditions by showing that transparent, empathetic, and recognition-oriented leadership acts as a resource replenishment mechanism in forced restructuring (Bakker & Demerouti,

2007; Hopkins & Weathington, 2006). Moreover, the present study has, by differentiating between employees whose contracts end and those whose continue, revealed a boundary condition that until now, to our knowledge, has not been discussed in engagement literature (Cartwright & Holmes, 2006).

Therefore, our findings contribute to literature in three main ways: First, they help extend the JD-R model to a coercive change context. Second, they contribute by specifying micro-level leadership behaviors (transparency, empathy, recognition) that can restore resources and rebuild trust in specific organizational situations. Third, the present study contributes by clarifying boundary conditions that the mitigating effects hold for employees who remain, but not for those exiting (Dlouhy & Casper, 2021).

The main limitations of this study can be considered to be its cross-sectional design, with which we acknowledge the potential for reverse causality; as well, the single-country empirical context may limit generalizability due to the country-specific collective bargaining laws and similar context-specific contingencies. Going forward, panel data or a multi-country empirical setting may be required to ascertain further generalizability. Future research should employ longitudinal or multi-country designs to test the stability and generalizability of these effects across diverse legal and cultural settings. In the meantime, organizations that combine humane, candid leadership with tangible support for employees' holistic well-being are better positioned to safeguard engagement and sustain performance when difficult change is unavoidable.

6. Conclusion

This study sought to clarify how specific leadership traits can prevent the well-documented decline in work engagement that typically occurs in organizational change negotiations. Drawing on survey data from Finnish engineers and architects who had either experienced or were undergoing such negotiations, we found a decrease in engagement across almost all respondent groups. However, the findings also suggested that transparent communication, empathic recognition of employee contributions, and deliberate fostering of team spirit can, to an extent, prevent the decline. These micro-level behaviors can be seen as resource-replenishment mechanisms in line with the Job Demands-Resources framework: they rebuild trust, help employees make sense of the change process, and support a shared belief in the future of the organization. We conclude that, while transparent and humane leadership may not always be enough to fully prevent the engagement shock of job loss, it still clearly cushions those who stay, and therefore can be considered a strategic factor important for resilient performance after restructuring in organizations.

Ethics declaration: No ethical clearance was required for the research.

AI declaration: Table 2 was translated from the original Finnish data with the help of ChatGPT. Copilot was used to help with translations from Finnish to English, and Table 1 was translated by Copilot from Finnish to English.

References

- Bakker, A. B. (2008). The work-related flow inventory: Construction and initial validation of the WOLF. *Journal of vocational behavior*, 72(3), 400-414.
- Bakker, A.B. and Albrecht, S. (2018), "Work engagement: current trends", *Career Development International*, Vol. 23 No. 1, pp. 4-11. <https://doi.org/10.1108/CDI-11-2017-0207>
- Bakker, A. B. and Demerouti, E. (2007). The Job Demands-Resources model: State of the art. *Journal of Managerial Psychology*, 22(3), 309-328. <https://doi.org/10.1108/02683940710733115>
- Baldoni, J. (2013). Employee engagement does more than boost productivity. *Harvard Business Review*, 4.
- Cartwright, S. and Holmes, N. (2006). The meaning of work: The challenge of regaining employee engagement and reducing cynicism. *Human Resource Management Review*, 16(2), 199-208. <https://doi.org/10.1016/j.hrmr.2006.03.012>
- Choi, S. B., Tran, T. B. H. and Park, B. I. (2015). Inclusive Leadership and Work Engagement: Mediating Roles of Affective Organizational Commitment and Creativity. *Social Behavior and Personality*. Vol. 43 (6), s. 931-943. <https://doi.org/10.2224/sbp.2015.43.6.931>
- Csikszentmihalyi, M. (2013). *Flow: The psychology of happiness*. Random House.
- Decuyper, A. and Schaufeli, W. (2020). Leadership and work engagement: Exploring explanatory mechanisms. *German Journal of Human Resource Management*, 34(1), 69-95. <https://doi.org/10.1177/23970022198921>
- Dlouhy, K. and Casper, A. (2021). Downsizing and surviving employees' engagement and strain: The role of job resources and job demands. *Human Resource Management*, 60(3), 435-454. <https://doi.org/10.1002/hrm.22032>
- Farina, L. S. A., Rodrigues, G. D. R. and Hutz, C. S. (2018). Flow and engagement at work: A literature review. *Psico-USF*, 23(4), 633-642.
- Hakanen, J. (2009) Työn imun arviointimenetelmä. Työn imu menetelmän (Utrecht Work Engagement Scale) käyttäminen, validointi ja viitetiedot Suomessa. Työterveyslaitos.
- Hirsjärvi, S., Remes, P. & Sajavaara, P. 2000. Tutki ja kirjoita. 15. uudistettu painos. Tampere: Tammerpaino.

- Hopkins, S. M. and Weathington, B. L. (2006). The relationships between justice perceptions, trust, and employee attitudes in a downsized organization. *The Journal of psychology*, 140(5), 477-498. <https://doi.org/10.3200/JRLP.140.5.477-498>
- Kahn, W. A. (1990) Psychological Conditions of Personal Engagement and Disengagement at Work. *Academy of Management Journal*. Vol. 33 (4), 692–724. doi.org/10.5465/256287
- Kunzelmann, A. and Rigotti, T. (2020). How time pressure is associated with both work engagement and emotional exhaustion: The moderating effects of resilient capabilities at work. *German Journal of Human Resource Management*, 35(3), 309-336. <https://doi.org/10.1177/2397002220952741>
- Manimegalai, S. and Baral, R. (2018) Examining the mediating role of organizational trust in the relationship between CSR practices and job outcomes. *Social Responsibility Journal*. Vol. 14 (3), 433–447. <https://doi.org/10.1108/SRJ-01-2017-0007>
- Medhurst, A. R. and Albrecht, S. L. (2016). Salesperson work engagement and flow: A qualitative exploration of their antecedents and relationship. *Qualitative Research in Organizations and Management: An International Journal*, 11(1), 22-45.
- Meynaar, I. A., Ottens, T., Zegers, M., van Mol, M. M. and Van Der Horst, I. C. (2021). Burnout, resilience and work engagement among Dutch intensivists in the aftermath of the COVID-19 crisis: A nationwide survey. *Journal of critical care*, 62, 1-5.
- Nešić, A., Mitrović, S., Meško, M. and Bertoncel, T. (2020) Correlation of Trust and Work Engagement: a Modern Organizational Approach. *Amfiteatru Economic*. 22(SI 14), 1283–1300. doi.org/10.24818/EA/2020/S14/1283
- Nunes, P. M., Proença, T. and Carozzo-Todaro, M. E. (2024) A systematic review on well-being and ill-being in working contexts: contributions of self-determination theory. *Personnel Review*. Vol. 53 (2), 375-419. doi-org/10.1108/PR-11-2021-0812
- Samreen, F., Nagi, S., Naseem, R. and Gul, H. 2022. COVID-19-Induced Downsizing and Survivors' Syndrome: The Moderating Role of Transformational Leadership. *Frontiers in Psychology*. Vol. 13, 833116. DOI doi.org/10.3389/fpsyg.2022.833116
- Schaufeli, W.B. & Bakker, A.B., 2003. Utrecht Work Engagement Scale (UWES): Test Manual. Unpublished manuscript, Department of Psychology, Utrecht University.
- Schaufeli, W. B., Bakker, A. B. and Salanova, M. (2003) Utrecht work engagement scale-9. Educational and Psychological Measurement. doi.org/10.1037/t05561-000
- Tuomi, J. and Sarajärvi, A. 2009. Laadullinen tutkimus ja sisällönanalyysi. 5. uudistettu laitos. Gummerus Kirjapaino Oy, Jyväskylä.
- Vehkalahti, K. 2019. Kyselytutkimuksen mittarit ja menetelmät. Helsingin yliopisto. Viitattu 22.4.2024. Saatavissa [https://doi: 10.31885/9789515149817](https://doi:10.31885/9789515149817)
- Wang, Y. (2014). A study of authentic leadership adopting the job demands and resources approach in predicting work-related flow and job performance.

Sustainability Indicators in Practice: Insights from Expert Companies in Finland

Kristiina Brusila-Meltovaara¹, Heidi Myyryläinen² and Marja Katisko³

¹LAB University of Applied Science, Lahti, Finland

²LAB University of Applied Science, Lappeenranta, Finland

³University of Helsinki, Finland

kristiina.brusila-meltovaara@lab.fi

heidi.myyrylainen@lab.fi

marja.katisko@helsinki.fi

Abstract: This multiple case study examines how knowledge intensive expert organizations measure sustainability in Finland. Through interviews eleven leaders of expert companies, the research identifies the need for tailored measurement tools. The findings reveal a variety of available metrics and the necessity for specific indicators for expert companies. Defining sustainability presents two significant challenges, firstly the lack of a unified definition and secondly the diversity of synonyms used in the literature. Furthermore, sustainable development is a continuous and guided societal change that occurs at global, regional, and local levels. Its goal is to ensure good living conditions for current and future generations. This study found that current metrics are perceived as fragmented and are also not used purposefully. New metrics could help companies assess sustainability more comprehensively. This research also highlights a need for metrics that are easy to use and reliable. The results of this study also show a need for new, unified sustainability metrics, as current metrics are fragmented and often lack purposeful use. By developing clear and reliable metrics, companies can assess sustainability comprehensively and consistently. Sustainable leadership can be defined as an ethical practice aimed at helping groups of people achieve significant environmental or societal goals. Sustainable leadership combines strategic and operational as well as financial information and integrates it with non-financial information, to make sustainable decisions. Successful sustainable leadership is more than just financial profit; it encompasses mental, physical, and social dimensions. Organizations actively address societal challenges, invest in their communities, and consider employees in all decision-making. The leaders interviewed in this study recommend involving the entire staff in promoting sustainability and ensuring management commitment

Keywords: Sustainability, Sustainable leadership, Sustainability metrics, Expert companies, Finland

1. Introduction

Sustainable business practices are essential for ensuring planetary health and societal well-being in the long term (United Nations, 2015). Companies have increased efforts to operate sustainably (Acuti et al, 2022). Stakeholders, customers, funders and the society are demanding greater accountability and responsibility from companies, increasing the pressure to implement sustainable practices, all aims promoted by the Sustainable Development Goals (United Nations, 2015). Climate change affects nearly all industries in various ways. Companies must assess both direct physical risks, such as extreme weather events and rising sea levels, and indirect risks related to climate mitigation efforts and changing consumer preferences. Additionally, companies face liability risks associated with their role in combating climate change. Societal and political changes, and individuals' awareness of sustainable development, directly influence leadership types (Wessberg et al, 2022).

Sustainability is a timely topic for sustainable management in companies. Changes in our living environment caused by climate change make the subject current as it deepens the understanding of sustainable management, sustainability metrics in use, and potential challenges. Although management has been widely studied, this research provides an overview of sustainability and the sustainability metrics in use in Finnish expert companies (Malinen, 2023). This research aims to answer the research question of how sustainability is defined, and the sustainability metrics utilized by expert companies in Finland. The research also establishes recommendations to others with regards to sustainability metrics and measures. The research consists of a multiple case study, where eleven leaders of expert companies in Finland are interviewed and examines specifically how knowledge intensive expert organizations measure sustainability. The findings reveal a variety of available metrics and the necessity for specific and tailored measurement tools and indicators for expert companies.

2. Literature Review

The two key challenges of sustainability are the lack of a unified definition, and the variety of synonyms used in literature (Proctor et al, 2015). According to the Finnish Ministry of the Environment, a comprehensive definition of sustainability encourages implementers to consider what they aim to maintain in terms of sustainability at

the individual level, organizational or system level, and the level of outcomes (Ministry of the Environment). Sustainable development is a continuous and guided societal change that occurs at global, regional, and local levels. Its goal is to ensure good living conditions for current and future generations (Moore et al, 2017).

Sustainability research approaches have varied. Differences in the definitions of sustainability relate to relationships between economic growth and sustainability. (Heikurinen, 2014) The concepts of sustainability can be divided into two main categories: weak and strong. Weak sustainability assumes that human-made capital and natural capital are interchangeable. Depletion of natural resources can be compensated by human-developed resources. Economic growth is considered sufficient for sustainability, and limiting consumption is not seen as necessary. Strong sustainability is based on the finiteness and irreplaceability of natural resources. Human activities, both economic and social capital, within the Earth's ecosystem can at most support natural systems but not replace them. Natural resources and processes are seen as unique, and their overuse is viewed as a threat to the balance of ecosystems (Heikurinen, 2014; Dedeurwaerdere 2014). Both approaches have been criticized. For weak sustainability, it is difficult to monetarily assess sustainability capital, for example, clean air is irreplaceable, or its replacement is difficult to evaluate (Martínez-Alier, 1995; Neumayer, 2003). The strong sustainability approach has been criticized as impractical because it requires knowledge of needs of future generations (Neumayer, 2003), and because it subordinates human needs (Beckerman, 1994).

Sustainability can be described as having three fundamental pillars, which emphasize the balance between economic, social, and environmental dimensions. From an economic perspective, the dimensions are seen as different forms of capital (Dyllick & Hockerts, 2002): economic (e.g., monetary profit, buildings, infrastructure), social (e.g., people, culture), and environmental capital (e.g. raw materials, ecosystem services).

Companies that aim to practice sustainable business often seek to address sustainability issues at both local and global levels (Dyllick & Muff, 2016). This approach aligns with the theoretical framework of sustainability, which emphasizes the interconnectedness of environmental, social, and economic dimensions—commonly referred to as the three pillars of sustainability. Sustainable business enables balanced economic growth without incurring debt or over-consuming capital reserves and considers the carrying capacity of the environment and future generations. A sustainable and stable economy provides the foundation for all other aspects of sustainable development (LUT University). The integration of digital technologies and sustainable practices offers organizations the opportunity to improve operational efficiency, reduce environmental impacts, and promote holistic sustainability (Melo et al, 2024).

Responsible business, or corporate responsibility, considers the social, environmental, and economic impacts of company operations. This means a strive towards acting ethically and sustainably, exceeding mere legal requirements. Responsible business treats its stakeholders well in daily interactions (Waddock & Rasche, 2012). Sustainable business is seen as a competitive advantage for organizations (Garcia-Torres et al, 2019). Since the end of the last century, supply chains, which include activities related to product design, production, and marketing, have grown significantly driven by the pursuit of competitive advantage through specialization and cost reduction (Handfield, 1999). The change is visible at the international level, with many supply chain actors located in developing countries (Gereffi, 1999). Competition shifted from individual companies to multi-level and complex supply chains, where business relationships were intricate (Lambert & Cooper, 2000). This development brought the challenge of managing the new structure responsibly from both stakeholder and environmental perspectives.

Sustainable leadership can be defined as ethical action aimed at helping groups of people achieve significant environmental or societal goals (Bendell & Little, 2024). Sustainable leadership requires leaders with exceptional abilities. They must be able to interpret and anticipate complex situations, analyze multifaceted problems, engage groups in dynamic and adaptive organizational change, and possess emotional intelligence to manage their own emotions as part of solving complex problems (Metcalf & Benn, 2013). Adding sustainability thinking to traditional leadership or bringing leadership into sustainability projects is not enough. A critical examination of leadership can help dismantle harmful structures and enable a broader range of people to promote sustainability in various ways. Sustainable leadership requires re-evaluating traditional leadership concepts. The perspective should be broadened to include critical sociology, deep psychological reflection, and nature-inspired insights. The challenge for sustainability and corporate responsibility experts is to expand their expertise from environmental and societal themes to a deeper understanding of leadership and its development from a critical perspective (Bendell & Little, 2024).

The sustainable success aimed at by sustainable leadership means a holistic approach combining economic profit with mental, physical, and social dimensions (Hilvo et al, 2023). Sustainable leadership is a comprehensive

approach covering business, society, and the environment. The organization actively participates in addressing societal challenges, invests in its community, and considers employees in all decision-making. Ethical principles, human rights, and the environment are included in decision-making. Continuous learning is one of the prerequisites for sustainable leadership, as is resilience. Resilience refers to an organization's ability to adapt and survive changes in the operating environment, such as economic crises, technological disruptions or geopolitical disturbances. Resilience also means the ability to innovate and leverage changes in business development. Organizational flexibility should be part of the organizational culture and strategy to ensure sustainable leadership (Brusila-Meltovaara & Thompson, 2021).

To integrate sustainability in leadership, sustainability metrics and tools should incorporate both strategic, operational, and financial information and non-financial information (Mio et al, 2022). Sustainability research has shifted from broad studies to more specific ones, such as mechanisms that explain and guide companies towards sustainability. Scholars have noted the need to understand sustainability in context (Dedeurwaerdere, 2014).

3. Theoretical Framework

This study is based on a multidisciplinary theoretical framework integrating concepts from sustainability science, sustainable leadership, and corporate responsibility. The framework based on the literature review provides the conceptual basis for analyzing how expert companies in Finland define, measure, and implement sustainability. The key concepts of the theoretical framework are sustainability, weak vs strong sustainability, sustainable leadership, sustainability indicators and metrics and corporate responsibility.

Sustainability is a continuous and guided societal change aimed at ensuring good living conditions for current and future generations (Moore et al., 2017). It encompasses three interdependent dimensions—environmental, social, and economic—often referred to as the "three pillars" of sustainability (Dyllick & Hockerts, 2002). These dimensions are treated as distinct forms of capital: natural, human/social, and economic. The theoretical framework distinguishes between weak sustainability, which assumes interchangeability between human-made and natural capital, and strong sustainability, which emphasizes the irreplaceability and finiteness of natural resources (Heikurinen, 2014; Neumayer, 2003). This distinction is critical for understanding how companies prioritize and measure sustainability, especially in sectors with varying environmental impacts.

Sustainable leadership is defined as ethical and strategic action aimed at achieving significant environmental and societal goals (Bendell & Little, 2024). It involves integrating financial and non-financial information to guide decision-making and promote resilience, innovation, and stakeholder engagement (Metcalf & Benn, 2013; Brusila-Meltovaara & Thompson, 2021). This concept is particularly relevant for expert organizations that operate in knowledge-intensive sectors. The theoretical framework incorporates the use of sustainability metrics to monitor and evaluate performance across environmental, social, and economic domains. While global frameworks such as the UN SDGs offer comprehensive indicators, their practical application in SMEs and expert organizations remains challenging due to fragmentation and complexity (Parris & Kates, 2003; Mio et al., 2022).

Corporate responsibility is viewed as a strategic and ethical commitment to consider the social, environmental, and economic impacts of business operations (Waddock & Rasche, 2012). It extends beyond compliance to include stakeholder well-being, transparency, and long-term value creation. This theoretical framework informs the design of the study, the formulation of interview questions, and the interpretation of findings. It positions the research within existing scientific discourse and provides a structured lens through which sustainability practices in expert companies can be analyzed.

4. Methodology

Eleven leaders of expert companies in Finland were interviewed during with regards to sustainability issues to establish how knowledge intensive expert organizations measure sustainability and to in Finland. The interviews were undertaken between May and September 2023. Guest et al (2006) suggest that when looking at overarching themes a sample of six interviews may be sufficient to enable to develop meaningful themes and useful interpretations. This qualitative study focuses on thematic interviews with entrepreneurs or managers who lead enterprises in Finland and is grounded in a theoretical framework that views sustainability through the lens of environmental, social, and economic dimensions, as well as the concepts of weak and strong sustainability. The interviewees were purposefully selected with the following criteria. They are well established expert companies. These organizations have a stable business foundation, and they actively develop sustainability related services. They express this in their publicly available information, such as websites.

Interviews are an easily approachable research method, as people generally know what to expect when they are asked to be interviewed (Silverman, 2013). The interviewee can describe how things really are, which is the basis for qualitative interview-based research. (Hollway & Jeffersson, 2000)

The interviewees were asked for permission to undertake the interview beforehand and informed that the interviews were going to be recorded, transcribed and possibly used later for other purposes. (Pernaa, 2023) The purpose of the interview data is to comprehensively and diversely determine the sustainability metrics of companies, the visibility of sustainability in the company's strategy, and the company's values based on the views and experiences of the leaders of expert organizations. The same interviewer undertook all the interviews over teams. Teams transcribed the interviews automatically. The transcribed interviews without the company names or the names of the people interviewed were analyzed by the copilot program available for the use of staff at LAB University of Applied Sciences. Eleven questions were asked in all the interviews in the same order and can be categorized as presented in Table 1.

Table 1: Categories of questions asked

Question group	Aim of questions
Background and area of operation	The overview of the company forms the background and basis for the interview
Sustainability	Determine how sustainability is defined by the company and what sustainable actions are undertaken
Measuring sustainability	How the company measures its sustainability?
Development of sustainability and recommendations	What recommendations the organization can give to others?

5. Findings

The interviewed companies specialize in specific fields such as sustainability and responsibility consulting, communication, or digital accessibility. Many have a long history and have evolved to meet market needs. They often started as small entities and have grown over time. The stories of these companies reflect their commitment to sustainability and responsibility. (Table 2)

Table 2: Description of organizations and the story behind them

Org.	Description	Story
1	communication agency specializing in sustainable development.	Founded when sustainability communication was being discussed more in the boards of large companies. The company combines expertise in communication with an interest in sustainable development
2	company focused on sustainability and responsibility consulting	The company is small and helps businesses understand and develop their sustainability themes. Particularl focus on carbon-neutral circular economy
3	An expert company helping succeed in the transition to sustainable development	The company is about 2.5 years old. It focuses on corporate responsibility and offers its clients desirable sustainability programs
4	A specialist company focused on digital accessibility	The company has been operating for about two years and focuses exclusively on digital accessibility
5	A company focused on reducing food waste	The company is seven years old, and its business idea is to connect restaurants, cafes, and grocery stores with consumers to utilize surplus food
6	A communication and event production agency	The company was formed in 2021 from the merger of two companies. It offers communication, marketing, and event services and has over 30 employees
7	An IT company focused on business consulting and sustainability strategies	The company employs two IT experts and one manager who also consults businesses. The company offers consulting services particularly to financial sector companies.
8	A communication agency focused on sustainable business communication	The company has been operating since 1997, initially focusing on science journalism but later shifting to corporate communication. The company offers communication services such as customer magazines and online communication.

Org.	Description	Story
9	focused on mobility	The company initially focused on traditional mobility models but decided to focus exclusively on sustainable mobility in 2018
10	Communication agency specializing in sustainable development and responsibility	The company is ten years old. It undertakes projects for both the public sector and businesses.
11	A company offering SaaS tools for energy management and sustainability	The company has been in the market for 20 years and provides businesses and public entities with the ability to report and optimize energy consumption as well as document and track sustainability measures

A broad view of sustainability can be observed, covering environmental, social, and economic aspects. Focus is on reducing emissions, improving health and well-being, and promoting economic sustainability. Social responsibility, such as employee well-being, is also highlighted. Sustainability is integrated into their strategies and daily operations, often reflecting the company's core values. Sustainability is evident in the services offered, which help clients improve their sustainability. Many companies provide sustainability consulting, training, and analysis. One company focuses on digital accessibility, differing from others.

The focus areas vary among companies. Material-intensive companies emphasize environmental responsibility, while expert companies focus more on social responsibility, such as employee well-being and equality. One company bases all its operations on social responsibility. In some companies, sustainability is central to their business strategy. For others, it is part of the ownership strategy or guided by values like bold change, honesty, human-centricity, and equality. Consulting firms help clients create and implement their sustainability strategies, seeing it as a business opportunity.

Active interaction with stakeholders is crucial. Some follow responsible procurement principles and emphasize transparent communication about sustainability efforts. Challenges faced include data collection and ensuring transparency. Sustainability and related values like responsibility, equality, and transparency are strongly present in the interviewed organizations. Bold changes towards sustainable solutions, honest communication, and human-centric approaches, such as flexible work arrangements, are emphasized. Sustainability is deeply rooted in the core values and operational culture of the companies.

The interviewed companies use a variety of metrics and tools to assess sustainability, which can be categorized into environmental, social, and governance and economic metrics. The metrics used are presented in Table 3.

Table 3: Types of metrics and tools used

Environmental metrics	Carbon footprint, Ecological footprint, Material flows, Energy consumption and use of renewable energy, Amount and sorting of waste, Accident frequency.
Social metrics	Employee well-being. Well-being surveys. Equality and accessibility. Employee-related metrics.
Economic & governance metrics	Business profitability. Responsible procurement. Science Based Targets. UN Global Compact.

Almost all interviewed companies mentioned calculating and/or offsetting their carbon footprint. This is the most common and established environmental metric. A few also mentioned calculating their ecological footprint, which is a developing metric that considers the impact of activities on biodiversity. Companies focused on process industries emphasized the importance of measuring material flows, which relates to efficient resource use and the circular economy. Many monitored their energy consumption and aimed to increase the share of renewable energy. Reducing waste and efficient waste sorting were often mentioned as concrete, measurable actions. Accident frequency was also mentioned as a metric, although it is primarily a safety metric. It was included as a sustainability metric because it measures social responsibility. Companies emphasized measuring and monitoring employee well-being using various methods, such as regular well-being surveys and employee-related metrics like turnover, training time, and sick leave. One company also used equality and accessibility as metrics, considering their promotion important for social responsibility. A weekly administered survey was also used to assess burnout.

The most common metrics are monitoring carbon footprint and energy consumption. Many companies also measure employee well-being and social responsibility. Companies see the need for simple and affordable metrics that consider different starting points and focus areas. Furthermore, current metrics are perceived as

fragmented and not used purposefully. New metrics could help companies assess sustainability more comprehensively. In interviews, companies expressed a desire for metrics that are easy to use and reliable. Interviewed organizations recognize the need for new, unified sustainability metrics, as current metrics are fragmented and often lack purposeful use. By developing clear and reliable metrics, companies could assess sustainability more comprehensively and consistently. To effectively support sustainability efforts, these metrics should be both user-friendly and reliable.

Companies have also implemented various development projects, such as carbon footprint calculations, creating responsibility programs, and promoting the circular economy, with the goal of long-term sustainability improvement. Interviewees are constantly seeking new innovative ways to make their operations more sustainable. Challenges in developing sustainability are data quality and accuracy, lack of infrastructure, people's habits, and lack of customer expertise. These challenges are solved through collaboration and continuous development. Challenges can vary depending on the industry and size of the company, but the common denominator is the need for continuous improvement and adaptation. Data comparability was also seen as a challenge. Additionally, consulting companies found it challenging to measure the impact of their operations on the sustainability of clients. On the social side, the lack of absolute metrics was seen as a challenge. Measuring social impacts can also be difficult because many aspects are subjective experiences. The complexity and heaviness of metrics were also seen as partly difficult, especially for small companies. Customers may have different views on sustainability, which complicates the use of unified metrics. This is particularly emphasized when customer expectations and priorities vary. Additionally, in many customer projects, data collection and management are insufficient, making it difficult to measure sustainability. Solving these challenges requires clear communication and functional information systems.

When asked about concrete development actions and recommendations for other companies, emphasis was on practical measures and clear goals to promote sustainability, such as improving office energy efficiency, supporting employee well-being, and increasing transparency. Targeted and practical actions help achieve sustainability goals and create long-lasting positive impacts. Conducting a current state analysis is also recommended as one of the actions, preferably facilitated by an external party, to understand which factors most affect sustainability. Interviewees also recommend involving the entire staff in promoting sustainability and ensuring management commitment.

6. Discussion

Although sustainability is generally understood as a broad concept by the interviewed companies, its focus areas and manifestations vary between companies, which is in line with the key challenges of sustainability of a lack of a unified definition, and the variety of synonyms used in the literature as noted by Proctor et al, 2015. The focus areas vary due to the company's industry, size, and strategy. The concrete form of the strategy also varies. In some companies, sustainability is at the core of the business and the entire strategy is built around it. In others, it is part of the ownership strategy or guided by values. All interviewed companies emphasize the importance of stakeholders and open communication. Responsible action is seen as interaction with stakeholders. Common to all interviewed companies is the importance of concrete actions, measurable results, stakeholder collaboration, and open communication in line with the findings of Waddock & Rache (2012), that a responsible business treats its stakeholders well in daily interactions. The importance of both strategizing and then monitoring sustainability knowledge is particularly underscored. Measurement challenges and the need for new metrics are also common themes. (Parris & Kates, 2003) Many seek simple metrics, especially the SME sector, as well as metrics for measuring the impact of sustainability actions, improving supply chain transparency, and assessing the efficiency of material-intensive processes. One company's specialization in digital accessibility highlights the diversity of sustainability and how it can manifest in specific areas. (Boström, 2012)

With regards to the sustainability metrics in use, it can be noted that the metrics are divided into those related to the environment, social responsibility, and economic sustainability. Common metrics are monitoring carbon footprint, energy consumption, employee well-being surveys, and ensuring responsible procurement. There is a need for development, particularly in the consistency, usability, and comparability of metrics, as current metrics are perceived as fragmented and difficult to apply. Additionally, measuring social impacts is considered challenging because sustainability-related aspects are based on subjective experiences. Observed metrics are in line with the "three pillars" model of sustainability into economic, social, and environmental metrics (Dyllick & Hockerts, 2002).

7. Conclusion

This research aimed to establish how expert companies in Finland define and measure sustainability, and to identify the metrics and tools used. Through thematic interviews with eleven leaders of expert companies, the research shows that sustainability is broadly understood, however, its operationalization varies. A finding is the use of diverse sustainability metrics, particularly metrics related to carbon footprint, energy consumption, and employee well-being. This study highlights the need for unified, simple user-friendly sustainability metrics – specifically tailored for the need of expert organizations. The research also supports the importance of sustainable leadership, which integrates ethical decision-making, stakeholder engagement, and resilience. Companies embedding sustainability into their core values and daily operations demonstrate a proactive approach to societal and environmental challenges.

Despite its contributions, the study has limitations. The sample size is small and focused on Finnish expert companies, which may limit the generalizability of the findings. Additionally, the qualitative nature of the research means that results are context-specific and interpretive. Practically, the findings offer guidance for companies seeking to improve their sustainability practices, emphasizing the need for clear metrics, transparent communication, and inclusive leadership. Theoretically, the study contributes to the literature by applying a multidisciplinary framework that combines sustainability science, leadership theory, and corporate responsibility.

AI Declaration: Copilot was used to analyze the transcribed data. The analysis was then double checked against the original transcribed data and further analyzed and categorized by the researchers. Copilot was also used to check the list of reference to the cited references to ensure all cited references were included in the list of references and all list of reference items were also cited.

Ethics declaration: This study did not require ethical clearance.

References

- Acuti, D., Pizzetti, M. & Dolnicar, S. (2022). When sustainability backfires: A review on the unintended negative side-effects of product and service sustainability on consumer behavior. *Psychology & Marketing*, 39, 1933–1945. <https://doi.org/10.1002/mar.21709>
- Beckerman, W. (1994). 'Sustainable development': is it a useful concept? *Environmental Values*, 3(3), 191-209.
- Bendell, J. & Little, R. (2024, November). Seeking sustainability leadership. In Pretoria Leadership Conference, 13-26. Routledge. https://insight.cumbria.ac.uk/id/eprint/2167/1/Bendell_SeekingSustainability.pdf
- Boström, M. (2012). A missing pillar? Challenges in theorizing and practicing social sustainability: introduction to the special issue. *Sustainability: Science, practice and policy*, 8(1), 3-14.
- Brusila-Meltovaara, K. & Thomson Greenan, C. (2021) Leagile? Leangile?. LAB Focus, Lahti. <https://blogit.lab.fi/labfocus/en/leagile-leangile/>
- Dedeurwaerdere, T. & Edward Elgar Publishing. (2014) *Sustainability science for strong sustainability*. Cheltenham: Edward Elgar Pub. Ltd.
- Dyllick, T. & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business strategy and the environment*, 11(2), 130-141. <https://onlinelibrary.wiley.com/doi/pdf/10.1002/bse.323>
- Dyllick, T. & Muff, K. (2016.) Clarifying the Meaning of Sustainable Business: Introducing a Typology from Business-as-Usual to True Business Sustainability. *Organization & environment*, 29(2), 156-174.
- Garcia-Torres S., Albareda L., Rey-Garcia M. & Seuring S. (2019). Traceability for sustainability –literature review and conceptual framework. *Supply Chain Management*, Vol 24, Issue 1. 85-106. DOI: 10.1108/SCM-04-2018-0152.
- Gereffi, G. (1994), "The organization of buyer-driven global commodity chains: How U.S. retailers shape overseas production networks", in Gereffi, G., and Korzeniewicz, M. (Ed.), *Commodity Chains and Global Capitalism*, Praeger, Westport, CT, 95–122.
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field methods*, 18(1), 59-82.
- Handfield, R. B. (1999). *Introduction to supply chain management*, Prentice-Hall, Upper Saddle River, New Jersey.
- Heikurinen, P. 2014. Kestävyyden käsitteen ulottuvuudet. *Tieteessä tapahtuu* (32) 4, 10–16. <https://journal.fi/tt/article/view/46149>.
- Ilvo, T., & Rubanovitsch, M. (2023). Kestävä myynti & johtaminen. Nordic Way Group.
- Hollway, W., & Jefferson, T. (2000). *Doing qualitative research differently : free association, narrative and the interview method*. SAGE.
- Lambert, D. M. and Cooper, M. C. (2000), "Issues in supply chain management, *Industrial Marketing Management*, Vol. 29 No. 1, 65–83.
- LUT-yliopisto. (n.d.). Kestävä liiketoiminta Suomessa käy globaalia vastuuttomuutta vastaan. <https://www.lut.fi/fi/artikkelit/kestava-liiketoiminta-suomessa-kay-globaalia-vastuuttomuutta-vastaan>.

- Malinen, V. (2023). Dilemma johtajuus ekososiaalisen sosiaalityön kontekstissa kuntasektorilla. <http://urn.fi/URN:NBN:fi:jyu-202301251458>
- Melo, L. da S., Fernandes, R. M., Nunes, D. R. de L., Oliveira, R. M. e S. de, Silva, J. M. N. da, Avila, L. V., & Martins, V. W. B. (2024). Industry 4.0 and Sustainability: Empirical Validation of Constructs of Industry Technology and Sustainable Development. *Platforms*, 2(4), 150–164. <https://doi-org.ezproxy.cc.lut.fi/10.3390/platforms2040010>.
- Metcalfe, L. & Benn, S. (2013). Leadership for sustainability: an evolution of leadership ability, *Journal of Business Ethics*, February 2013, Volume 112, Issue 3, 369–384. <http://link.springer.com/article/10.1007/s10551-012-1278-6>.
- Ministry of Environment (n.d.). Mitä on kestävä kehitys? <https://ym.fi/mita-on-kestava-kehitys>.
- Mio, C., Costantini, & Panfilo, S. (2022). Performance measurement tools for sustainable business: A systematic literature review on the sustainability balanced scorecard use. *Corporate social responsibility and environmental management*, 29(2), 367–384.
- Moore, J. E., Mascarenhas, A., Bain, J. & Straus, S. E. (2017). Developing a comprehensive definition of sustainability. *Implementation Science* : IS, 12(1), 110–110.
- Neumayer, E. (2003). *Weak versus strong sustainability: exploring the limits of two opposing paradigms*. Edward Elgar Publishing: Northampton, MA.
- Parris, T. M., & Kates, R. W. (2003). Characterizing and measuring sustainable development. *Annual Review of environment and resources*, 28(1), 559–586.
- Pernaa, J. (2023). Opinnäytetyön ja pro gradun pikaopas: Hyödyllinen tukimateriaali ohjaajille. LUMAT-B: International Journal on Math, Science and Technology Education, 8(1).
- Proctor, E., Luke, D., Calhoun, A., McMillen, C., Brownson, R. & McCrary, S. (2015), Sustainability of evidence-based healthcare: research agenda, methodological advances, and infrastructure support. *Implement Sci.* 2015;10:88.
- Sánchez, J. L. F., Sotorrío, L. L., & Díez, E. B. (2011). The relationship between corporate governance and corporate social behavior: A structural equation model analysis. *Corporate Social Responsibility and Environmental Management*, 18(2), 91–101. <https://doi.org/10.1002/csr.244>.
- Silverman, D. (2013). *Doing qualitative research* (Fourth edition.). Sage.
- United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. <https://sdgs.un.org/sites/default/files/publications/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf>
- Zurich Insurance. (n.d.). Here's how climate change will impact businesses everywhere – and what can be done. Retrieved from <https://www.zurich.com/sustainability/planet/adapting-to-climate-change>
- Waddock, S. A. & Rasche, A. (2012). *Building the responsible enterprise : where vision and values add value* (1st ed.). Stanford Business Books, an imprint of Stanford University Press. <https://doi.org/10.1515/9780804783873>
- Wessberg, N., Hyytinen, K., Nieminen, M. & Grönroos, E. (2022). Kestävän kehityksen strategian tuki ja vaikuttavuuden systeminen kokonaistarkastelu. Työ- ja elinkeinoministeriön julkaisu 2022:44. https://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/164185/TEM_2022_44.pdf?sequence=1.

Breaking the Silence: How Advertising CEO Vacancies can Transform Gender Equality in Executive Recruitment

Thora Christiansen and Ásta Dís Óladóttir

University of Iceland, Reykjavík, Iceland

thc@hi.is

astadis@hi.is

Abstract: Despite Iceland's global reputation for gender equality, women remain significantly underrepresented among chief executive officers (CEOs), revealing a persistent gap in corporate leadership. This study examines how the (non-)advertising of CEO vacancies serves as a structural mechanism that influences transparency, inclusion, and gender dynamics in executive recruitment. While prior research has focused on networks and board-level bias, little attention has been paid to the procedural decision of whether or not to advertise leadership roles, a choice that fundamentally determines who sees, applies for, and ultimately attains power. Drawing on 52 qualitative interviews with board members and executive search consultants in Iceland, this study explores how advertising is perceived and enacted in the context of CEO recruitment. Using thematic analysis and guided by Upper Echelons Theory and Executive Labor Market Theory, four key dynamics are identified: (1) advertising as a lever for transparency and inclusion, (2) risk aversion favoring confidential processes, (3) cultural norms that subtly deter women from applying, and (4) emerging hybrid models combining public calls with targeted outreach. The findings reveal that advertising is neither neutral nor incidental; it reflects strategic tensions between control and openness, as well as between perceived stability and inclusive access. Among the dynamics identified, hybrid approaches emerge as the most actionable and adaptable for boards seeking to expand candidate pools while maintaining discretion. By reframing advertising as a structural lever rather than a procedural formality, the study offers new insights into how executive recruitment can reinforce or disrupt gendered hierarchies. It calls for normalizing inclusive, hybrid recruitment strategies as a practical priority for organizations seeking to align leadership appointments with commitments to gender equality.

Keywords: CEO selection, Executive labor market theory, Executive recruitment, Gender inequality, Inclusive recruitment, Leadership advertising, Upper echelons theory

1. Introduction

Iceland consistently ranks at the top of global gender equality indices, celebrated for its progressive policies and political representation of women. However, paradoxically, women remain markedly underrepresented in the most powerful corporate positions, particularly as chief executive officers (CEOs) (WEF, 2025; Óladóttir et al., 2024). This enduring imbalance raises a critical question: how can a country so publicly committed to gender equality continue to produce such stark disparities in private-sector leadership?

One overlooked factor lies in the structural opacity of executive recruitment, particularly in the decision of whether to publicly advertise CEO vacancies. In Iceland, these roles are rarely filled through open calls; instead, they are often secured through informal networks, quiet boardroom negotiations, or confidential headhunting processes. While these methods provide boards with control and stability, they also narrow the pool of candidates and limit access for women and other outsiders. Advertising is often treated as a bureaucratic detail rather than a strategic decision, yet it signals who is invited to compete for leadership and under what terms.

Existing research has illuminated how informal networks, gendered expectations, and board-level biases reproduce leadership inequality (Carli & Eagly, 2016; Christiansen & Óladóttir, 2022; Gunnarsdóttir et al., 2025). However, little attention has been given to the procedural mechanisms that regulate visibility, namely, whether leadership roles are openly advertised or quietly circulated. This paper conceptualizes advertising not as a peripheral practice, but as a structural instrument that mediates access, legitimacy, and equity within executive labour markets.

Iceland provides a revealing case study for several reasons. Its small size and dense professional networks amplify the effects of informal recruitment. Its strong national commitment to gender equality contrasts sharply with persistent exclusion in top corporate roles, allowing us to observe how structural mechanisms operate even in “best-case” policy environments. Understanding recruitment dynamics in this context can shed light on broader global patterns of elite exclusion and inequality.

To explore these dynamics, this paper draws on Upper Echelons Theory (UET) (Hambrick & Mason, 1984), which highlights how organizational decisions are shaped by the characteristics and experiences of senior leaders, and Executive Labor Market Theory (ELMT) (Withers et al., 2023), which examines how access to top roles is regulated by structural factors such as visibility, signalling, and elite networks. By bridging these perspectives,

the study investigates how decisions around advertising reflect both individual cognition and systemic inequality.

This paper addresses the following research questions:

RQ1: How do board members and executive search consultants understand and evaluate the decision to advertise CEO vacancies?

RQ2: What factors encourage or discourage the use of open advertising in CEO recruitment processes?

RQ3: How can advertising be leveraged as a tool for greater transparency, diversity, and equality in executive recruitment?

The remainder of the paper is structured as follows: the next section reviews relevant literature on elite labour markets, board decision-making, and gender inequality in recruitment. This is followed by a description of the study's qualitative methodology. The findings section presents four thematic dynamics identified in the data. The discussion integrates these findings with existing theory, and the paper concludes with practical and theoretical implications, limitations, and directions for future research.

2. Literature Review

The persistent underrepresentation of women in top executive positions has been widely documented, yet the mechanisms that sustain exclusion at the CEO level remain only partially understood. This chapter reviews three key bodies of literature to establish the conceptual foundation for this study: executive labour markets, board-level decision-making, and gendered recruitment dynamics. It concludes with a synthesis that integrates Executive Labor Market Theory and Upper Echelons Theory as complementary frameworks for analysing how advertising functions in the recruitment of CEOs.

2.1 Executive Labor Markets and Structural Opacity

Executive labour markets operate under conditions of scarcity, opacity, and high-stakes selection, distinguishing them from other labour market segments. At the CEO level, job vacancies are rarely advertised openly. Instead, appointments often rely on informal networks and confidential search processes, making access to such roles largely invisible to outsiders. According to ELMT (Withers et al., 2023), the *Executive Labor Market* is a structurally exclusive field, where visibility, access, and eligibility are influenced not only by qualifications but by embeddedness in elite networks. These dynamics privilege known insiders and systematically marginalize underrepresented candidates. Similarly, Cziraki and Jenter (2021) argue that the CEO labour market suffers from persistent inefficiencies as demand for capable leaders is high. However, the selection process remains narrow, opaque, and risk-averse.

Executive search consultants play a critical role in this system. Ethnographic work by Coverdill and Finlay (2014) reveals that headhunters are not neutral intermediaries; they act as gatekeepers who shape the very definitions of talent, fit, and visibility. Through exclusive client relationships and reliance on established networks, executive search processes often reinforce the status quo.

This body of work highlights a significant gap. Extensive attention has been paid to elite networks and candidate selection criteria; however, limited research has focused on the *decision to advertise* as a structural inflection point in the recruitment process. This study addresses that gap by examining how advertising practices regulate transparency and access at the top.

2.2 Board Decision-Making and Upper Echelons Theory

Boards of directors are ultimately responsible for CEO appointments, making them central actors in forming recruitment norms. Upper Echelons Theory (Hambrick & Mason, 1984) posits that strategic decisions, including recruitment, are shaped by the personal values, backgrounds, and experiences of top executives and board members. Recent work has expanded UET to explore how board composition affects leadership transitions. Boivie et al. (2025) show that boards learn from past succession experiences and tend to replicate familiar patterns, including preferences for confidentiality or open processes. Boards with prior exposure to transparent recruitment are more likely to endorse advertising, while those with limited experience tend to default to closed systems.

However, UET has also been critiqued for insufficiently theorizing how decisions are made at the micro level. Neely et al. (2020) argue that a greater focus is needed on specific choices, such as advertising versus headhunting, to understand how executive preferences translate into action. This study responds to that call by

investigating how advertising decisions reflect both individual cognition and shared institutional norms. Moreover, recent findings challenge the assumption that closed recruitment ensures better outcomes. Quigley et al. (2020) demonstrate that board judgments about CEO quality often fail to predict actual performance. This raises the question: might open advertising improve not only access, but decision quality?

2.3 Gender, Inclusion, and the Myth of Meritocracy

Gender inequality in executive recruitment is deeply rooted in both organizational practices and cultural norms. In Iceland, as in many advanced economies, significant progress has been made in gender equality in education and politics, while leadership in the private sector remains predominantly male-dominated.

Research in Iceland has shown that closed, network-driven recruitment reproduces exclusion. Christiansen and Óladóttir (2022) argue that Icelandic boards often resist appointing women to CEO positions, not due to overt bias, but rather due to an ingrained belief in “neutral” processes that, in fact, favour insiders. Gunnarsdóttir et al. (2025) similarly find that CEO succession practices reflect unexamined and outdated beliefs about leadership, fit, and continuity. Findings from research on executive search firms in a broader European context echo this critique. Tienari et al. (2013) describe how headhunters often rely on familiar networks, drawing repeatedly from male-dominated talent pools. Nevertheless, Doldor et al. (2016) offer a more nuanced view, positioning headhunters as “*accidental activists*” who, under pressure or by design, can become drivers of diversity when inclusive recruitment is prioritized.

Crucially, advertising alone does not guarantee access. Cultural norms around ideal leadership are often masculinized and influence both who applies and how candidates are evaluated. Cziraki and Robertson (2021) find that women’s qualifications are frequently discounted in executive selection, and Sölvberg (2021) shows that job advertisements themselves often encode masculine-coded leadership ideals, subtly deterring women from applying. Together, these studies underscore that formal equality mechanisms, such as advertising, must be deliberately designed to challenge bias rather than reproduce it.

2.4 Theoretical Integration

This study integrates Executive Labor Market Theory and Upper Echelons Theory to examine how decisions around advertising CEO vacancies shape access to leadership. ELMT highlights how executive recruitment is embedded in opaque and network-driven structures that privilege insiders and restrict visibility for outsiders (Withers et al., 2023). In this context, advertising functions not simply as a procedural act but as a gatekeeping mechanism that can either reinforce or challenge exclusion. UET offers a complementary lens by focusing on the role of decision-makers. Board members’ strategic preferences, particularly regarding transparency and risk, are influenced by their prior experiences and cognitive frameworks (Hambrick & Mason, 1984). These orientations influence whether advertising is embraced as a tool for inclusion or avoided in favour of confidential, network-based processes.

By bringing these perspectives together, the study positions advertising as a structural and symbolic decision point that reflects broader dynamics of power, legitimacy, and inequality in executive recruitment. Quigley et al. (2020) provide compelling evidence that board-level perceptions of candidate quality often fail to align with actual executive performance. This disconnect highlights how cognitive biases at the individual level, central to UET, and structural inefficiencies in executive labour markets, emphasized by ELMT, are deeply interconnected and influence leadership selection. Finally, research on gender and meritocracy demonstrates how even ostensibly open processes can reinforce inequality unless recruitment is deliberately inclusive (Cziraki & Robertson, 2021; Gunnarsdóttir et al., 2025). This theoretical integration provides a foundation for analysing attitudes toward advertising CEO vacancies and for considering how such practices intersect with the broader project of gender equality in leadership.

3. Methodology

This study employs a qualitative design to explore how advertising practices shape access and inclusion in CEO recruitment. Given the focus on subjective interpretation and social processes, semi-structured interviews were used to elicit rich, contextual insights from those directly involved in executive hiring (Kallio et al., 2016).

A total of 52 participants were interviewed: 44 board members (22 women and 22 men) representing all listed companies in Iceland, and eight executive search consultants (4 women and four men). One male and one female board member were interviewed from each company board to ensure gender balance and capture diverse

perspectives. Executive consultants from the leading agencies in the market were included as critical gatekeepers who influence candidate pools and advise boards on recruitment strategy.

Participants were recruited through purposive sampling (Holloway & Schwartz, 2018). Interviews were conducted in person or via video conferencing, recorded with informed consent, and transcribed verbatim. Interview protocols focused on perceptions of advertising, CEO selection practices, and reflections on gender equality in recruitment.

Thematic analysis was conducted in accordance with grounded theory principles (Strauss & Corbin, 1997), utilizing NVivo 14 for data management and coding. Open coding was initially carried out by one trained researcher to ensure consistency and familiarity with the full dataset. This approach enabled the detailed and systematic identification of concepts across cases, as emphasized by Charmaz (2014). To enhance analytical rigor, the subsequent development of axial and selective codes was conducted collaboratively. The research team co-developed themes through iterative discussions, comparisons of interpretations, and the resolution of ambiguities, ensuring both depth and shared analytical accountability. Reflexive memoing and regular discussion of the researcher's positionality were employed to maintain transparency and interpretive awareness throughout the study.

Sensitizing concepts from Upper Echelons Theory and Executive Labor Market Theory informed the analysis without imposing pre-set categories. These frameworks guided the interpretation of emergent themes, particularly those related to risk, legitimacy, access, and power. Cross-case comparisons were conducted to examine variation across gender and professional roles.

While anonymity was necessary given the small Icelandic business community, this limited contextual referencing. To further protect participant confidentiality in this close-knit setting, identifiers were limited to general role-based labels: Female Board Member (FBM), Male Board Member (MBM), and Executive Search Consultant (ESC), rather than attributing quotes to specific sectors, organizations, or individuals.

4. Findings

The analysis revealed four structural themes that illustrate how the (non-)advertising of CEO roles reflects deeper dynamics in executive recruitment: (1) advertising as a lever for equality; (2) risk management outweighing openness; (3) cultural barriers limiting women's participation; and (4) hybrid approaches as emerging practices. These themes show that the decision to advertise a CEO vacancy is never neutral; it mirrors the values of board members and the structural logic of the executive labour market.

4.1 Theme 1: Advertising as a Lever for Equality

Participants consistently described advertising as a practical mechanism for increasing transparency and broadening the candidate pool for CEO positions. For many, particularly female board members, advertising was framed as a practical tool for promoting gender equality and fairness in recruitment processes. One female board member emphasized the symbolic as well as practical value of advertising:

"When you put the job out there for everyone to see, it sends a message. It says the door is open, not just for the usual suspects but for all qualified people." (FBM)

Male board members were somewhat more cautious, often viewing advertising less as a tool for equality and more as a signal of procedural legitimacy. As one male participant noted:

"It's not always about finding a better candidate through advertising — sometimes it's about demonstrating to stakeholders that we followed a fair and open process." (MBM)

Executive search consultants acknowledged that advertising could expand candidate pools but stressed that it would only advance equality if ads were consciously designed with inclusiveness in mind. One executive search consultant remarked:

"You can advertise and still only get the same people applying if the language and criteria point to the same old profile." (ESC)

Together, these perspectives highlight that advertising is not inherently inclusive. Its potential as a lever for equality depends on deliberate design choices such as the language used, the media channels selected, and explicit encouragement directed toward underrepresented candidates.

4.2 Theme 2: Risk Management vs. Equality

A recurring theme in the interviews was the perception of risk associated with advertising. Board members and consultants alike described how concerns about business continuity, confidentiality, and reputation frequently outweighed considerations of equality and fairness. One male board member described advertising as a destabilizing act:

"If you advertise that you're replacing the CEO, you risk unsettling employees, investors, even the media. The safest route is to handle it quietly." (MBM)

Female board members recognized these concerns but often challenged their inevitability, suggesting that confidentiality was sometimes invoked as a convenient rationale for closed processes. As one woman argued:

"Of course, there are sensitive situations, but more often than not it's about boards wanting control and sticking to the networks they trust." (FBM)

Consultants confirmed that boards frequently prioritized discretion, even at the cost of narrowing candidate pools:

"Our clients often want us to run a silent process. Advertising is seen as a risk — too public, too messy. That preference keeps the pool small." (ESC)

The accounts illustrate how organizational risk management logics tend to dominate recruitment decisions, creating a structural bias toward secrecy. This, in turn, restricts opportunities for underrepresented candidates and weakens the potential for equality by advertising.

4.3 Theme 3: Cultural Barriers to Applying

Even when positions are advertised, cultural norms and perceptions about who "fits" in CEO roles were described as discouraging women from applying. Both board members and consultants noted the persistent perception of the CEO as a male figure who is decisive and readily available around the clock. One female board member explained:

"Women often don't put themselves forward unless they tick every single box. Men don't hesitate in the same way. The culture still tells women that leadership is not for them." (FBM)

Male board members also acknowledged this pattern, though sometimes framed it as an issue of women's confidence rather than structural exclusion. As one man put it:

"We'd like more women to apply, but often they hold themselves back. It's not that we don't want them — they just don't show up." (MBM)

Consultants highlighted how job advertisements themselves could unintentionally reinforce exclusion, through the use of narrow criteria and masculine-coded language:

"The wording of the ad matters a lot. If it signals an ideal CEO as always available, highly aggressive, or purely financial, women will read that as 'not me.'" (ESC)

This theme underscores that advertising alone cannot overcome cultural barriers. Without deliberate efforts to craft inclusive job profiles and challenge persistent gender norms, open calls risk reproducing existing inequalities by deterring women from applying.

4.4 Theme 4: Hybrid Approaches Combining Advertising and Executive Search

While boards and consultants often highlighted the limitations of advertising, many also pointed toward hybrid approaches as a pragmatic solution. Combining open advertising with targeted executive search was seen as a way to strike a balance between transparency and control, as well as inclusivity and stability. One male board member described the value of this balance:

"Advertising opens the door, but targeted search ensures you also bring in the candidates you know you want to consider. It's not either-or — it's both." (MBM)

Women board members often welcomed the idea of hybrid models as a compromise that could expand opportunities for women while still meeting the boards' desire for stability. As one woman put it:

"You can run an open call and at the same time approach women you know are qualified. That way, you widen the field without leaving it entirely to chance." (FBM)

Consultants confirmed that hybrid approaches are increasingly common in practice, particularly in contexts where boards want to demonstrate fairness but are wary of a fully open process:

“Most of our assignments now involve some form of hybrid — an ad in the papers, but also a targeted shortlist built behind the scenes.” (ESC)

This theme demonstrates that advertising does not have to be positioned against confidentiality and risk. Instead, it can be combined with proactive search strategies to achieve a broader, more diverse, yet still controlled recruitment process.

5. Discussion

This study examined how board members and executive search consultants in Iceland understand and enact the decision to advertise CEO vacancies, and how this practice influences access, transparency, and gender inclusion in executive recruitment. Drawing on 52 interviews and guided by Upper Echelons Theory and Executive Labor Market Theory, the analysis identified advertising as a critical but underutilized structural lever within elite hiring processes. The following discussion considers the implications of the study's four thematic findings in relation to the research questions and existing literature.

5.1 Advertising and Interpretive Frames

The first research question explored how decision-makers interpret the value and purpose of advertising CEO vacancies. The findings reveal that perceptions of advertising are not uniform but shaped by participants' roles, gender, and prior experiences. Female board members and some consultants tended to view advertising as a transparency-enhancing practice, while male board members more frequently emphasized procedural legitimacy and reputational risk. These patterns align with UET, which posits that strategic decisions are influenced by decision-makers' values, backgrounds, and organizational histories (Hambrick & Mason, 1984).

Moreover, as recent extensions of UET suggest (Boivie et al., 2025), board-level experience with past CEO transitions appears to be relevant for current openness to advertising. Participants who had observed successful open recruitment processes expressed greater confidence in its utility. This suggests that decisions about transparency are not merely driven by policy or ideology but evolve through organizational learning. This is an important nuance that extends UET's application to recruitment contexts.

5.2 Risk, Confidentiality, and Structural Opacity

The second research question explored the factors that enable or constrain open advertising. Risk mitigation emerged as a dominant logic. Boards often frame advertising as a threat to stability, citing concerns about market reaction, internal disruption, or reputational exposure. Consultants confirmed that clients often prioritize confidentiality, even when doing so restricts the candidate pool. These dynamics reflect ELMT's emphasis on structural opacity and insider control (Withers et al., 2023).

However, the findings also highlight how ELMT's framework can be refined. While structural exclusion is evident, it is reinforced not only by network access but also by institutionalized logics of risk aversion. Advertising is not rejected solely because it invites outsiders, but because it symbolically signals uncertainty. This risk-based logic supports closed recruitment, even in contexts like Iceland, where a strong formal commitment to gender equality exists. As such, the study extends ELMT by revealing how perceptions of organizational risk intersect with structural opacity in the formation of hiring norms.

5.3 Leveraging Advertising for Inclusion

The third research question considered how advertising can be used to promote greater inclusion and diversity in executive recruitment. Participants identified hybrid approaches that combine open calls with targeted outreach as a pragmatic strategy for striking a balance between transparency and control. However, the study also reveals the limitations of advertising alone. Cultural narratives around leadership continue to position the CEO role as masculine, hyper-available, and risk-tolerant. These norms deter women from applying, even when vacancies are visible.

This finding resonates with prior research on gender-coded job advertisements and the symbolic construction of leadership (Sölvberg, 2021; Cziraki & Robertson, 2021). Advertising can broaden access only if it is deliberately designed to do so. Language, tone, outreach, and framing all matter. Without inclusive messaging and active encouragement, open recruitment risks replicating the exclusions it seeks to redress.

5.4 Theoretical and Practical Implications

This study contributes to theory by bridging UET and ELMT to explain how access to executive leadership is shaped at both individual and structural levels. It refines UET by demonstrating how board members' experiential learning influences openness to transparency. It also extends ELMT by demonstrating that recruitment opacity is reinforced not only through elite networks but also through symbolic concerns surrounding legitimacy and risk.

Practically, the findings underscore that advertising should not be treated as a neutral administrative formality. Instead, it should be viewed as a strategic tool that can enhance legitimacy, broaden candidate pools, and challenge embedded patterns of exclusion. Boards and consultants committed to diversity must adopt inclusive advertising strategies, normalize open recruitment, and embed accountability for diversity outcomes into leadership succession processes.

5.5 Limitations

Several limitations should be acknowledged. First, the study relies solely on interview data. Future research could triangulate data sources, such as job advertisements, appointment outcomes, or board-level documentation, to build a fuller picture of how transparency practices function in recruitment. Second, the study is context-specific: Iceland's small size and strong policy frameworks may limit the generalizability of findings, though they also make it an ideal case for exploring entrenched exclusion within progressive environments.

Finally, the interpretive nature of qualitative research requires attention to reflexivity. While anonymity was necessary to protect participants in a tight-knit business environment, it restricted our ability to contextualize quotes by industry or company type. Additionally, the research team's own engagement with questions of gender and leadership may have shaped the coding and interpretation process.

6. Conclusion

The findings of this study suggest that the advertising of CEO vacancies is far from incidental. It is a strategic decision point that reflects deeper tensions between risk and transparency, control and inclusion. In the Icelandic context, advertising remains the exception, possibly reinforcing gendered patterns of exclusion at the top of corporate leadership.

However, advertising also holds transformative potential. When deliberately inclusive, paired with proactive outreach, and embedded in board accountability structures, it can become a lever for change rather than a symbolic gesture. Reframing advertising as a structural tool, rather than a procedural afterthought, is essential for advancing equity in executive labour markets.

Acknowledgements

The authors would like to thank the Icelandic Centre for Research (Rannís, grant no. 239880-051), the Research Fund of the University of Iceland (grant nos. 15512 and 15533), and the main supporter of the Research Center for Equal Opportunities in Economic Participation and Leadership at the University of Iceland, Arion Bank. The authors also wish to express their gratitude to their collaboration partners at Creditinfo, Gallup, GemmaQ, the Icelandic Pension Funds Association, and Nasdaq Iceland, as well as to all participants in the study.

Ethics Declaration: Ethical clearance for the research was not needed. Participants were informed of their assured anonymity and that they could withdraw from the study at any time without consequences.

AI Declaration: Artificial intelligence (AI) tools, specifically OpenAI's ChatGPT, were used in the development of this paper. AI support was applied for language refinement, clarity enhancement, and formatting in line with the conference style guidelines. The authors reviewed, verified, and revised all AI-generated texts to ensure accuracy, academic integrity, and alignment with the research findings. No AI tools were used to generate, collect, or analyse the data for this study.

References

- Boivie, S., Gee, I. H., Gentry, R. J. and Graffin, S.D. (2025) "Do boards learn to hire? The effect of board experience with CEO replacement on CEO performance", *Strategic Management Journal*, Vol. 68, No. 1, pp. 1–29. <https://doi.org/10.1002/smj.3725>
- Carli, L.L. and Eagly, A.H. (2016) "Women face a labyrinth: An examination of metaphors for women leaders", *Gender in Management: An International Journal*, Vol. 31, No. 8, pp. 514-527. <https://doi.org/10.1108/GM-02-2015-0007>
- Charmaz, K. (2014). *Constructing grounded theory: introducing qualitative methods* (2nd ed), London: SAGE Publications.

- Christiansen, T.H. and Óladóttir, G. (2022) "The board needs more courage to make the decision to hire a woman CEO", Marques, J. & Dhiman, S. (eds.), *Leading with Diversity, Equity and Inclusion*, Springer, Cham, pp. 431-447.
- Coverdill, J.E. and Finlay, W. (2014) *Contingency Headhunters: What They Do—and What Their Activities Tell Us about Jobs, Careers, and the Labor Market*, Cornell University Press, Ithaca, NY.
- Cziraki, P. and Jenter, D. (2021) "The market for CEOs", *CEPR discussion paper DP16281*.
<https://cepr.org/publications/DP16281>
- Cziraki, P. and Robertson, D. (2021) "Credentials matter, but only for men: Evidence from the S&P 500", *SSRN Working Paper*. <https://ssrn.com/abstract=3943718>
- Doldor, E., Vinnicombe, S., Gaughan, M. and Sealy, R. (2016) "Accidental activists: Headhunters as marginal diversity actors in institutional change towards more women on boards", *Human Resource Management Journal*, Vol. 26, No. 3, pp. 285–303. <https://doi.org/10.1111/1748-8583.12107>
- Fernandez-Mateo, I. and Fernandez, R.M. (2016) "Bending the pipeline? Executive search and gender inequality in hiring for top management jobs", *Management Science*, Vol. 62, No. 12, pp. 3636-3655.
<https://doi.org/10.1287/mnsc.2015.2315>
- Greguletz, E., Diehl, M. R., and Kreutzer, K. (2019) "Why women build less effective networks than men: The role of structural exclusion and personal hesitation", *Human Relations*, Vol. 72, No. 7, pp. 1234-1261.
<https://doi.org/10.1177/0018726718804303>
- Gunnarsdóttir, S., Christiansen, P.H., Óladóttir, Á.D. and Kristjánsdóttir, E.S. (2025) "Exploring Women's Leadership in CEO Appointments: A Qualitative Study of Board Member Perspectives in Iceland's Listed Companies", *SAGE Open*, Vol. 15, No. 2. <https://doi.org/10.1177/21582440251339804>
- Hambrick, D.C. and Mason, P.A. (1984) "Upper echelons: The organization as a reflection of its top managers", *Academy of Management Review*, Vol. 9, No. 2, pp. 193–206. <https://doi.org/10.5465/amr.1984.4277628>
- Holloway, E. L., and Schwartz, H. L. (2018) Drawing from the margins: Grounded theory research design and EDI studies. In L. A. E. Booysen, R. Bendl, & J. K. Pringle (Eds.), *Handbook of research methods on diversity management, equality and inclusion at work* (pp. 497–528). Edward Elgar Publishing.
- Neely, B.H., Lovelace, J.B., Cowen, A.P., and Hiller, N.J. (2020) "Meta-critiques of Upper Echelons Theory: Verdicts and recommendations for future research", *Journal of Management*, Vol. 46, No. 6, pp. 1029–1062.
- Óladóttir, Á. D., Christiansen, T. H., and Aðalsteinsson, G. D. (2021) "If Iceland Is a Gender Paradise, Where Are the Women CEOs of Listed Companies?" In Marques, J. (Ed.), *Exploring Gender at Work: Multiple Perspectives*, pp. 317–337. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-64319-5_17
- Óladóttir, Á.D., Christiansen, T.H. and Gudmundsdóttir, H. (2024) "Challenging the Status Quo: Headhunters and Gender Bias in Executive Recruitment". In *European Conference on Management, Leadership & Governance* (pp. 453-459). Academic Conferences International Limited. <https://papers.academic-conferences.org/index.php/ecmlg/article/view/3182/2819>
- Óladóttir, Á.D., Christiansen, T.H., Gunnarsdóttir, S. and Kristjánsdóttir, E.S., (2024) "Closing the gap: TMT quotas, investment strategies, and succession policies for gender equality". In *Encyclopedia of Diversity, Equity, Inclusion and Spirituality* (pp. 1-16). Cham, Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-32257-0_88-1
- Quigley, T.J., Wowak, A. J., and Crossland, C. (2020) "Board predictive accuracy in executive selection decisions: How do initial board perceptions of CEO quality correspond with subsequent CEO career performance?", *Organization Science*, Vol. 31, No. 3, pp. 720–741. <https://doi.org/10.1287/orsc.2019.1326>
- Singh, V., Vinnicombe, S. and Kumra, S. (2006) "Women in formal corporate networks: an organisational citizenship perspective", *Women in Management Review*, Vol. 21, No. 6, pp. 458-482.
<https://doi.org/10.1108/09649420610683462>
- Sölvberg, L. M. B. (2021) "Constructions of the ideal elite employee: A content analysis of job advertisements for positions in the Norwegian upper class", *Current Sociology*, Vol. 71, No. 7, pp. 1199-1216.
<https://doi.org/10.1177/00113921211059218>
- Solberg, A. G., Wathne, C. T. and Madslien, I. (2016) *Fra ord til handling: Likestillingsreform i ledelse*, Work Research Institute (AFI), Oslo. <http://www.afi.no/>
- Strauss, A. and Corbin, J. (1997) *Grounded theory in practice*. Thousand Oaks, CA: SAGE Publications
- Tienari, J., Meriläinen, S., Holgersson, C. and Bendl, R. (2013) "And then there are none: On the exclusion of women in processes of executive search", *Gender in Management: An International Journal*, Vol. 28, No. 1, pp. 43-62.
<https://doi.org/10.1108/17542411311301565>
- WEF. (2025) *Global Gender Gap Report 2025*. https://www3.weforum.org/docs/WEF_GGGR_2025.pdf
- Withers, M.C., Lee, K. H., Bermiss, Y. S., and Boivie, S. (2024) "Upper echelon employment: A review of the fundamental questions related to the executive labor market", *Journal of Management*, Vol. 50, No. 1, pp. 71–121.
<https://doi.org/10.1177/01492063231171382>

Translating Organisational Realities into the Lecture Theatre: The Power of Junior-Senior Knowledge Sharing

Bettina Falckenthal¹, Cláudia Figueiredo² and Manuel Au-Yong-Oliveira³

¹University of Aveiro, Portugal

²CIPES, DCSPT, University of Aveiro, Portugal

³INESC TEC, GOVCOPP, DEGEIT, University of Aveiro, Portugal

b.falckenthal@ua.pt

claudiafigueiredo@ua.pt

mao@ua.pt

Abstract: The systematic transfer of expertise from senior to junior professionals is a critical challenge for organizations facing demographic shifts and rapid technological change. Organisations rely on universities to foster a mindset in future professionals that empowers them to both absorb and perpetuate this transfer. This paper explores how findings from 36 semi-structured interviews with different organisational perspectives resonated with the students from Bachelor and Master programmes. The research team combines industry knowledge and experience with award winning academic research experience. The difficulty of creating trust between colleagues – especially between older and younger ones – is a topic of growing interest in an aging continent and developed world. Solutions are proposed. Bettina Falckenthal (former CEO and PhD candidate at the University of Aveiro – Doctorate in Business and Innovation (DBI) program) has delivered a series of lectures to youths on senior-to-junior knowledge sharing in organizations. This we have seen has sparked a new thinking process and approach to future work by young scholars. The importance of human capital could not be more important, including and especially in the age of AI. How not to lose out on important knowledge when seniors retire? How to best capitalize on juniors in the enterprise - and to motivate them to succeed quickly and knowledgeably – in collaboration with senior experts, perhaps nearing retirement? These issues have been discussed on a par with the importance of tacit knowledge in organizational settings. How important is trust in this type of collaboration? Serious games, a concept that appeals to generations with a digital upbringing, as well as Senior-Junior tandems (JuSeTs), linked to which we are in the process of generating intellectual property, are central to the debate. A literature review has already been performed, and artificial intelligence (AI) discussed in conjunction with the need to share – does AI promote or inhibit trust and knowledge-sharing community building? The students in attendance have stated how interesting the lectures on the topic have been and wish to learn more. Our in-depth research results are to be shared with them as we see motivation as being highly impactful on the success of both seniors and juniors in the workplace. Should older people be discarded or treasured? Given the growing shortage of human capital, expertise and tacit knowledge in an aging Europe, the topic could not be more crucial to the competitiveness of organizations in an increasingly complex and uncertain world.

Keywords: Leadership education, Seniors' expertise, Career development, Knowledge transfer competitive advantage, Human capital

1. Introduction

The core objective of our initiative (involving primary data collection and research with seniors; research and media publications; and in-person and online lectures to youths) was to address the critical challenge posed by demographic changes in Europe, particularly the aging workforce and resulting skill shortages.

The initiative explored how organizations could effectively conserve or transfer tacit knowledge, typically held by senior employees nearing retirement, to junior employees. The research team combines industry knowledge and experience with award-winning academic researcher expertise. Bettina Falckenthal, leveraging her extensive corporate experience and ongoing doctoral research at the University of Aveiro (with her co-authors who are also her PhD supervisors), has extensively lectured youths on senior-to-junior knowledge sharing within organizations, sparking a transformative thinking process among young scholars regarding their future work.

The research team have observed and researched the paradox that, even under conditions of skill scarcity, experienced and engaged employees are sent into retirement regardless of their contributions. This may be triggered by statutory age limits or as a result of organizational incentives promoting early exits. Research into the labour market situation in Europe revealed that regulations and practices vary widely across Germany, Portugal, and other EU neighbours (Paullin, 2014; Turek and Henkens, 2020; Halvorsen, 2021; van Ours, 2022) which limits transferability. Nevertheless, organisations that want to stay competitive in a globalized world need to find a solution to this paradox.

The definition and significance of “human capital” are being challenged just as the application and significance of “artificial intelligence” (AI) are evolving. Discussing with students the challenges of transferring leadership

skills, as well as the possibilities and limits of Junior/Senior tandems (JuSeTs) and AI's role in promoting or inhibiting trust and knowledge-sharing awakened considerable interest in these topics, highlighting their desire to deepen their understanding of what the future may bring – regarding evolution, advancement and inclusivity.

Organizations faced with balancing the challenges of demographic transformation and knowledge continuity need a leadership team experienced in managing a diverse workforce (Leenen, Van Heerden and Masole, 2019; Czaja *et al.*, 2020; Zander *et al.*, 2021). Trust and a sense of community foster social capital by encouraging learning, loyalty, and cross-professional connection (Wikström *et al.*, 2023). The social connections built in every step of a career significantly impact the pace and direction of an individual's progress (Salimi *et al.*, 2025). These realities are the foundations for our research on Junior-Senior knowledge sharing.

2. Methodology: Conceptual Framework, Literature Review and Thematic Analysis of Existing Interview Data

The Methodology followed a qualitative research philosophy (Saunders, Lewis and Thornhill, 2019) based on a literature review and 36 semi-structured interviews.

2.1 The Systematic Literature Review

This study applies the PRISMA approach (Page *et al.*, 2021) to review articles and conference papers on leadership education. A systematic review (SLR) was conducted in Scopus in October 2025. Only peer-reviewed English articles or conference papers in a 10-year timeframe since 2015 were considered, limited to research with a higher education focus in business or management related studies in Europe.

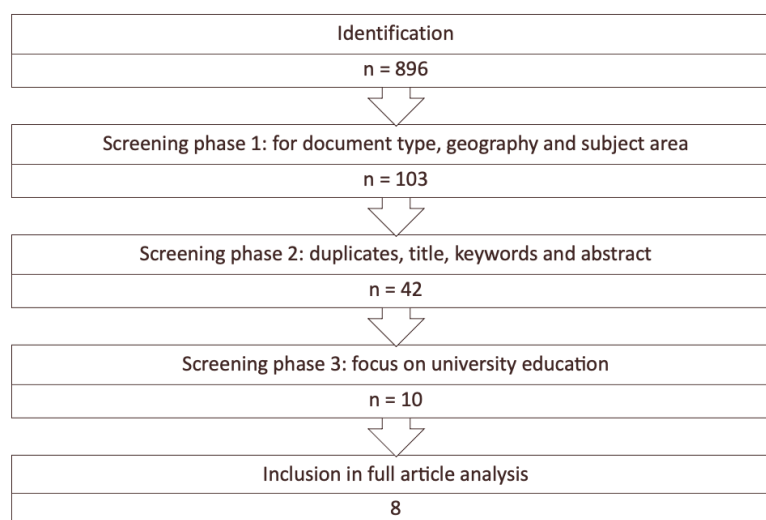


Figure 1: PRISMA Flow Diagram: Identification, Screening and Inclusion of Sources

Leadership capability has been identified as a decisive factor in career and organisational performance. Whether on project or team level, leaders have a significant influence on shaping outcomes that advance both team effectiveness and overall enterprise success (Daley and Baruah, 2021).

Our initiative expanded on leadership education research that encourages academics to offer students the opportunity to shape the lecture with their contributions (Mavin *et al.*, 2024) and to enrich and complement the standard curriculum (Laguna Sánchez *et al.*, 2021). We aimed to provide students with materials and experiences that enable critical reflection on leadership trends periodically promoted through social media (Madsen and Slåtten, 2025) and their own understanding and interpretations of leadership (López González, Fernández Espinosa and Ortiz de Montellano, 2024).

Research confirms the significance for students to develop the emotional and relational dimensions of leadership during their study program whether through real-life collaboration with senior leaders or through complex simulated opportunities (Rennemo and Vaag, 2018; López González *et al.*, 2024; Daniels *et al.*, 2025).

2.2 The Qualitative Contribution

Our research infrastructure was built around a carefully selected sample group of experts as research participants. The selection was rigorous, focusing on individuals with significant professional experience, alongside recruiters and retirees. This approach ensured the reliability of insights gathered, providing robust qualitative data through a set of 36 semi-structured interviews. The three different target groups (see table 1) were interviewed with three specific interview scripts.

Table 1: Interview participants according to "perspective" and "gender"

Perspective / Gender	Employee Perspective	Employer / Recruiter Perspective	(Early) Retiree Perspective	Total	Percentage Across Genders
Female	7 (42%)	5 (29%)	5 (29%)	17 (100%)	47%
Male	6 (32%)	6 (32%)	7 (36%)	19 (100%)	53%
Total	13 (36%)	11 (31%)	12 (33%)	36 (100%)	100%

Interview participants were assigned alphanumeric codes, with 'F' and 'M' denoting gender, 'em' indicating the employee perspective, 'er' representing the recruiter or employer perspective, and 'rt' referring to the retiree perspective. Citations are presented in the following format (examples):

- emM03 represents a male employee,
- erF11 represents a female employer/recruiter,
- rtF07 represents a female retiree.

The transcriptions of the interviews were analysed through Thematic Narrative Analysis with emphasis on themes and subject matter. For this article we selected the items that referred to "leadership" (please see table 2).

Table 2: Themes identified in the thematic analysis re. "leadership" of existing interview data

Theme or pattern identified	Highlight/summary	Code for interviewee
Trust & Credibility	Former leaders still have a large network of contacts. They will only share them if they trust the recipient to value the relationship that is being offered.	erM15
	I was lucky that the young team treated me as an equal and valued my leadership experience.	rtF08
	Doctors, engineers, and craftsmen invest years before earning their title. Yet anyone can become a leader overnight: one signature or a reshuffled org chart, and suddenly they are in charge. Yet, teams want their leaders to have some "street credibility" before they follow.	emM06
	If the juniors ask the right questions, I am happy to share my leadership expertise and to empower them.	emM03
Tacit Knowledge Transfer	Giving young leaders the tools to amplify their impact is very rewarding.	emM06
	I would employ seniors to share their tacit knowledge - not to do the job they have been doing for years.	erF11a
	As a young employee I would not have been able to succeed in my project if I had not had a senior colleague who explained the unwritten laws to me.	emF09
	I could share the unwritten laws of our organization, set an example of how to effectively address sensitive topics with a boss or within the team.	rtM08
	I enjoy seeing juniors succeed under my tutelage. That is a great reward.	rtM07
Leadership Identity & Role Transition	I would not want to compete with younger people about subject matter expertise but rather share my leadership experience.	rtF07
	Rather combine a young talent with a retired professional then continue developing advanced employees not living up to expectations.	erM14
	Sharing leadership experience with Master students feels like paying back a debt to society.	emF11b
	Juniors are expected to take on leadership of a project or team and to perform as a leader and not just deliver results.	erM04

Theme or pattern identified	Highlight/summary	Code for interviewee
	The success of a leader depends on the fit of their values and personality to the company culture. Young leaders tend to underestimate the relevance of that fit.	emM03
	It took quite some time for my younger colleagues to accept that I would pass on my leadership role and be content in a different role.	emF01
	I am happy to share my expertise and leadership experience but only with more flexibility and less overall responsibility	rtF5b
	Transferring the responsibility to lead to a junior was very liberating. I could pass on my experience without having to take the pressure.	rtM08
	If a senior leader can financially afford it (or are incentivised by their employer) to go into early retirement, they will do it and find a more inspiring role to apply their vast knowledge.	rtF5b

3. The Infrastructure

The findings from our research were presented and discussed in a number of university lectures with an international body of students, who provided additional perspectives and viewpoints for the research findings.

We introduced students to the format of Junior-Senior Tandems (JuSeTs) as a format to transfer tacit leadership knowledge. Senior experts and junior employees form the core of these tandems which operate within structured frameworks that enable frequent interaction and collaboration. Digital tools, especially those leveraging artificial intelligence, can augment these human-centric interactions by providing accessible and dynamic repositories of tacit knowledge, while also offering personalized learning experiences tailored to juniors' developmental needs (Falckenthal, Au-Yong-Oliveira and Figueiredo, 2025).

The objective was to teach the younger generation about the workplace and what they might encounter there. We aimed to provide mechanisms to improve their fast acceptance and growth in view of complex challenges in the modern and digital world. Lectures were conducted in Portugal and Germany to pass the message on how youths and more experienced seniors may and should interact for increased performance and competitiveness by organizations. Students taking different courses and from different backgrounds were targeted. In Portugal, we gathered Portuguese bachelor's students (taking degrees in management; and in languages and corporate relations) and master's students (again, master's in management students but also physics, environmental studies and tourism students, among others) – accompanied by international Erasmus exchange students (from diverse academic backgrounds). The lectures in Portugal were delivered in person and online (via Zoom) – in English – with some translation when felt necessary. News items were also written and published (e.g., in the online University of Aveiro newspaper) to ensure that the students felt the importance and significance of the lectures (please see figure 2).

News

Campus Research Education and Training Culture and Sports Awards Conferences Interviews Opinion Linhas

Conferences

Can Tacit Knowledge be shared via Serious Games & AI?

03 march 2025



Invited speaker: Bettina Falckenthal (former CEO, PhD candidate at UA – DBI program). Bettina Falckenthal presented her research in the curricular unit Management of Innovation and Technology at the University of Aveiro on 3rd March 2025. The session was well-received by the 40 students present.



In today's innovation-driven landscape, tacit knowledge – the unwritten, experience-based know-how within organizations – is a critical asset. Unlike explicit knowledge, tacit knowledge is difficult to codify and share, and its loss may lead to delaying innovation and creating a competitive disadvantage.

As increasing numbers of experts reach the legal retirement age and leave their companies, successful knowledge continuity across generations has become more crucial for the competitiveness of organizations.

Even though organizations are increasingly willing to keep senior experts on board beyond legal retirement age the cost/benefit questions are difficult to answer. In addition to the need to balance spending and ensure knowledge continuity organizations face the challenge to offer attractive ways for the younger generation to absorb tacit knowledge from senior experts. Companies are looking into options like Serious Games and AI.

This lecture explored the challenges, tools and approaches to Intergenerational Tacit Knowledge Transfer.

Students were able to test their own ability to absorb tacit knowledge by playing a "Serious Game" and having received actionable ideas for their own future research.

Serious Games ("serious" because they occur in a business environment; they also require a specific investment which may be quite high) are a "cool" and relatively novel way to ensure tacit knowledge transfer and are already being used for recruitment purposes – to ensure the right people are interested in the firm at hand (please see an example here: <https://corp.kaltura.com/resources/videos/interactive-video-example-recruiting-for-deloitte/>).

According to Bettina Falckenthal, trust is seen to be very important in tacit knowledge transfer – as in many other corporate processes – and for long-term results to prevail. E.g., job shadowing (following and observing a more experienced colleague while they address their everyday work and challenges) will only work with trust between the junior and senior parties involved. Creating a new product or service, opening up a new factory, are processes that will often only succeed if the tacit knowledge and experience exists – and so it cannot be wasted and lost when seniors retire.

The person responsible for the curricular unit Management of Innovation and Technology, Manuel Au-Yong Oliveira, was very happy with the result of the talk – which stayed close to students' needs regarding current and future employment and what to expect in the job market. DEGEIT Director Anabela Botelho welcomes these and other initiatives which bring academia closer to the professional landscape.

Figure 2: An in-person lecture on Junior-Senior Tandems and tacit knowledge transfer in Aveiro, Portugal

4. The Challenges

Companies are under pressure to keep tacit knowledge in the organization (Burmeister and Deller, 2016). In the past they have tried a variety of approaches, formats and tools. The idea of combining an experienced senior with a junior in a tandem (share a position or job for a specified timeframe) to transfer tacit knowledge has proven successful. Nonetheless it is challenging for organizations because JuSeTs have to fulfil a number of prerequisites: a) Putting two people in the same position full-time costs two salaries so they have to justify the cost for that with measurable benefits; b) Combining a senior and a junior successfully demands more than just subject matter expertise on both sides: ideally their skills are complementary, their personalities well matched and the tandem manages to build trust as fast as possible and not just at the end of the allotted time frame; c) Among the designated JuSeT partners a primary obstacle is overcoming age-related biases and stereotypes; d) Seniors may perceive juniors as inexperienced and unprepared, while juniors might view seniors as outdated or resistant to change. These perceptions can hinder trust, which is crucial for successful knowledge sharing; e) Another challenge involves the reluctance of senior employees to share their tacit knowledge due to concerns about their job security or feelings of irrelevance post-retirement and potential resistance from juniors hesitant about the relevance of knowledge from older generations; f) Additionally, integrating AI into the knowledge transfer process presents challenges, particularly in balancing technology with necessary human interactions that foster trust and genuine communication (Falckenthal, Au-Yong-Oliveira and Figueiredo, 2025).

Our research revealed a further paradox: this manifests in the ambivalent perceptions of senior employees in organisations as both cost factors and strategic assets (OECD, 2024). Legacy stereotypes shaped by historical incentives for early retirements risk perpetuating biases about reduced adaptability and relevance of older workers, obscuring their true significance in times of skill scarcity. Moreover, a focus on “high potentials” in talent management often neglects the contributions of experienced staff, impacting engagement, loyalty and knowledge continuity (von Hehn, 2016).

From our qualitative data, the following themes were identified as key factors our senior experts considered essential for juniors to internalize in their long-term career development: (A) Trust and credibility, (B) Tacit knowledge transfer, (C) Leadership Identity & Role transition (please see Table 2: Themes identified in the thematic analysis re. "leadership" of existing interview data).

These dynamics contribute to the challenge of truly embedding intergenerational collaboration as a strategic approach in organizations.

Limitations noted in the studies included difficulties in precisely quantifying tacit knowledge transfer, issues around the scalability of certain methodologies (e.g., Serious Games), and integrating AI without diminishing critical interpersonal dynamics essential for knowledge transfer.

Regarding the research effort and primary data collection process, the authors' network was leveraged. The authors, having worked in industry, prior to working in academia, made some fruitful contacts with interesting people who could help answer the research question (a purposive sample): what could make older and financially secure individuals maintain their motivation and desire to work after reaching the retirement age? Would they be interested in collaborating in Junior-Senior Tandems? And what were the motivations and reservations?

In order to keep student interest high during the lectures the mentimeter.com free tool was used to poll students on their feelings and ideas about the subject (please see figures 3 to 8). Note how seniors are seen to contribute with expertise, connections and crisis management experience (figure 3). Juniors, on the other hand, are seen to contribute with curiosity, drive and motivation (please see figure 4).

What are for you the key contributions of senior experts in a team?

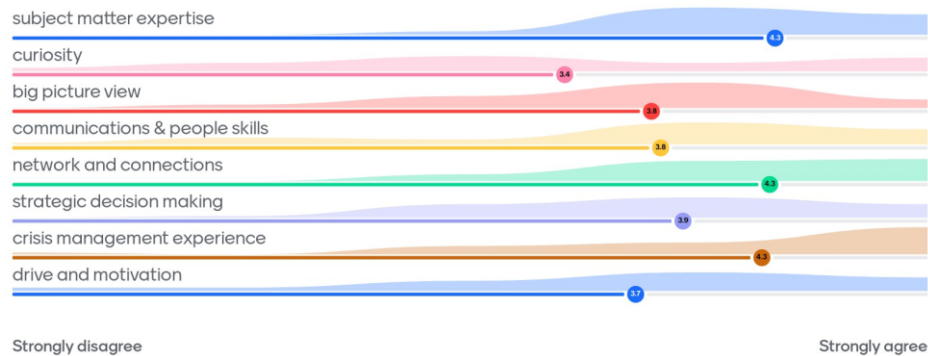


Figure 3: In lecture poll results on expected contributions of seniors

What are for you the key contributions of junior team members?

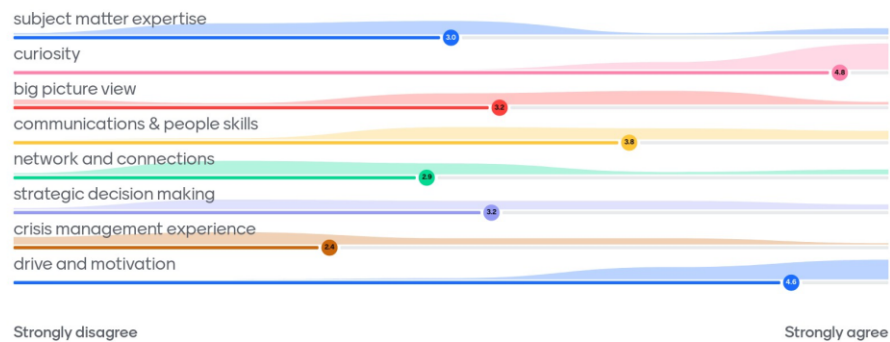


Figure 4: In lecture poll results on expected contributions of juniors

Additionally, the research recognized significant differences in the preferred learning styles highlighted in Falckenthal's comparative analyses during her lectures (please see figures 6 and 7).

Reflecting your own style of learning: Which format would you prefer to absorb tacit knowledge from somebody more experienced?

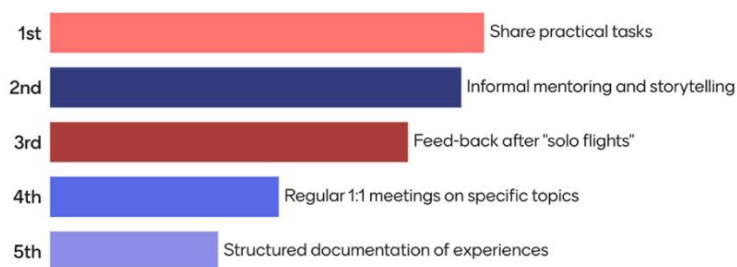


Figure 5: In lecture poll results on learning styles Group A

Reflecting your own style of learning: Which format would you prefer to absorb tacit knowledge from somebody more experienced?

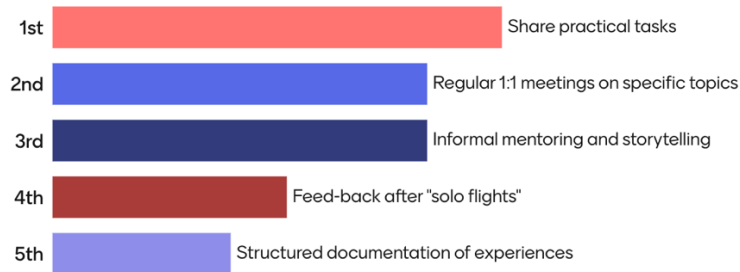


Figure 6: In lecture poll results on learning styles Group B

From your point of view: who benefits more from a Junior/Senior Tandem - the Company or the Junior?

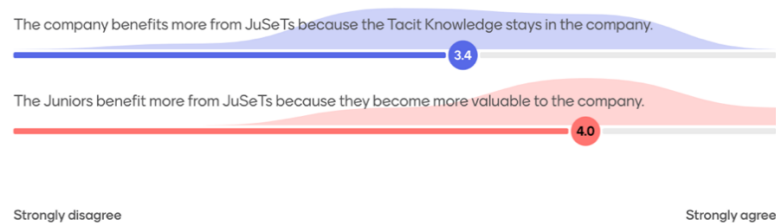


Figure 7: In lecture poll results on beneficiary Group A

From your point of view: who benefits more from a Junior/Senior Tandem - the Company or the Junior?

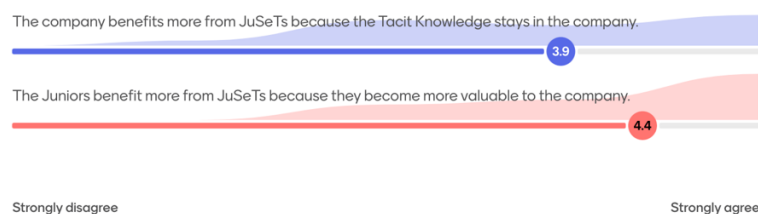


Figure 8: In lecture poll results on beneficiary Group B

5. How the Initiative was Received by Future Leaders

The topic was entirely new to most of the young students. The lectures did spark the interest levels of attendees as numerous day-to-day examples of tacit knowledge were given that they could relate to.

Feedback from participants and academic audiences demonstrated a high degree of engagement and recognition of the initiative's importance. Lectures delivered by Bettina Falckenthal at the University of Aveiro

in Portugal and the Hochschule Fresenius in Germany were particularly well-received, demonstrating high levels of student interaction and positive feedback, notably in discussions surrounding the future of work, strategic HR management, and active aging in corporate environments.

Anecdotal polling conducted during international lectures on how seniors are perceived and treated in their respective home countries revealed notable cultural differences which in turn stimulated more deliberate reflection among the students.

Feedback from the younger scholars involved in the lectures highlights a profound shift in their perception of the workplace dynamics and an increased interest in organizational roles involving collaborative and intergenerational tasks.

On the other hand, participants in the semi-structured interviews (senior experts and retirees; recruiters) indicated high levels of satisfaction of being able to contribute to organizations' foresight and vision regarding the organizational relevance of tacit knowledge (gained mainly through one's professional and life experience). Opportunities that existing labour laws offer are also seen to be crucial.

Students expressed an enhanced awareness of the critical need for effective intergenerational collaboration and a heightened awareness of the value each generation may bring to organizational success.

6. The Learning Outcomes

A systematic evaluation framework utilizing key performance indicators (KPIs) has been proposed to measure the effectiveness of junior-senior knowledge transfer (Falckenthal, Figueiredo and Au-Yong-Oliveira, 2025). KPIs include metrics such as interpersonal trust levels, quality of relationships, skill improvement scores, and tangible organizational performance improvements. Notably, trust emerged as a pivotal element, closely tied to successful knowledge transfer. Improved interpersonal trust leads to increased collaboration, better conflict management, and enhanced productivity. Skill improvement scores offer quantitative insights into the efficacy of knowledge transfer demonstrating tangible benefits in skill acquisition and competency development among junior employees.

This framework allows companies to move beyond ad-hoc decision-taking when asked to evaluate the costs and benefits of intergenerational tacit knowledge transfer by bringing a scientific perspective into such evaluations.

We provided actionable insights for human resource strategies, particularly regarding the active utilization of senior experts beyond retirement age, contributing to increased organizational resilience and productivity.

The research and lectures critically discussed innovative tools like Serious Games (games devised to entertain while providing training also, and while facilitating knowledge transfer) or AI applications, and their requirements for efficiently supporting dynamic and engaging knowledge transfer processes (Acampora *et al.*, 2023; Malik, Nguyen and Budhwar, 2024).

The students in class when polled were seen to have recognized that the organizations, youths and seniors involved would all benefit from the Junior-Senior Tandems. This particular tool was seen to be a fast path to growth.

7. Plans to Further Develop the Initiative

Moving forward, broader application and scalability of Junior-Senior Tandems will be explored via pilot projects to refine metrics and thresholds such as interpersonal trust levels, efficiency improvements, and tangible benefits observed in organizational performance in addition to KPIs such as Quality of Relationships and Skill Improvement Scores.

Plans involve collaborations with industry partners, aiming to validate methodologies and refine KPIs for broader applicability and effectiveness.

We propose a JuSeT+ framework of structured tandems in shared or job-split roles for retirees and juniors, now designed for flexible engagement and enhanced knowledge transfer. In this context AI can be employed in matching and training personalization. Pilot experiments in organizations and extended case studies are the next steps, aiming to establish scalable, cross-generational frameworks for talent development and knowledge continuity.

Further research will explore deeper cultural and international variations in attitudes toward senior employees, aiming to develop tailored strategies that enhance global applicability and effectiveness. We also intend to

pursue further academic and industry collaborations, building on the successful integration and reception seen in our initiative.

Plans for further development could also include expanding the application of AI within tandem frameworks, improving knowledge codification techniques, and scaling these pilot methods to broader organizational contexts. While AI offers powerful tools for capturing and disseminating knowledge, human judgment, experience, and intuition remain irreplaceable, especially regarding tacit knowledge. Organizations that effectively integrate human capital with technological advancements will maintain competitive edges by preserving essential knowledge and continuously cultivating new expertise through intergenerational collaboration.

In class we are aiming to implement AI-based simultaneous translation to maximize student comprehension of lectures in a foreign language.

8. Conclusion

Our research and in-class lecturing initiative underscores the immense potential of human capital, particularly in the form of structured intergenerational knowledge sharing. Through strategic pairings of juniors and seniors, complemented by the judicious use of artificial intelligence, organizations can significantly enhance their internal knowledge continuity. Addressing critical challenges such as trust, bias, and technology integration, our research provides actionable strategies and innovative tools that organizations can leverage to thrive amidst demographic and technological shifts. Through ongoing development and broadening collaborations, our initiative aspires to set new standards in strategic human resource management and knowledge continuity.

Looking forward, the implications extend far beyond HR or organizational development. They demand a fundamental transformation in how Human Capital is identified, developed, combined and utilised. Recruitment can no longer revolve around ticking boxes on CVs. Forward-looking organizations increasingly ask results-driven questions, such as:

- How will this candidate help us restructure our department or innovate our next product line?
- How have they demonstrated their problem-solving capabilities, adaptability, and capacity for collaboration?

This evolution means hiring will focus less on traditional credentials and more on the capacity to generate outcomes and contribute to organizational continuity. For graduates, the implications are profound: The required skill set for future professionals will be characterized by adaptability, results orientation, and the ability to deliver beyond subject matter expertise. The education sector, in turn, must adapt curricula and training paradigms to nurture these multidimensional, challenge-oriented competencies.

For HR and recruiters, this transition involves rethinking their own skill requirements:

- Assessing not just subject knowledge, but genuine motivation and collaboration capabilities.
- Structuring interviews and assessment processes to judge how candidates will contribute to real-world challenges, not just how well they fit into conventional patterns.
- Actively seeking out, valuing, and integrating the "wealth of experience" found across different age cohorts.

Teams thrive when recruitment processes look beyond surface-level markers. Career starters bring fresh insights from their recent studies; experienced professionals offer depth and perspective. Together, this diversity sparks innovation and builds resilient, adaptive organizations.

The research team's efforts and insights highlight the transformative potential of focused educational initiatives aimed at young scholars and future professionals. By nurturing a deeper understanding of the value inherent in senior-to-junior knowledge transfer, organizations can better equip themselves to handle the demographic challenges of an aging workforce and competitive pressures in the modern global economy. Ultimately, recognizing and harnessing the full potential of an age-diverse workforce is not merely beneficial but essential for sustainable organizational success and resilience in an increasingly complex world.

Ethical Declaration: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (or Ethics Committee) named Commission for Ethics and Social Responsibility located in our department and university (Process Nº 01/22; date of approval: 21st November 2022).

Approval Code: Positive - the researcher(s) may proceed with the questions as stated in the interview script submitted; the questions are deemed appropriate and anonymity of subjects ensured. The participation of the interviewees is clear and voluntary. No harm to persons will occur.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement:

The data presented in this study are available upon request from the lead author. The data are not publicly available because, in their informed consent, the participants were informed that the data would be confidential and that individual responses would never be known, as the data analysis would be of all the participants combined.

Conflicts of Interest: The authors declare no conflicts of interest.

AI declaration: Perplexity.ai was used for text optimization only and to make the flow of the text better and more formal.

References

- Acampora, G. et al. (2023) 'A Serious Mixed-Reality Game for Training Police Officers in Tagging Crime Scenes', *Applied Sciences*, 13(2), p. 1177. Available at: <https://doi.org/10.3390/app13021177>.
- Burmeister, A. and Deller, J. (2016) 'Knowledge retention from older and retiring workers: What do we know, and where do we go from here?', *Work, Aging and Retirement*, 2(2), pp. 87–104. Available at: <https://doi.org/10.1093/workar/waw002>.
- Czaja, Sara.J. et al. (2020) *Current and Emerging Trends in Aging and Work*. Edited by Sara.J. Czaja, J. Sharit, and Jacqueline B. James. Cham: Springer.
- Daley, J. and Baruah, B. (2021) 'Leadership skills development among engineering students in Higher Education – an analysis of the Russell Group universities in the UK', *European Journal of Engineering Education*, 46(4), pp. 528–556. Available at: <https://doi.org/10.1080/03043797.2020.1832049>.
- Daniels, M. et al. (2025) 'Advancing project leadership education through AI-enhanced game-based learning', *Project Leadership and Society*, 6, p. 100189. Available at: <https://doi.org/10.1016/j.plas.2025.100189>.
- Falckenthal, B., Au-Yong-Oliveira, M. and Figueiredo, C. (2025) 'Intergenerational Tacit Knowledge Transfer: Leveraging AI', *Societies*, 15(8), p. 213. Available at: <https://doi.org/10.3390/soc15080213>.
- Falckenthal, B., Figueiredo, C. and Au-Yong-Oliveira, M. (2025) 'A Systematic Literature Review on Intergenerational Tacit Knowledge Transfer: A KPI Perspective', in.
- Halvorsen, B.E. (2021) High and rising senior employment in the Nordic countries, *European Journal of Workplace Innovation*.
- von Hehn, S. (2016) *Systematisches Talent Management - Kompetenzen strategisch einsetzen*. 2nd ed. Stuttgart: Schäffer-Poeschel.
- Laguna Sánchez, P. et al. (2021) 'A collaborative model for leadership education in high-potential university women students', *Journal of Open Innovation: Technology, Market, and Complexity*, 7(2). Available at: <https://doi.org/10.3390/joitmc7020138>.
- Leenen, L., Van Heerden, A. and Masole, P.N.L. (2019) 'A model to select a leadership approach for a diverse team', in *Proceedings of the European Conference on Research Methods in Business and Management Studies*, pp. 182–191. Available at: <https://doi.org/10.34190/RM.19.110>.
- López González, J. et al. (2024) 'Study of emotional intelligence and leadership competencies in university students', *Cogent Education*, 11(1). Available at: <https://doi.org/10.1080/2331186X.2024.2411826>.
- López González, J., Fernández Espinosa, V. and Ortiz de Montellano, S. (2024) 'A virtue-based model of leadership education', *Journal of Moral Education*, 53(3), pp. 433–449. Available at: <https://doi.org/10.1080/03057240.2023.2218058>.
- Madsen, D.Ø. and Slåtten, K. (2025) 'Viral Leadership: Algorithmic Amplification and the Rise of Leadership Fashions', *Administrative Sciences*, 15(6). Available at: <https://doi.org/10.3390/admsci15060202>.
- Malik, A., Nguyen, T.-M. and Budhwar, P. (2024) 'Towards a Conceptual Model of AI-Mediated Knowledge Sharing Exchange of HRM Practices: Antecedents and Consequences', *IEEE Transactions on Engineering Management*, 71, pp. 13083–13095. Available at: <https://doi.org/10.1109/TEM.2022.3163117>.
- Mavin, S. et al. (2024) 'Flipping the normative: Developing and delivering a critical pedagogy for executive education in a UK business school', *Management Learning*, 55(4), pp. 528–552. Available at: <https://doi.org/10.1177/13505076231162717>.
- OECD (2024) *Employment Outlook 2024: The net-zero transition and the labour market*. OECD (OECD Employment Outlook). Available at: <https://doi.org/10.1787/ac8b3538-en>.
- van Ours, J.C. (2022) 'How Retirement Affects Mental Health, Cognitive Skills and Mortality; An Overview of Recent Empirical Evidence', *Economist (Netherlands)*, 170(3), pp. 375–400. Available at: <https://doi.org/10.1007/s10645-022-09410-y>.

- Page, M.J. et al. (2021) 'The PRISMA 2020 statement: An updated guideline for reporting systematic reviews', The BMJ. BMJ Publishing Group. Available at: <https://doi.org/10.1136/bmj.n71>.
- Paullin, C. (2014) The Aging Workforce: Leveraging the Talents of Mature Employees. Available at: <https://www.researchgate.net/publication/274707176>.
- Rennemo, Ø. and Vaag, J.R. (2018) 'Collective Leadership Learning (CLL) – Leader reflections on learning during higher-level, experience-based leadership education', Scandinavian Psychologist, 5. Available at: <https://doi.org/10.15714/scandpsychol.5.e13>.
- Salimi, M. et al. (2025) 'The fast-track ascent to the top: The role of human capital in European listed firms', European Management Journal, 43(2), pp. 194–210. Available at: <https://doi.org/10.1016/J.EMJ.2024.02.002>.
- Saunders, M.N.K., Lewis, P. and Thornhill, A. (2019) Research Methods for Business Students. 8th ed. PEARSON EDUCATION LIMITED.
- Turek, K. and Henkens, K. (2020) 'How Skill Requirements Affect the Likelihood of Recruitment of Older Workers in Poland: The Indirect Role of Age Stereotypes', Work, Employment and Society, 34(4), pp. 550–570. Available at: <https://doi.org/10.1177/0950017019847943>.
- Wikström, E. et al. (2023) 'Mentoring programmes – building capacity for learning and retaining workers in the workplace', Journal of Workplace Learning, 35(8), pp. 732–751. Available at: <https://doi.org/10.1108/JWL-01-2023-0003>.
- Zander, L. et al. (2021) Research Handbook of Global Leadership: Making a Difference. Edited by L. Zander. Elgar

Understanding and Preventing VAT Fraud: Lessons from One of the EU's Highest Gap Economies

Mihai-Daniel Gavrila

The Bucharest University of Economic Studies, Doctoral School of Accounting, Romania

gavrilamihai17@stud.ase.ro

Abstract: VAT fraud represents one of the most pervasive and damaging forms of economic crime within the European Union, leading to substantial losses in public revenue and undermining the efficiency of tax systems. As member states face increasing pressure to enhance fiscal sustainability, understanding the underlying mechanisms of VAT evasion becomes essential. This study focuses on Romania, a country with one of the highest VAT gaps in the EU, to explore the relationship between tax fraud and broader economic and institutional dynamics. By employing a quantitative approach, the present paper aims to analyze the impact of VAT fraud on public revenues, to assess the effectiveness of existing anti-fraud measures and to identify innovative practices that could be adapted across the EU to prevent this phenomenon. The Romanian case is analyzed not only for its specific vulnerabilities but also for its potential to generate transferable insights for other countries facing similar, though less acute, challenges. The findings are expected to contribute to the development of practical, data-driven recommendations for improving VAT compliance, reducing tax gaps, and strengthening fiscal governance at both national and European levels.

Keywords: VAT gap, Tax fraud, Fiscal efficiency, Budget revenues

1. Introduction

Fraud has been one of humanity's oldest challenges. Since the emergence of property rights, people have sought various ways to gain advantages over others—often through means that were not entirely legal, fair, or ethical. Historical records reveal many forms of fraud. Examples range from counterfeiting currency in the Roman Empire and forging goods in the Middle Ages to modern-day schemes such as Ponzi schemes, credit card fraud, and carousel fraud.

According to James et al (1991) tax fraud is a much more complex behavior than traditional economic theories would suggest. As shown in their study, people don't necessarily cheat on their taxes just because the chances of being audited are low or the penalties aren't severe. In fact, many individuals tend to overestimate even small probabilities of getting caught, which leads them to comply more than rational models would predict. Moreover, some taxpayers choose to pay their taxes simply because they value the public goods those taxes help fund—like schools, roads, or healthcare—even when there's no real threat of punishment. These findings show that tax compliance depends not only on fear or calculation, but also on personal values, social norms, and civic responsibility. Understanding this human side of tax behavior is crucial for designing more effective policies to prevent fraud. Thus, James and Alley (2002) argue that compliance also depends heavily on how the tax system is administered. A well-functioning self-assessment system can promote voluntary compliance, but only if taxpayers trust the fairness and efficiency of tax authorities. When people feel that the system treats them with respect and equity, they are more likely to cooperate; when they perceive it as arbitrary or biased, the likelihood of fraud increases. In this sense, preventing tax fraud is not only about increasing audits or penalties—it also requires building a tax administration that fosters transparency, consistency, and mutual trust between the state and its citizens.

On the other hand, Sritharan et al. (2022) highlights both traditional and emerging themes for being responsible of frauds. In addition to James et al (1991) and James and Alley (2002), Sritharan et al. (2022) identify three major categories of drivers for the fraud: individual-level determinants such as personal ethics, risk perceptions, and tax morale; institutional factors like weak enforcement, corruption, and administrative inefficiencies; and contextual elements, including informality, digital readiness, and socioeconomic conditions. Their analysis shows that tax evasion is a multifaceted issue, deeply embedded in the relationship between citizens and the state, where compliance is shaped not only by deterrence but also by perceived fairness and trust. Notably, the review also emphasizes the growing importance of digitalization and corporate social responsibility (CSR) in shaping compliance behavior, pointing to the need for future research to explore how technology and governance reforms can improve tax systems and reduce evasion in both developed and developing economies.

In the case of Romania, recent survey data reveals a deep mistrust in public institutions, most respondents perceive institutional corruption as "high" or "very high" (Achim & McGee, 2022). This conclusion is based on a nationwide survey conducted on a representative sample of 1,856 Romanian citizens, balanced across age,

gender, education level, and region. The perception of high corruption was particularly prevalent among young adults (ages 25–44) and urban residents, who tend to interact more frequently with administrative systems and are thus more exposed to bureaucratic inefficiencies and favoritism. This widespread perception of institutional dishonesty presents a serious barrier to building a culture of voluntary tax compliance and reinforces the structural vulnerabilities already identified in the broader literature.

Another important aspect is the vulnerability of modern tax systems. According to Víghová (2023), taxes are the primary source of public revenue in most countries, which makes them a frequent target of fraud. Despite the efforts of authorities to safeguard this vital source, fiscal systems remain exposed to the risks of fraud and evasion. Since the complete elimination of such practices is not a realistic objective, administrative strategies focus instead on reducing risks and mitigating the negative effects of tax fraud. According to the author, the largest fiscal losses stem from indirect taxes— particularly consumption taxes and the value added tax (VAT)— highlighting the structural fragility of the mechanisms used to collect them.

Despite the wide recognition of VAT fraud as a serious policy issue, empirical evidence on its direct impact on state revenues remains limited, especially in the context of emerging economies. This study aims to address this gap by exploring the relationship between VAT fraud and government revenue collection over the past two decades. The findings of this research may offer valuable insights not only for academics and tax practitioners, but also for policymakers seeking to design more effective fiscal legislation and anti-fraud strategies in the future. In this respect, the main research questions developed for this paper are:

Research question 1: How does variation in the VAT Gap correlate with VAT revenue collection in Romania over time?

Research question 2: Does VAT fraud significantly affect the fiscal revenues in Romania?

Research question 3: Does VAT fraud significantly affect the total budget revenues in Romania?

2. Literature Review

VAT was first introduced in France in 1952. Since then, it has expanded—under various forms—across Europe, Latin America, and later into transitional and developing economies (James, 2011). According to the author, VAT is appealing to governments because it generates high and stable revenues while maintaining relatively low administrative costs.

Brezeanu et al. note that VAT implementation and collection efficiency vary significantly across EU member states, despite a generally uniform structure. Although efficient in generating revenue, VAT remains vulnerable to fraud and evasion. The VAT Gap reflects this vulnerability and has become a key concern for EU governments. As such, understanding the role of fiscal freedom, government effectiveness, and human development in reducing the VAT Gap is crucial for improving compliance and enhancing tax system performance.

Regarding the VAT Gap, this is mainly caused by tax fraud. In this respect, Keen and Smith (2007) provide a comprehensive classification of the main types of VAT fraud, highlighting how the structure of the tax—based on input credits and zero-rating of exports—creates specific vulnerabilities. Among the most common forms are: under-reporting of sales (when businesses deliberately hide part of their turnover), failure to register (particularly by small or fraudulent firms seeking to avoid VAT obligations), and misclassification of goods or services to benefit from reduced or exempt rates. A particularly damaging scheme is carousel fraud (also known as Missing Trader Intra-Community fraud). In this scheme, goods are moved across borders within the EU VAT-free and then sold domestically with VAT added. The trader subsequently disappears without remitting the tax, sometimes repeating the cycle through a chain of fictitious entities. Additionally, firms may submit false claims for VAT refunds by fabricating input invoices or inflating deductible amounts. The authors argue that these fraud types exploit core features of the VAT system and require targeted administrative responses, especially in the context of cross-border transactions.

In terms of methods for preventing and detecting VAT fraud, Bussy and Tassi (2025) examine the effectiveness of the reverse charge mechanism in addressing cross-border VAT fraud within the European Union. Using product- and country-level data from 2013 to 2020, their study shows that before the reverse charge rule was implemented in 2015, VAT fraud accounted for about 0.1% to 0.2% of total VAT revenues. Following the reform, fraud levels declined significantly—particularly in member states with higher levels of perceived corruption and weaker customs enforcement. Their findings underscore that while the reverse charge mechanism is a valuable tool in combatting carousel fraud, its success largely depends on the institutional quality and administrative capacity of individual countries.

To further strengthen VAT compliance, Bellon et al. (2022) emphasize the critical role of tax system digitalization, particularly through the implementation of electronic invoicing systems, which can enhance revenue collection efficiency and improve broader economic performance. Similarly, Takefuji (2023) warns that weak digital governance and outdated tax infrastructures leave countries increasingly vulnerable to organized tax fraud. His study cites significant losses during the COVID-19 pandemic, when countries such as the U.S., U.K., Japan, and Moldova struggled to detect fraud in emergency relief programs due to insufficient oversight and digital integration. Alarming, fraudsters already use advanced technologies like AI to facilitate tax evasion, while many governments still lack the tools to counter these evolving threats. In this context, preventing tax fraud has become not only a legal or ethical challenge, but also a matter of whether tax administrations can adapt to the rapidly changing digital landscape.

Regarding the impact of tax evasion on economic growth, McClellan (2019) combines firm-level data from the World Bank Enterprise Surveys—covering reported sales, bribes to tax inspectors, and audit probabilities across 79 countries—with macroeconomic indicators, and subsequently extends the analysis to a broader panel of 86 countries from 1995 to 2013. In this second stage, VAT collection efficiency (VAT gap) is used as a proxy for evasion, alongside indicators of tax administration quality. Using fixed effects and instrumental variable regressions, the findings suggest two key results. First, frequent audits and high compliance costs tend to suppress GDP growth. Second, a one-percentage-point improvement in VAT collection efficiency is associated with an approximate 17.8-percentage-point increase in per capita GDP growth. The study concludes that policies aimed at improving revenue through simplification, digitalization, and voluntary compliance are more conducive to economic development than coercive enforcement measures, which may deter private investment.

In their study, Butu et al (2021) construct a comprehensive panel database covering the period 2009–2018 for 26 EU member states (EU-27 excluding Cyprus and Croatia, plus the UK). The authors classify these countries into four regional clusters—Northern, Southern, Western, and Central-Eastern Europe—and explore the relationship between the VAT Gap and five structural or institutional indicators: Fiscal Freedom (FF), Government Effectiveness (GE), the Human Development Index (HDI), the Corruption Perceptions Index (CPI), and the share of population at risk of poverty or social exclusion (AROPE). Using Spearman rank correlations, the study finds statistically significant negative associations between the VAT Gap and FF, HDI, and CPI across the full sample. It also reports a strong positive correlation with AROPE. No significant link is identified with GE at the aggregate level. Regionally, the most notable negative correlations are found between the VAT Gap and HDI in Central-Eastern Europe, and between the VAT Gap and FF in Southern Europe. Interestingly, in Northern Europe, the VAT Gap shows a particularly strong inverse relationship with GE. The authors argue that enhancing institutional quality, reducing corruption, and improving social cohesion are key to narrowing the VAT Gap, while weak fiscal governance and high levels of social exclusion tend to exacerbate it.

On another hand, Ogneru et al. (2022) examine the extent to which the VAT Gap undermines a country's capacity to finance public programs, by analyzing its impact on the tax-to-GDP ratio—used as a proxy for the overall degree of taxation. Their study covers 26 EU member states over the period 2014–2019 and employs annual panel data with fixed-effects regressions. The authors model the tax-to-GDP ratio as a function of the VAT Gap and lagged revenue performance, government expenditure, and a selected subset of socio-economic variables (namely, poverty risk, employee compensation, household consumption, and gross value added), drawn from an initial pool of 28 indicators. The results highlight a statistically significant negative relationship: a higher VAT Gap consistently leads to a lower tax-to-GDP ratio, and this effect endures over time due to the path-dependent nature of tax collection efficiency. Additionally, when reversing the regression framework, the same four socio-economic variables jointly explain approximately 95% of the variation in the VAT Gap itself. These findings suggest that reducing the VAT Gap goes beyond administrative efficiency—it is a strategic means to strengthen fiscal capacity, particularly in countries where consumption structures and social vulnerabilities heighten the risk of revenue loss.

3. Research Methodology

To investigate the relationship between VAT fraud and public revenue collection in Romania, this study employs a quantitative research approach, consistent with previous empirical studies (McClellan, 2019; Ogneru et al., 2022; Butu et al., 2021), which demonstrate that robust statistical models can capture the macroeconomic impact of tax evasion with high explanatory power. The analysis covers the period 2009–2022, segmented into two sub-periods: 2009–2019, representing the pre-pandemic phase of relative economic and institutional stability (after the global financial crisis, and 2019–2022, corresponding to the years marked by exogenous shocks—namely, the COVID-19 pandemic and the Russo-Ukrainian war. This division reflects recommendations

from recent literature (Takefuji, 2023; Víghová, 2023), which emphasizes the vulnerability of tax systems during periods of crisis, when administrative efficiency is disrupted, and fiscal fraud tends to increase due to emergency spending and weakened oversight. Furthermore, Sritharan et al. (2022) suggest that structural and contextual factors, such as digital readiness and socio-economic pressures, can exacerbate tax non-compliance during times of instability. By comparing these two distinct periods, the study aims to identify differential dynamics in the VAT Gap and fiscal performance, offering a more nuanced understanding of how Romania's tax system has responded to both long-term trends and short-term disruptions. This temporal segmentation also allows for the exploration of potential structural breaks in compliance behavior and revenue efficiency, as suggested by Bellon et al. (2022), who stress the need to reassess tax system resilience in the face of global crises. For analyzing the correlation between the variables it was used the SPSS program. Based on this, there were concluded the following research hypothesis:

Research hypothesis 1: There is a negative and statistically significant relationship between the size of the VAT Gap and the revenues actually collected from VAT in Romania.

Research hypothesis 2: The negative impact of the VAT Gap on total tax revenues is stronger during crisis periods (2019–2023) than in the period 2009–2019.

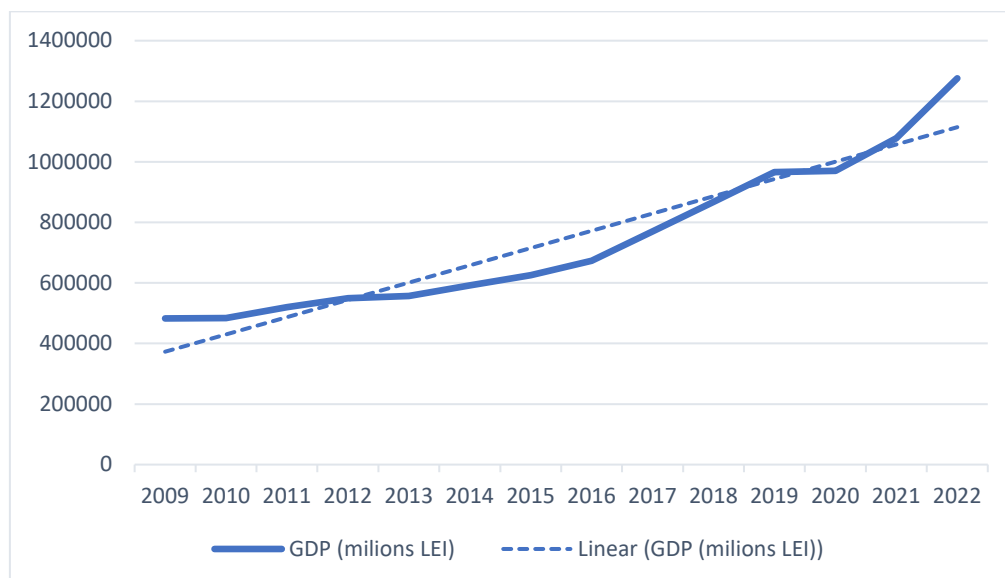
4. Data Collection

The study draws on quarterly series from the TIEMPO database of Romania's National Institute of Statistics (INS), covering gross domestic product across all industries; these quarterly observations were aggregated to obtain annual totals. According to INS methodology, GDP is reported through two complementary approaches: (a) the production method, given by $GDP = GVA + TP - SP$, where GVA is gross value added at basic prices, TP denotes taxes on products, and SP represents subsidies on products; and (b) the expenditure method, expressed as $GDP = FCE + GCF + X - M$, where FCE is final consumption expenditure, GCF is gross capital formation, X is exports of goods and services, and M is imports of goods and services. Subsequently, the same database was queried to retrieve series on total revenue, fiscal revenues, and value-added tax (VAT) collections.

Additionally, using the above-mentioned database, there were collected information on the Romanian's total revenues, tax revenues and VAT revenues for the analyzed period.

The VAT-gap series was sourced from the European Commission's annual VAT Gap reports, while standard VAT-rate figures were extracted from the archived versions of the Romanian Tax Code available on www.anaf.ro.

5. Results and Discussions

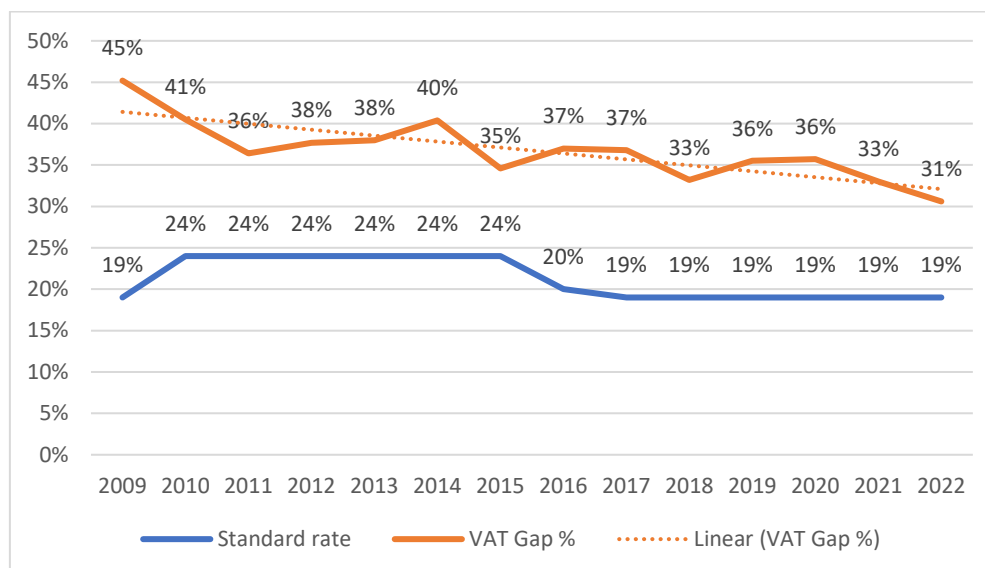


Source: Author's own contribution

Figure 1: The evolution of GDP during the period 2009 - 2022

Romania's nominal GDP has nearly tripled over the 14-year horizon, rising from almost 482 billion lei in 2009 to more than 1.27 trillion lei in 2022, having an increase of approximatively 164%. After a flat post-crisis year in

2010, the economy resumed a steady upward trajectory, passing the 600 billion lei mark in 2015 and accelerating sharply thereafter: average annual growth in nominal terms was about 8 % between 2009 and 2022. Although the COVID-19 shock almost stalled nominal expansion in 2020, Romania rebounded quickly, adding over 100 billion lei in 2021 and a further 200 billion lei in 2022—its strongest two-year jump in the series, having one of the biggest growths during these two years, 11,14% in 2021 from 2020 and 18,36% in 2022 from 2021. Overall, the data underline a robust medium-term growth profile, punctuated by only a brief pandemic pause, in 2020.



Source: Author's own contribution

Figure 2: The evolution of VAT standard rate and VAT gap during the period 2009 - 2022

Between 2009 and 2022, Romania's experience shows that the headline VAT rate explains only a fraction of the country's VAT Gap. The sharp hike from 19 % to 24 % in mid-2010 failed to generate lasting compliance gains, with the gap hovering around 38–40 % in the following years—evidence that businesses adapted quickly and that administrative capacity, rather than tax pressure alone, drove outcomes. In 2015 the deficit narrowed by almost six percentage points even though the standard rate remained unchanged, thanks to targeted reduced-rate measures on food and stepped-up audits. Conversely, reducing the rate to 20 % in 2016 and back to 19 % in 2017 produced no immediate improvement, the gap staying above 36 %. Only after 2018, alongside the roll-out of SAF-T reporting and the e-Invoice system, did the VAT Gap resume a clear downward trend, reaching 30.6 % in 2022.

To determine whether Romania can truly be classified as a highly taxed state, it was first analyzed its tax-to-GDP ratio and then examined how strongly overall government revenue depends on fiscal revenues—especially VAT collections. To achieve this, the indicators Tax-to-GDP and VAT-to-GDP were constructed, expressed as the ratio of tax revenues to GDP and VAT revenues to GDP, respectively. Subsequently, the share of tax revenues in total revenues and the share of VAT revenues in total revenues were also calculated. This assessment yielded the following results:

Table 1: Correlation between taxes, GDP, total and fiscal revenues

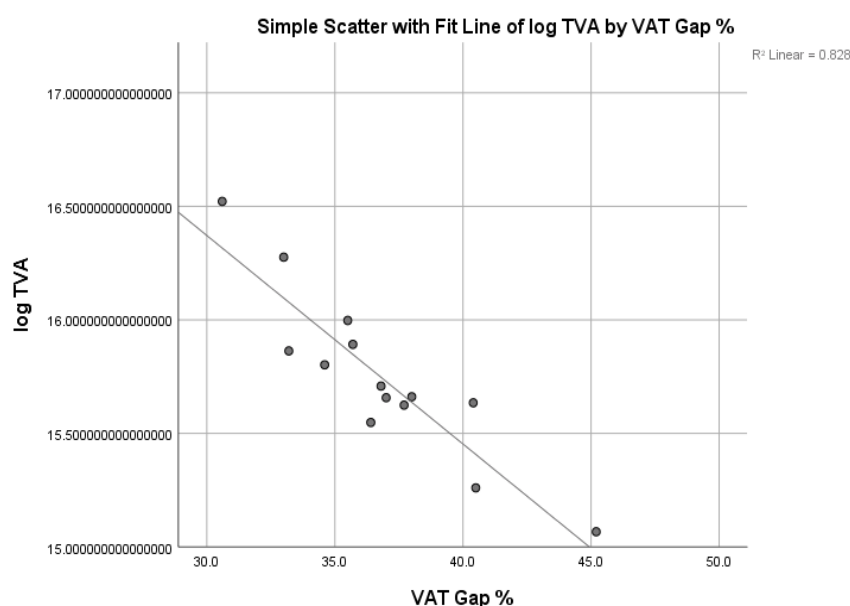
Year	Tax-to-GDP	VAT-to-GDP	Share of taxes in total revenues	Share of VAT in total fiscal revenues
2009	9.98%	7.11%	85.32%	71.28%
2010	11.64%	8.12%	84.61%	69.70%
2011	13.38%	9.22%	87.25%	68.92%
2012	13.77%	9.20%	87.91%	66.81%
2013	14.40%	9.31%	88.16%	64.64%
2014	13.61%	8.60%	85.21%	63.17%

Year	Tax-to-GDP	VAT-to-GDP	Share of taxes in total revenues	Share of VAT in total fiscal revenues
2015	14.31%	9.13%	86.32%	63.78%
2016	12.97%	7.67%	85.82%	59.18%
2017	11.04%	6.95%	78.30%	62.94%
2018	11.48%	6.87%	70.01%	59.84%
2019	11.01%	6.77%	71.18%	61.55%
2020	9.68%	6.27%	69.96%	64.76%
2021	11.38%	7.36%	72.63%	64.69%
2022	12.51%	7.38%	71.83%	58.95%

Source: Author's own contribution

Between 2009 and 2022, Romania fell well short of what would be considered a highly “fiscalised” state: the tax-to-GDP ratio ranged from just 9.68% to 14.40%, averaging 12.23%—barely half the EU-27 average. The elasticity of tax revenue with respect to GDP is only about 0.86, meaning receipts grow more slowly than the economy itself and signaling under-collection relative to potential. More than 80 % of budget resources come from taxes, and roughly 60 % of those taxes are generated by VAT, the very levy most exposed to evasion, with a persistent VAT Gap of 30–40 %. This mix of low overall tax effort, sub-unitary elasticity and structural vulnerability to VAT fraud explains why, despite solid economic expansion, Romania's public coffers remain constrained and underscores the need for simultaneous reforms: broadening the tax base, deepening digital compliance tools and diversifying non-tax revenue sources.

To test Hypothesis 1 previously mentioned, the VAT values were log-transformed and analyzed in relation to the VAT Gap. This approach resulted in the following scatter plot:



Source: Author's own contribution using SPSS program

Figure 3: The relation between the VAT gap and VAT revenues

The scatter plot reveals a clearly downward-sloping regression line, with an R^2 value of approximately 0.83. In other words, around 83% of the yearly variation in nominal VAT revenues can be explained by changes in the VAT Gap. As the gap increases by one percentage point, VAT revenues (in natural logarithm) systematically decrease. Visually, the H1 hypothesis is strongly supported. Going further with the hypothesis test, it was made a linear regression using the following equation:

$$\ln(TVA_t) = \alpha + \beta \times VATGap_t + \varepsilon_t$$

The following results were obtained:

Table 2: The correlation between VAT revenues and VAT gap. Results of linear regression from SPSS

Dependent variable: log TVA	B	SE	Beta (std)	t
(Constant)	19.126	0.446	-	42.892
VAT Gap (%)	-0.092	0.012	-0.910	-7.604

Source: Author's own contribution using SPSS program

The linear regression strongly confirms the hypothesis of an inverse relationship between VAT evasion and VAT revenues. The model, which includes a single predictor (VAT Gap %), is statistically very robust ($F = 57.8$; $p < 0.001$) and explains approximately 83% of the annual variation in VAT revenues, as indicated by the R^2 coefficient. The unstandardized coefficient of -0.092 suggests that a 1 percent point increase in the VAT gap leads to a nearly 9% decrease in nominal VAT revenues, while the Beta value of -0.91 points to an extremely strong effect in terms of standard deviations.

This means that, VAT collection performance in Romania is strongly and negatively influenced by the size of the VAT Gap, aspect which highlights the importance of reducing VAT evasion to strengthen public revenue.

Moving further to hypothesis no. 2, it was built the following set of variables using annual data from 2009 to 2022: Tax-to-GDP (calculated as total tax revenues divided by GDP, multiplied by 100) as the dependent variable; VAT Gap % as the main predictor; a binary variable Crisis (coded 1 for the years 2019–2022 and 0 otherwise) to mark the pandemic and inflationary period caused by the Russo-Ukrainian war; and an interaction term $INT = VAT\ Gap \times Crisis$ to capture any shift in the slope during crisis years. The variables were initially processed in Excel—computing Tax-to-GDP, creating the dummy variable and the interaction term—then imported into SPSS, where it was performed an OLS regression.

After excluding the Crisis variable (since its coefficient was statistically insignificant), the two-predictor model became:

$$Tax-to-GDP = 20.83 - 0.215 \times VAT\ Gap - 0.073 \times INT$$

Table 3: The correlation between fiscal revenue and VAT gap during crisis periods. Results of linear regression from SPSS

Dependent variable: Tax-to-GDP	B	SE	Beta (std)	t
(Constant)	20.834	4.397	-	4.738
VAT Gap (%)	-0.215	0.115	-0.505	-1.863
INT	-0.073	0.027	-0.744	-2.743

Source: Author's own contribution using SPSS program

This model explains about 41% of the variation in the dependent variable (R^2 aprox. 0.41), is borderline significant overall ($F = 3.89$; $p = 0.053$), and, crucially, the interaction coefficient is negative and statistically significant ($\beta = -0.073$; $p = 0.019$). This means that during crisis years, the impact of the VAT Gap on tax revenues becomes stronger: the slope steepens from -0.215 percentage points in 2009–2018 to -0.288 percentage points of GDP for every 1 pp increase in the VAT Gap, confirming that the negative effect was indeed more pronounced in 2019–2022.

6. Limitations and Future Research

This analysis is constrained by a relatively short time series—just 14 years—and by its single-country focus on Romania, without extending to other EU jurisdictions operating under comparable fiscal frameworks. Moreover, the estimates may be influenced by institutional factors not fully captured in the baseline specifications, such as the enforcement capacity of the tax administration, the rollout intensity of digital reporting tools (e-Invoicing, SAF-T), judicial efficiency or broader governance quality. These factors could confound the observed relationship between VAT policy and compliance outcomes.

Future research could strengthen the analysis of VAT evasion by extending the observation window, incorporating a broader cross-country sample, or enriching the model with additional explanatory variables. In particular, new tools and datasets could be used to better capture the drivers of the VAT Gap, such as indicators of tax administration performance, governance quality, and the effects of fiscal policy measures over time. Furthermore, the current study could be complemented by a qualitative research—e.g., expert interviews with tax practitioners and policymakers—to provide deeper insight into taxpayer behavior under specific circumstances.

7. Conclusions

This paper aimed to analyze the extent to which VAT-related tax evasion, measured by the recorded VAT Gap, undermines Romania's fiscal capacity and whether this effect becomes more pronounced during times of crisis. For the period 2009–2022, an annual dataset was constructed—including GDP, total revenues, tax revenues, and VAT collections—using the TEMPO database of the Romanian National Institute of Statistics and the VAT Gap series published by the European Commission. Based on this dataset, two econometric models were estimated using SPSS.

The variables were initially processed in Excel, where a logarithmic transformation was applied to VAT revenues to stabilize variance. A binary variable “Crisis” was created (taking values of 1 for 2019–2022 and 0 otherwise), as well as an interaction term between Crisis and VAT Gap.

The first model tests the hypothesis of an inverse relationship between the VAT Gap and VAT revenues. The results show that a one-percentage-point increase in the VAT Gap reduces nominal VAT collections by approximately 9%, with the model explaining 83% of the annual variation ($\beta = -0.092$; $t = -7.6$; $p < 0.001$). These findings suggest that the performance of VAT collection is primarily driven by the degree of taxpayer compliance, rather than by adjustments to the standard VAT rate.

The second model investigates whether this mechanism becomes more acute during periods of external shock. Using Tax-to-GDP as the dependent variable and including the interaction term VAT Gap $\times$ Crisis, the estimation reveals that the negative slope steepens in the 2019–2022 period: from -0.22 percentage points in 2009–2018 to -0.29 pp of GDP for each additional percentage point in the VAT Gap during crisis years. The interaction coefficient is statistically significant ($\beta = -0.073$; $p = 0.019$), confirming the hypothesis that revenue losses caused by VAT fraud are greater precisely when the national budget is most vulnerable.

The practical conclusions are clear: Romania remains a country with a low level of taxation (tax-to-GDP around 12%), yet is highly dependent on VAT: over 60% of total tax revenues come from this source, while the VAT Gap remains elevated, at 30–40%. The evidence presented unequivocally shows that reducing the VAT Gap is essential for Romania's fiscal consolidation and for strengthening its resilience to future shocks.

Reducing VAT evasion—through digitalization (SAF-T, e-Invoice), risk-based audits, and rebuilding trust in the tax administration—represents the fastest and least distortionary way to expand fiscal space, especially during times of crisis, when this space becomes particularly vulnerable to fraud.

Acknowledgement

This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.

Ethics declaration: I declare that the research complies with ethical principles and rules.

AI declaration: AI tools were used to translate the paper from Romanian into English and to perform spell-checking.

References

- Achim, M. V., & McGee, R. W. (Eds.). (2022). Financial crime community pulse: A Romanian survey. Springer Briefs.
- Alm, J., McClelland, G. H., & Schulze, W. D. (1991). Why do people pay taxes? *Journal of Public Economics*, 48(1), 21–38.
- Bellon, M., Norris-Dabla, E., Khalid, S., & Lima, F. (2022). Digitalization to improve tax compliance: Evidence from VAT e-invoicing in Peru. *Journal of Public Economics*, 210, 104–119.
- Brezeanu, P., & Butu, I. (2021). The impact of fiscal freedom, government effectiveness and human development index on the VAT gap in the European Union. In *Proceedings of the 4th International Conference on Economics and Social Sciences* (pp. 299–309).
- Butu, I., Brezeanu, P., Porumboiu, A., & Ștefoni, S. E. (2021). The relationship between VAT gap and economic or institutional variables. *Annals of the Faculty of Economics*, 30(2), 250–259.

- Bussy, A., & Tassi, A. (2025). Cross-border value added tax fraud in the European Union. SSRN Working Paper. <https://ssrn.com/abstract=5213489>
- European Commission. (2009–2022). VAT Gap reports. Brussels: Directorate-General for Taxation and Customs Union.
- Eurostat. (2024). TIEMPO / nama_10_gdp – GDP and tax databases. <https://ec.europa.eu/eurostat>
- James, K. (2011). Exploring the origins and global rise of VAT. In *The VAT reader* (pp. 15–22). Tax Analysts. <https://doi.org/10.2139/ssrn.2291281>
- James, S., & Alley, C. (2002). Tax compliance, self-assessment and tax administration. MPRA Paper 26906. University Library of Munich.
- Keen, M., & Smith, S. (2007). VAT fraud and evasion: What do we know, and what can be done? IMF Working Paper. Law no. 227/2015 on the Fiscal Code, with subsequent amendments.
- McClellan, C. (2019). Growth effects of VAT evasion and enforcement. *Public Finance Review*, 47(3), 530–557. <https://doi.org/10.1177/1091142118783475>
- Ogneru, V., & Stancu, S. (2022). The impact of the VAT gap on the degree of taxation of an economy: Analysis with panel data. *Journal of Financial Studies*, 12(7), 164–184.
- Sritharan, N., Sahari, S., & Sharon, C. C. S. (2022). A systematic literature review on tax evasion: Insights and future research agenda. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 12(2), 84–105.
- Takefuji, Y. (2023). Case report on enormous economic losses caused by fraud from Japan to the world. *Journal of Economic Criminology*, 1(1), 33–47.
- Víghová, A. (2023). Discovery of tax evasion in the field of consumption taxes. *Entrepreneurship and Sustainability Issues*, 11(1), 209–219. [https://doi.org/10.9770/jesi.2023.11.1\(12\)](https://doi.org/10.9770/jesi.2023.11.1(12))

Navigating into the Military Leadership Landscape

Styliani Gkiosi and Neophytos Mouzouris

Department of Economics and Business, School of Economics, Business and Computer Sciences,
Neapolis University Pafos, Cyprus

s.giosi@nup.ac.cy

n.mouzouris@nup.ac.cy

Abstract: Military leaders significantly influence national and global history. Through a standardized, hierarchically defined management structure, the military cultivates values and rules reinforced by education, discipline, and experience. Armed Forces operate under strict discipline, structured power, and a collective demand for commitment and efficiency, while adapting to ever-changing challenges. Military leadership involves managing human resources under pressure, uncertainty, complexity, and ambiguity, and relies on personal traits such as credibility, determination, and role-modeling. This study investigates the military leadership landscape through four leadership theories—charismatic, transactional, transformational, and servant leadership—across five dimensions: personality, vision, influence, personnel management and care, and responsibility in decision-making and risk-taking. A quantitative survey was distributed across three branches of the Armed Forces. Findings indicate that transformational and servant leadership elements predominate. Understanding modern military leadership benefits researchers and military leaders, encouraging further investigation.

Keywords: Military leadership, Charismatic leadership, Transactional leadership, Transformational leadership, Servant leadership

1. Introduction

The Armed Forces (AF) are a unique organization, with characteristics that differentiate them from other public or private entities. Their uniqueness stems from the role they play in the field of national defense and security, as well as from the structure, operation and multidimensional requirements and needs which they are called upon to satisfy. Strict discipline, hierarchically structured power and the collective demand for commitment and efficiency in carrying out their mission as well as adaptation to ever-changing conditions and modern challenges are the basis for their performance.

The ever-changing conditions are often characterized by the acronym VUCA which stands for Volatility, Uncertainty, Complexity and Ambiguity. It emerged in the military world, especially in the US Army, in the early 1990s and then entered the vocabulary of modern management (Alexa, 2024, p. 305). Even though many contrary opinions were appeared it deserves its value and in recent research studies has embraced resilience generated by robustness and agility.

A considerable number of studies have been conducted on various leadership theories, both traditional and contemporary, in order to determine the characteristics of effective and successful leaders, to identify patterns of their behaviour and recognize their leadership styles, while there are a limited number of studies that explore military leadership and the strategy applied in the ever-changing environment. Many research studies about leadership in the Army utilize the internationally validated instrument Multifactor Leadership Questionnaire (MLQ-5X), the flexibility of which cannot be questioned since it has been used in thousands of military (e.g. Narváez, et al., 2020) and civilian studies (e.g. Batista-Fogueat, et al., 2021). It assesses the transformational, transactional and laissez-faire leadership theories, and these three theories are the main components of the full-range leadership model (Avolio & Bass 2002). Other recent research studies connect leadership styles to commander performance evaluations, especially the transformational and transactional leadership under stressful and uncertain conditions (Babos, et al. 2024), leadership to the roles of a military leader (Fratila, 2022), and the quality of the leadership competencies of first-level military leaders to behavioural dimensions like tasks, change and relations (Meerits & Kivipold 2020). However, studies exploring military leadership under multiple contemporary theories remain limited. This research examines whether charismatic, transactional, transformational, and servant leadership are present in military leadership model, focusing on five critical dimensions of leadership execution: personality, vision, influence, personnel management and care, and responsibility in decision-making and risk-taking.

2. Military Leadership and its Characteristics

Leadership “can be characterized as an enigmatic concept, maybe is hard to define but it touches and is of interest and practiced by everyone and quite often is used interchangeably with other concepts such as command and management” (Horn & Walker 2008). There are many definitions and models of leadership and

“some of its classes include motivation and influence, leadership as a set of personal attributes or traits, leadership as management, leadership as a system of authority, leadership as a relationship with subordinates, leadership as a set of roles” (Spicker 2012).

Concerning the military leadership, it seems that sometimes adopts the trait-based approach, the transformational approach or other approaches congruent with the above mentioned leadership classes, but quite often it differentiates in accordance with the level of hierarchy. Leaving aside the authoritarian leadership model and having in mind to shed light on the contemporary leadership theories applied in the military context, charismatic, transactional, transformational and servant leadership were taken into account.

According to the charismatic leadership, leaders have a vision, a sense of mission, are willing to take personal risks to achieve that vision, are sensitive to follower needs, exhibit extraordinary behaviors while their followers tend to give them power when they attribute heroic or extraordinary leadership abilities (Robbins & Judge 2024), or they recognize their charisma, behaviours values-driven, symbolic, or emotion-laden (Antonakis et al. 2016).

Transactional leadership, which is also called managerial leadership, focuses on short-term goals, procedures and policies that are favor-structured, assignment specific tasks to employees, motivation through the reward and punishment, opposition to change and inflexibility (Jaqua & Jaqua 2021).

The transformational leadership theory consists of 4Is: intellectual stimulation (leaders stimulate their followers to be innovative and creative by questioning assumptions, reframing problems, and approaching old situations in new ways and finding solutions to problems); individualised consideration (leaders pay special attention to each individual follower's needs for achievement and growth by acting as a coach or mentor, accepting individual differences, and encouraging a two-way exchange communication); inspiration motivation (leaders motivate and inspire their followers by providing meaning and challenge to their work, involve followers in envisioning attractive future states, create clearly communicated expectations, demonstrate commitment to goals and the shared vision); idealised influence (leaders serve as role models for their followers, are admired, respected, and trusted, are considered as having extraordinary capabilities, persistence, and determination by their followers) (Bass & Riggio 2006).

Transformational leaders are distinguished by their risk taking, goal articulation, high expectations, emphasis put on collective identity, self-assertion, and vision while their followers have a positive attitude and effective performance (Ehrhart & Klein 2001).

According to the servant leadership theory (Greenleaf 1997), the role of the servant leader is to serve followers, the role of the follower is to become wiser, freer, and more autonomous and the outcomes expected are the follower satisfaction, development, commitment to service and societal betterment (Barbuto & Wheeler 2006). In addition, servant leadership changes the focus of the influence, which is generally considered the key element of leadership, by emphasizing the ideal of service in the leader–follower relationship (van Dierendonck 2011).

Leadership in the field of AF is multidimensional and is shaped by a set of interrelated structural elements that make up its execution model. According to this model and the multi-year experience of one of the present study researchers, effective leadership in the military context is based on five fundamental dimensions: the leader personality; the vision that guides his actions; the ability to influence and inspire subordinates; the rational administration and care of personnel; the responsibility in decision-making and risk-taking.

Northhouse (2021) state that key personality traits associated with effective leadership are self-confidence, integrity, and determination. In the context of AF, the leader's personality is not limited to his individual behaviour, but is manifested in his ability to operate under conditions of increased pressure, uncertainty and operational intensity, while maintaining stability, adaptability and insight.

The execution of AF mission demands from their leaders to communicate their vision, inspire and motivate their followers and enhance their commitment toward that vision. Indeed, the vision “reinforces the sense of purpose and commitment of subordinates, acting as a catalyst for mobilization and alignment of personal goals with the goals of the organization” (Bass & Avolio 1994) and strengthens the cohesion, loyalty, and psychological resilience of the leaders in the long run.

Communication plays a vital role to the military leaders and it is not limited to transmit information but to influence and persuade. In fact, the influence of a leader is associated with the use of different strategies and tactics, adapted to the requirements and the goals of each organization (Yukl 2013). In the military environment of the AF the leader's influence is not exercised exclusively through his hierarchical position, but is reinforced by trust, personal prestige, consistency of words and actions and high levels of emotional intelligence.

Administration and personnel management are fundamental dimensions that link the functional and human sides of leadership. Effective administration includes the rational management of resources, the allocation of tasks, decision-making and ensuring efficiency. Staff care incorporates psychological support, professional development and maintaining of the moral cohesion of the team. But leadership “goes beyond formal management, as it involves caring, mobilizing and supporting team members, especially under conditions of increased fatigue, risk or uncertainty” (Kotter 1996).

Taking responsibility, the ability to make decisions and risk-taking under pressure are key traits of the military leaders and their effectiveness in threatening turbulent and high risk circumstances reflects not only technical proficiency, but also ethos, courage and mission awareness, elements that shape the ability to assume responsibility and high risk decision making besides the robustness and agility of the leader. These five fundamental dimensions of military leadership constitute the framework on which the evaluation of the four selected leadership theories placed for the purpose of the present research study.

3. Methodology

3.1 Methodological Approach

The selected research approach was a survey as “it provides a quantitative description of trends, attitudes, and opinions of a population, or tests for associations among variables of the sample of a population and helps researchers answer questions such as descriptive, questions about the relationships between variables and questions about predictive relationships between variables over time” (Creswell & Creswell 2018). The main aim of this survey was to investigate the military leadership landscape by taking into consideration four leadership theories (charismatic, transactional, transformational, servant) and five leadership dimensions (personality, vision, influence, management and personnel care, and responsibility of decision making and risk-taking). These five dimensions were selected as the basis of investigation, firstly by taking into consideration basic management and leadership principles of military leadership and secondly, as they constitute components of the four selected leadership theories through which the military leadership model was identified.

The survey was mainly conducted by the following questions: 1. What is your general evaluation about the applied leadership model in the AF; The sub-question of which is: **1a.** What are the frequency and variation of scores on the applied leadership model in the AF for officers and non-commissioned officers? **2.** Do leadership theories such as charismatic, transactional, transformational and servant consist part of the applied leadership model in the AF? The sub-question of which is: **2a.** Which of the four leadership models prevails over the others in the leadership model applied in the AF? **3.** Is there a correlation between the opinions and perceptions of officers and non-commissioned officers regarding the leadership model applied in the AF? The main hypotheses were:

H1: There is no difference in the perception of the appropriateness of leadership model applied in the AF between officers and non-commissioned officers.

H2: The leadership model applied in the AF is related to charismatic, transactional, transformational and servant leadership.

H3: Transformative and servant leadership are more likely to have a greater impact on the leadership model applied in the AF.

A quantitative approach was selected based on the self-reported views of military leaders. A literature review of leadership theories, relevant articles, white papers, unclassified official forms and reference documents constituted the basis for the construction of the theoretical framework. The questionnaire as quantitative approach instrument has “many advantages such as economy and speed in data collection, standardized analysis and comparable results, and anonymity assurance” (Bryman 2016). In addition, quantitative approach “concentrates on measurable variables and quantified data capable of giving objective analysis of social phenomena and amenable to statistical analysis; it facilitates generalization by minimizing bias; it addresses the need for timely research in rapidly evolving environments like the disruptive, volatile, uncertain, complex and ambiguous –DVUCA environment” (Lim 2024).

3.2 Sample, Data Collection and Analysis

The sample participants belong to the AF, a hierarchically structured organization, which includes the Army, the Navy and the Air Force. The criterion for the participants’ inclusion was the specific hierarchy level (officer or

non-commissioned officer) with an equal participation rate in the survey of 50% and without gender discrimination.

The selected data were across all military branches rather than focusing on one specific branch and this increases the trustworthiness of the research and analysis. Data were gathered during the period from March 2025 to May 2025. The questionnaire was distributed through online survey, all responses were anonymized and stored securely, voluntary participation was emphasized and declared consent was obtained from all participants.

The questionnaire for data collection was consisted of three parts. The first part concerned demographic data of the respondents: gender, category (officer, non-commissioned officer), branch (Army, Navy, Air Force), and total years of service (professional experience). The second part was consisted of the general evaluation of the applied leadership model. The third was consisted of 35 items (seven items per leadership dimension) with a five-point Likert scale (strongly disagree to strongly agree) for all constructs except demographics. Officers and non-commissioned officers constituted the independent variable and the four leadership theories (charismatic, transactional, transformational and servant) dependent variables.

Data analysis was conducted with the SPSS Version (30.0). Descriptive statistics and inferential statistics were used to summarize data, answer research questions and test the hypotheses.

4. Results and Findings

The reliability and internal consistency of the items were examined using the Cronbach's Alpha Index. The Cronbach's α was 0.922, which demonstrates an extremely high level of reliability (values > 0.9 are considered excellent), confirms the consistency of the items and the measures' accuracy in capturing the intended constructs. A pilot testing and expert views were taken into consideration for the items development.

The total number of questionnaire respondents was 142, of two distinct hierarchical levels (officers and non-commissioned officers) of the AF with an equal participation rate in the survey of 50%. The demographic characteristics of the research sample were: the percent of 10.6% consisted of females and 89.4% of males, and that was expected to happen due to the limited number of females in the permanent staff of the AF. The participants were from all three branches of the AF (Army, Navy, Air Force) with a corresponding rate of 64.8%, 17.6%, 17.6%. It was also expected, due to the significantly larger number of those serving in the Army compared to the other branches. Most respondents had 21 and more years of military service (69.7%), from 11 to 20 years (21.1%) and from 0 to 10 years (9.2%).

Data gave answers to the main research questions and support the relative hypotheses.

Concerning the first main research question (general evaluation of the applied military leadership model) the points of view of the respondents are interpreted at the following two tables. The Table 1 describes the total frequency and percentage and the Table 2 their distribution between the two categories, officers and non-commissioned officers.

Table 1: General evaluation of the applied military leadership model

Description of evaluation	Frequency	Percentage
Completely unsuitable	3	2.1
Partially unsuitable	28	19.7
Neutral	24	16.9
Partially suitable	71	50
Completely suitable	16	11.3
Total	142	100

Table 2: General evaluation of the applied military leadership model per category

Description of evaluation	Officers		Non-commissioned officers	
	Frequency	Percentage	Frequency	Percentage
Completely unsuitable	1	1.4	2	2.8
Partially unsuitable	19	26.8	9	12.7

Description of evaluation	Officers		Non-commissioned officers	
	Frequency	Percentage	Frequency	Percentage
Neutral	7	9.9	17	23.9
Partially suitable	39	54.9	32	45.1
Completely suitable	5	7	11	15.5
Total	71	100	71	100

According to the Table 1, the majority of the respondents consider the applied leadership model at least suitable, with 50% rating it as "Partially Suitable" and an additional 11.3% as "Completely Suitable." Overall, 61.3% of the sample expressed a positive view of the leadership model.

According to the Table 2, concerning the officers, the majority (54.9%) evaluates the model as "Partially Suitable", while only 7% consider it "Fully Suitable", forming a moderately positive total of 61.9%. A slightly more positive attitude is observed among non-commissioned officers where 45.1% evaluate the model as "Partially Suitable" and 15.5% as "Completely Suitable", forming an overall positive percentage of 60.6%. Concerning the neutrality, non-commissioned officers present a higher percentage (23.9%), which may reflect a reserved attitude or lack of familiarity with all the aspects of the applied leadership model.

Concerning the second main research question (evaluation of the applied military leadership model under the consideration of the four leadership models), descriptive statistical analysis was applied in order to find out the basic distribution of participants' responses for each of the four contemporary leadership theories/models examined: charismatic, transformational, transactional and servant leadership.

Table 3: Average and standard deviation of the four leadership theories

Leadership theory/model	Average	Standard Deviation
Charismatic	3.89	0.80
Transactional	3	0.59
Transformational	3.95	0.83
Servant	3.95	0.86

It is evident that the models of transformational leadership and servant leadership are rated higher, with an average of 3.95, which indicates the presence and recognition of modern, human-centered leadership approaches within the AF.

The servant leadership model presents the greatest dispersion (standard deviation = 0.86), which demonstrates the existence of divergent views regarding the intensity of its application.

On the contrary, the transactional leadership model has the lowest mean (3.00) and the smallest standard deviation (0.59), which indicates convergent views and limited application of corresponding leadership practices.

Charismatic leadership is recorded at an intermediate level, with an average of 3.89, indicating that "characteristics such as personal influence and inspiration are valued by the participants, without however emerging as dominant traits of the leadership model" in the specific organization (Conger & Kanungo 1998).

The descriptive statistical analysis forms the basis for the further application of inferential statistical methods, with the aim of investigating whether the observed differences between the means are statistically significant.

The Repeated Measures ANOVA is the method used to determine whether there are statistically significant differences in the means of the four leadership models rated by the same participants. It is appropriate when each participant rates multiple variables, as this is the case in the present study. Furthermore, it allows the investigation of whether any of the leadership theories is statistically significant than others. The application of this analysis revealed a statistically significant difference between the four leadership theories [$F(3.139) = 90.379$, $p < 0.001$]. The F-index is the basic statistical measure in the analysis of variance and larger values indicate stronger differences between the groups. The p-value indicates the probability that the result is due to random variation. When it appears $p < 0.05$ the difference is considered statistically significant. At the present analysis ($p < 0.001$), the probability of random error is less than 0.1%, which enhances the reliability of the result and confirms the existence of significant differences between the leadership theories.

Since the same participants evaluated all four leadership theories (within-subjects analysis), the influence of external individual differences (such as gender, age, or professional experience) is reduced. This “enhances the validity of the statistical analysis, as it allows for more precise isolation of differences” attributable to the leadership theories themselves (Tabachnick & Fidell 2013).

The results of the analysis confirm that the evaluation of leadership theories varies significantly, depending on the characteristics identified in each theory. Participants evaluated the four theories differently, with one or more of them statistically outperforming or not.

Transactional leadership was evaluated negatively compared to the other theories, which is consistent with the findings of the descriptive statistical analysis, strengthening the validity of the conclusions.

After identifying statistically significant differences in the means of the four leadership theories through the Analysis of Variance (ANOVA), Pairwise Comparisons Analysis was performed between all theories. This analysis allows the identification of individual differences between pairs, highlighting which theories outperform or underperform compared to the others. A difference is considered statistically significant when the corresponding p-value is less than 0.05 ($p < 0.05$), which indicates that the probability the difference due to random variation is less than 5%.

The results of the analysis revealed that transactional leadership differs statistically significantly from all other theories, with the largest deviations recorded compared to transformational (+0.949) and servant leadership (+0.950). On the contrary, no statistically significant difference was found between transformational leadership and servant leadership ($p = 0.965$). This finding suggests that participants “perceive the two theories as similar”, which reinforces the view that both are based on common human-centered principles, emphasizing staff empowerment and support (Eva et al. 2019).

Concerning the third main research question (Is there a correlation between the opinions and perceptions of officers and non-commissioned officers regarding the leadership model applied in the AF), Multivariate Analysis of Variance (MANOVA) was applied. MANOVA is a “statistical technique that allows for the simultaneous examination of differences between groups on more than one dependent variable” (Tabachnick & Fidell 2013). In the context of the present study, it was used to determine whether officer or non-commissioned officer, as an independent variable, affects the overall perception of the four leadership theories, the dependent variables of the analysis. The MANOVA results showed that the overall effect of the independent variable (officers - non-commissioned officers) on the four dependent variables (leadership theories) is not statistically significant ($p = 0.079$). Consequently, no substantial differentiation is documented in the perceptions of the two groups, which indicates a relative homogeneity of opinions, regardless of hierarchical position.

However, since the p-value approaches the statistical significance threshold ($\alpha = 0.05$), it was deemed appropriate to apply a complementary Between-Subjects Effects Analysis (Univariate Tests or Between-Subjects Effects Analysis), which allows the examination of the effect of the independent variable on each dependent variable separately. The F-statistical index and p-value for each model is summarized in the Table 4.

Table 4: Impact analysis of respondents per leadership model

Leadership theory/model	F	p(Sig.)
Charismatic	5.022	0.027
Transactional	0.134	0.715
Transformational	4.129	0.044
Servant	2.406	0.123

This univariate approach revealed statistically significant differences in respondents' perceptions of charismatic ($F = 5.022$, $p = 0.027$) and transformational leadership ($F = 4.129$, $p = 0.044$), with officers rating them significantly higher compared to non-commissioned officers. The values of the F statistic reflect the size of the difference between the groups, while the corresponding p values confirm the statistical significance of the differences ($p < 0.05$).

In contrast, no statistically significant differences were found in the ratings for the two leadership theories, transactional ($F = 0.134$, $p = 0.715$) and servant leadership ($F = 2.406$, $p = 0.123$), as the p-values exceed the established significance threshold ($\alpha = 0.05$). This finding suggests that the ratings of the two groups do not differ substantially with respect to these specific theories/models.

This is consistent with previous findings showing that senior executives (officers) often recognize and prioritize leadership characteristics related to vision, inspiration, and personal influence (Bass & Avolio 1994). This may be “linked to the increased degree of administrative responsibility and strategic involvement” that characterizes the role of officers compared to non-commissioned officers (Yukl 2013).

5. Limitations and Suggestions for Further Research

Before turning to the conclusions flowing for the present effort, some limitations and suggestions for further research should be noted. One of the limitations is size of the sample, and another is the absence of random sampling and the existence of convenience sampling which hinders generalization.

Suggestion for further research are: the use of qualitative and mixed methods research approach; the enlargement of the size and diversity of the research sample, with the aim of ensuring greater representativeness in terms of the sectors, units and geographical areas and creating the possibilities for generalization of results; the research expansion in order to include a critical and often underrepresented part of the military organization, the conscript soldiers; investigation of the changes in personnel attitudes and perceptions over a long period of time and especially during the periods of institutional changes or reforms; comparative studies with corresponding military forces of different countries or security forces, with the aim of identifying best leadership practices focusing on innovation, emotional intelligence, flexibility and agility.

6. Discussion and Conclusions

This research study sought to investigate the military leadership landscape through the lens of four leadership theories (charismatic, transactional, transformational, servant), where leader personality, vision, influence, managerial skills and personnel care, responsibility in decision making and risk-taking constituted the basis for military leadership to successful achievement of its mission in an ever-changing world.

At the present research, the existence of transactional leadership, “in which reward and punishment dominate as the main means of achieving goals and ensuring functionality” (Burns 1978; Bass 1985) has been significantly downgraded, which means that military leadership of nowadays has adopted a human-centered approach and leaves aside its authoritarian character. Additionally, the leadership model applied in the AF, primarily characterized by the elements of transformational and servant leadership. The prevailing role of transformational leadership over the transactional leadership, which is often called authoritarian leadership, is congruent with a research in the public relations leadership where the focus groups participants prefer transformational leadership to transactional (Aldoory & Toth 2004). As public relations leadership takes place in a constantly changing, turbulent environment enforces the comparison with military leadership which activate in a VUCA environment. Moreover, previous research has highlighted the conditions under which transactional and transformational leadership operate: transactional in stable, predictable environments and transformational in crises and ever changing environments. The prevailing role of servant leadership is also apparent at another research where servant leadership has incremental predictive validity over transformational, authentic, and ethical leadership through a meta-analysis based on 130 independent studies (Lee, et al., 2020).

The present study emphasizes the importance of the four leadership theories that have been encompassed the leadership model applied in the AF by pinpointing the presence of modern, human-centered leadership approach and their navigation to their relevant VUCA environment. As the VUCA environment is normal to the military leaders’ life, it seems necessary for them to pay attention to near-and longer term future needs, create the appropriate ground for leading in future ambiguity and be able to adapt whatever it comes (O’Gorman, 2015). Additionally, even though military “is traditionally seen as an authoritarian organization” (Brænder & Holsting 2020) its leadership values do not develop in isolation from the society and are being influenced by the experience of people who belong to the military organization. Military leaders perform in an organization where ethics of action and patriot mind and the adoption of the contemporary leadership theories are evident. Furthermore, they make crucial decisions, mostly under intense pressure and with serious consequences (Fratila 2022). Therefore it seems suitable to the AF to incorporate “elements of a network-based structure and value innovation, flexibility and horizontal commands rather than keep exclusively their hierarchical structure” (Gøtzsche-Astrup, et al. 2021).

Findings of this research can be seen as an indication that may be a way to further develop military leadership to integrate values of openness to new solutions, flexibility and agility where leaders could be characterized as agile learners and be able to excel in unfamiliar circumstances.

Ethics Declaration: An ethical clearance was required. Approval of permission to conduct this research dated the 3rd of April 2025 was issued by the National Bioethics Committee of the country to which the AF belongs.

AI Declaration: No AI tools were used.

References

- Alidoory, L. & Toth, E. (2004) "Leadership and gender in public relations: Perceived effectiveness of transformational and transactional leadership styles", *Journal of Public Relations Research*, Vol.16, No. 2, pp 157–183.
- Alexa, A. (2024) "Military logistics in the light of the VUCA-world", *Land Forces Academy Review*, Vol XXIX, No. 3(115), pp 305-311.
- Antonakis, J., Bastardoz, N., Jacquart, P. & Shamir, B. (2016) "Charisma: An ill-defined and ill-measured gift, *Annual Review of Organizational Psychology and Organizational Behavior*, Vol 3, No. 1, pp 293-319.
- Avolio, B. J. & Bass, B. M. (2002) *Manual for the Multifactor Leadership Questionnaire (Form 5X)*, Redwood, Mindgarden.
- Babos, A., Rusu, M. S. & Bugata, G. (2024) "Perceptions of transformational and transactional leadership behaviors within military hierarchies", *International conference KNOWLEDGE-BASED ORGANIZATION*, Vol 30, No. 1, June, pp 1-8.
- Barbuto, J. E. & Wheeler, D. W. (2006) "Scale development and construct clarification of servant leadership", *Group and Organizational Management*, Vol 31, No. 3, pp 300-326.
- Bass, B. M. & Avolio, B. J. (Eds.) (1994) *Improving organizational effectiveness through transformational leadership*, Sage Publications, Thousand Oaks.
- Bass, B. M. (1985) *Leadership and performance beyond expectations*, Free Press, New York.
- Bass, B. M. & Riggio, R. E. (2006) *Transformational Leadership*, Lawrence Erlbaum Associates, Inc., London.
- Batista-Foguet, J. M., Esteve M, M. & van Witteloostuijn, A. (2021) "Measuring leadership an assessment of the Multifactor Leadership Questionnaire", *PLoS ONE*, Vol 16, No. 7, pp 1-22.
- Brænder, M. & Holsting, V. S. (2020) "The power of experience? Innovative and authoritative leadership values among Danish Army cadets", *Armed Forces & Society*, Vol XX, No. X, pp 1-22.
- Bryman, A. (2016) *Social research methods*, 5th ed, Oxford University Press, London.
- Burns, J. M. (1978) *Leadership*, Harper & Row, New York.
- Conger, J. A. & Kanungo, R. N. (1987) "Toward a behavioral theory of charismatic leadership in organizational settings". *The Academy of Management Review*, Vol 12, No. 4, pp 637-647.
- Creswell, J. W. & Creswell, D. J. (2018) *Research design: Qualitative, quantitative, and mixed methods approaches*, 5th ed, SAGE Publications, Inc.. Thousand Oaks.
- Ehrhart, M. G. & Klein, K. J. (2001) "Predicting followers' preferences for charismatic leadership: the influence of follower values and personality", *The Leadership Quarterly*, Vol 12, pp 153-179.
- Eva, N. et al. (2019) "Servant leadership: A systematic review and call for future research", *The Leadership Quarterly*, Vol 30, No. 1, pp 111-132.
- Fratila, C. (2022) "On types and paradigms of military leadership", *International conference KNOWLEDGE-BASED ORGANIZATION*, Vol 28, No. 2, pp 166-170.
- Gøtzsche-Astrup, O., Brænder, M. & Holsting, V. S. (2021) "Network or hierarchy? Personality profiles of future military leaders", *Nordic Psychology*, Vol 74, No. 3, pp 183-204.
- Greenleaf, R. K. (1977) *Servant leadership: A journey into the nature of legitimate power and greatness*, Paulist Press, New Jersey.
- Horn, C. B. & Walker, R. W. (Eds.) (2008) *The Military Leadership Handbook*, Dundurn Press and Canadian Defence Academy Press, Ontario.
- Jaqua, E. & Jaqua, T. (2021) "Transactional Leadership", *American Journal of Biomedical Science and Research*, Vol 14, No. 5, pp 399-400.
- Kotter, J. P. (1996) *Leading change*, Harvard Business School Press, Massachusetts.
- Lee, A., Lyubovnikova, J., Tian, A. W. & Knight, C. (2020) "Servant leadership: A meta-analytic examination of incremental contribution, moderation, and mediation", *Journal of Occupational and Organizational Psychology*, Vol 93, No. 1, pp 1-44.
- Lim, W. M. (2024) "What is quantitative research? An overview and guidelines", *Australian Marketing Journal*, Vol 0, No. 0, pp 1-24.
- Meerits, A. & Kivipold, K. (2020) "Leadership competencies of first-level military leaders". *Leadership & Organization Development Journal*, Vol 41, No. 8, pp 953-970.
- Narváez, C. P., Vélez, A. J., Fernández, R. C. & Téllez, O. F. (2020) Multilevel Military Leadership Model: Correlation between the levels and styles of military leadership using MLQ in the Ecuadorian Armed Forces. In: A. Rocha & R. Pereira, (Eds), *Developments and advances in defense and security*, Springer, pp 161-170.
- Northouse, P. G. (2021) *Leadership: Theory and practice*, 9th ed, Sage Publications, Thousand Oaks.
- O'Gorman, K. (2015) Developing high potential leaders. In: D. D. Riddle, E. R. Hoole & E. C. Gullette, (Eds), *The Center for Creative Leadership Handbook of Coaching in Organizations*, Jossey-Bass: San Francisco.
- Robbins, S. P. & Judge, T. A. (2024) *Organizational Behavior*, Pearson Education Limited, Essex.
- Spicker, P. (2012) "Leadership: a perniciously vague concept", *International Journal of Public Sector*, Vol 25, No. 1, pp 34-47.
- Tabachnick, B. G. & Fidell, L. S. (2013) *Using multivariate statistics*, 6th ed, Pearson, London.

- van Dierendonck, D. (2011) "Servant Leadership: A review and synthesis", *Journal of Management*, Vol 37, No. 4, pp 1228-1261.
- Yukl, G. (2013) *Leadership in organizations*, 8th ed, Pearson Education, New Jersey.
- Zaballero, A. G. & Park, J. G. (2012) The different leadership styles. In: W. J. Rothwell, Ed, *The Encyclopedia of Human Resource Management: HR Forms and Job Aids*, John Wiley & Sons, Inc, San Francisco, pp 36-38.

Leadership Data-Driven and CBHRM: Interplay of Skills in Public Administration

Ginevra Gravili

DEMDI, Bari, Italy

ginevra.gravili@uniba.com

Abstract: The increasing complexity of public sector challenges needs a shift from intuition-based decision-making to evidence-based approaches, particularly in human resource management (Cho et al., 2023). This paradigm shift requires leaders able to leverage data analytics to manage strategically human resources within public administration (Magakwe, 2025; Cho et al., 2023). The digital transformation in public sector needs to move beyond traditional practices to embrace new strategies for performance optimization ("Digital Transformation in Public Sector Human Resource Management," 2024). This paper explores the interplay between data-driven and soft skills, examining how these elements facilitate efficient transformation programs and enhance public service delivery (Adie et al., 2024) (Bastidas et al., 2023). Specifically, it investigates how leaders in public administration need to integrate sophisticated data analytics and soft competency frameworks to support an adaptive and high-performing workforce (García, 2025; Zervas & Stiakakis, 2024). The objective is to delineate the weight of the skills and competencies required for public sector leaders to navigate the complexities of data-driven decision-making (Adie et al., 2024). This integration is crucial to raise a workforce capable of navigating and ensuring public sector development (Adie et al., 2024; Zervas & Stiakakis, 2024). This research will delve into the competencies required by Human Resource Directors within these highly adaptive and scalable organizations, particularly examining how a human-centric approach to digital leadership can foster an environment leading to innovation and efficiency in public service.

Keywords: Leadership data-driven, CBHRM, Skills, Public administration

1. Introduction

The implementation of data-driven technologies marks the onset of a transformative era (Haug et al., 2023), in which public administrations are compelled to undertake significant organizational changes (Larson & DeChurch, 2020; Stonehouse & Konina, 2020), aimed at reshaping structures and redefine roles (Kollmann et al., 2021). This paradigm change requires leaders able to leverage data analytics to manage strategically human resources (Magakwe, 2025; Cho et al., 2023), shifting from intuition-based decision-making to evidence-based approaches (Cho et al., 2023). This is necessary for constant adaptation and continuous reskilling of leaders (Davenport & Ronanki, 2018). Traditional skills are increasingly insufficient to manage AI systems, their potential applications, imposing a leadership characterized by adaptability, digital literacy, and the right mindset (Chamorro-Premuzic et al., 2018; Pearce, 2018; Reynolds, 2018); they must be able to evolve with evolving organizational expectations and values (Forst & Jeske, 2019).

As AI changes take root, leaders need to be able to handle these changes (Ciarli et al., 2021) with an appropriate mindset. AI systems leverage big data analytics, deploy deep learning algorithms, and enable the formulation of objective, data-driven decisions. AI demonstrates substantial potential in enhancing efficiency and enabling strategic decision-making within predefined regulatory and procedural frameworks. Its effectiveness depends on the quality and integrity of the data, and it correlates above all on the ability to interpret and implement it, because its capacity for transformative innovation is inherently limited when it comes to challenging or transcending existing institutional paradigms (Kollmann et al., 2023).

It is essential for being competitive in the labour market (Davenport, 2006; Kane, 2017): public administrations currently face challenges in attracting top talent, as the private sector is often perceived as more appealing to skilled leaders (Chen et al., 2013).

This paper explores the interplay between data-driven and soft skills, highlighting the impact that they have on enhancing public service delivery. Specifically, it investigates which are the skills that Italian public administration leaders have in order to address the reskilling process versus data analytics and/or soft skills to support an adaptive and high-performing workforce (García, 2025; Zervas & Stiakakis, 2024). The objective is to delineate the weight of the skills and competencies required for public sector leaders to navigate the complexities of data-driven decision-making (Adie et al., 2024). This integration is crucial to raise a workforce capable of navigating and ensuring public sector development (Adie et al., 2024; Zervas & Stiakakis, 2024). This is explorative research and it will delve into the competencies required by ten Italian Human Resource Directors within these highly adaptive and scalable organizations, particularly examining how a human-centric approach

to digital leadership can foster an environment leading to innovation and efficiency in public service (Zhang et al., 2024; Abbu et al., 2025).

2. Literature Review

In recent years, the pervasive impact of digital transformation has reshaped the landscape of strategic human resources management processes, requiring public administrations to develop new organizational and professional skills that have brought to light the pivotal role of two paradigms: data-driven leadership and CBHRM.

Data-driven leader

The literature research highlights that the data-driven leader is someone who promotes accountability and fosters a data-driven culture, where decisions are based on facts and data, thereby avoiding unfounded opinions, cognitive biases, groupthink and self-censorship.

The leaders possess strong analytical skills and data self-efficacy, the ability to handle, discuss, and understand processes and biases (Schmidt, van Dierendonck, and Weber, 2023). They integrate management science principles, through which leaders make strategic decisions, improve operational efficiency, and drive innovation. They emphasize the central role of data in organizational culture, improving workforce engagement, and driving competitive advantage. Data-driven leaders use data-informed decision-making practices to acquire, evaluate, and interpret data to make strategic decisions, reducing the risk associated with decisions based merely on intuition. (Chigbu and Makapela, 2025).

In this regard, Schmidt van Dierendonck and Weber (2023) argue that the data-driven leader is characterized by an integrated set of three core competencies—technical, strategic, and relational—which must coexist to enable a genuine transformation of decision-making processes.

The technical competencies include the ability to understand, interpret, and critically evaluate both quantitative and qualitative data. As Gray, Bounegru, and Gerlitz (2018) emphasize, data ability goes beyond the ability to “read numbers”, entailing the capacity to critically question the origin of data, the methods used for its collection, the metrics applied and the broader social implications of its analysis.

In the public sector, these leaders are able to read and interpret services performance indicators, analyse administrative data and monitoring dashboards. Without a strong technical foundation, data is at risk of being overlooked or misinterpreted, resulting in poorly informed decisions. Beyond technical skills, a data-driven leader needs to possess professional competencies, such as the ability to translate data-driven insights into decisions. This requires integrating data into policy-making processes, using it to define priorities, evaluate impacts, and anticipate future scenarios.

This leader could be defined as “a visionary” (Schmidt et al., 2023) - one who can align analytical findings with the organization’s mission and leverage tools such as predictive analytics and data forecasting to identify emerging problems and opportunities. In public administration, this means using analytical insights to enhance strategic planning.

Another dimension of the data-driven leader involves relational and organizational competencies. As Kewalramani and Panyam (2024) argue: “it is transformative leadership - capable of promoting data culture, managing resistance, and enabling change - that ultimately determines the success of data adoption within organizations.”

According to this approach, the concept of data-driven leadership requires a set of skills and, where there is no evidence, it imposes new reskilling programs that become strategic levers for improving the efficiency, transparency, and quality of public services.

Table 1: Data-driven Skills

Skill / Competency	Description	Sources
Data Literacy	Ability to read, understand, and interpret data for decision-making.	Schmidt et al. (2023); Chen (2019); Niggli et al. (2023)
Analytical Thinking	Critical thinking using data; pattern recognition and logical reasoning.	Schmidt et al. (2023); Faúndez & de la Fuente-Mella (2022)

Skill / Competency	Description	Sources
Data Self-Efficacy	Confidence in using data and understanding its potential and limitations.	Schmidt et al. (2023); Chen (2019)
Strategic Vision	Ability to align data insights with long-term organizational goals.	Schmidt et al. (2023); Faúndez & de la Fuente-Mella (2022)
Problem Spotting	Identifying challenges or opportunities early using data insights.	Schmidt et al. (2023)
Influencing & Storytelling	Translating data into compelling narratives to influence stakeholders.	Schmidt et al. (2023); Niggl et al. (2023)
Knowledge Facilitation	Encouraging data sharing and cross-functional learning.	Schmidt et al. (2023); Niggl et al. (2023)
Technical Understanding	Awareness of tools, systems, and analytics capabilities.	Faúndez & de la Fuente-Mella (2022); Niggl et al. (2023)
Team Building	Assembling and empowering the right talent to support data initiatives.	Schmidt et al. (2023); Niggl et al. (2023)
Cultural Leadership	Creating an environment where data-informed decision-making is valued.	Niggl et al. (2023); Chen (2019)

CBHRM

CBHRM focuses on the systematic use of competency-based models – which define the knowledge, skills, behaviours, and attributes required for effective performance – to manage human resources within organizations (recruitment, training, evaluation, and career development) (Spencer & Spencer, 1993). The term “competence” includes a set of measurable or observable knowledge, skills, abilities, and behaviours that influence to individual and organizational performance (Boyatzis, 1982; Spencer & Spencer, 1993). Unlike formal education or certifications, competencies focus on what a person can perform a role under real-world conditions. This model distinguishes behavioural (such as teamwork, communication, and adaptability) and technical (such as data analysis, clinical procedures, or project management, Dubois & Rothwell, 2004). They provide a framework for both individual and organizational development (Lucia & Lepsinger, 1999), improving transparency in HR practices, and supporting continuous learning (Campion et al., 2011). Numerous studies conducted in public administrations have highlighted the positive effects of using this model on organizations. In the healthcare sector, for example, Gunawan et al. (2019) shed on how CBHRM has improved service delivery and employee motivation. In educational organizations, competency-based systems have improved staff development and performance (Arif and Smiley, 2004).

From a theoretical standpoint, competencies integrate the resource-based view (RBV), according to which human resources are critical factors for competitive advantage. Thus, organizations that identify, develop, and leverage competencies are more likely to achieve high performance (Lepak and Snell, 1999).

Table 2: CBHRM Skills

Skill / Competency	Description	Sources
Problem Solving	Critically analyze complex problems using data to identify key issues and propose effective solutions.	Jablokow (2008); Heifetz & Laurie (1997)
Strategic Vision	Anticipate future scenarios and define long-term goals and strategies accordingly.	Goldman & Casey (2010); Hughes et al. (2014)
Systemic Thinking	Understand interrelations among elements to develop an integrated and coherent perspective.	Kunc (2024); Senge (1990)
Process Management	Plan, organize, and manage resources and activities efficiently, aligned with strategic objectives.	Davenport (1993); Strielkowski et al. (2023)
Team Development	Promote employee growth through feedback, delegation, and recognition, ensuring fairness and motivation.	Goleman et al. (2013); Yukl (2012)
Team Leadership	Coordinate teams, assign roles, promote inclusion, and encourage collaboration.	Zaccaro et al. (2001); Hoch & Kozlowski (2014)
Change Promotion	Embrace and foster continuous improvement and innovation, positioning change as a positive force.	Kotter (1996); Nelson & Squires (2017)

Skill / Competency	Description	Sources
Responsible Decision-Making	Make timely, well-reasoned decisions under uncertainty, while assuming full accountability.	Schoemaker et al. (2013); Kahneman (2011)
Results Orientation	Set ambitious, value-oriented goals and take proactive action to achieve high-quality outcomes.	Locke & Latham (2002); Collins (2001)
Relationship Management	Build trust-based internal and external networks through effective, stakeholder-focused communication.	Goleman (1995); Boyatzis (2006)
Negotiation	Facilitate agreement between differing interests through constructive conflict resolution.	Fisher et al. (2011); Lewicki et al. (2020)
Service Quality Orientation	Understand and respond to stakeholder needs through active listening and continuous improvement.	Zeithaml et al. (1990); Johnston (2001)
Emotional Resilience	Stay calm and maintain performance under stress, while managing one's own and others' emotions.	Luthans & Youssef (2007); Tugade & Fredrickson (2004)
Self-Development	Pursue ongoing growth through reflection, feedback, and continuous learning.	London (2002); Kolb (1984)
Organizational Awareness	Act in line with organizational values, promoting transparency, fairness, and public interest.	Goleman (2000); Ashkanasy & Daus (2005)

Towards a Critical Integration of Data-Driven Leadership and CBHRM Frameworks

While both the Data-Driven Leadership and Competency-Based Human Resource Management (CBHRM) paradigms respond to the evolving demands of digital transformation, their integration within public sector scholarship and practice remains limited and under-theorized. Although CBHRM emphasizes the importance of strategic skills, it does not provide leaders with the tools needed to manage complex and constantly evolving information systems. The Data-Driven Leadership model, by contrast, is a dynamic approach that promotes continuous learning and evidence-based decision-making. It leverages technical skills, strategic vision, and interpersonal skills, with particular emphasis on the use of data. Unlike CBHRM, data-driven leadership integrates data with strategies. However, the literature on this topic remains fragmented. For example, the triadic model, proposed by Schmidt et al. (2023), doesn't measure competences, professional development, and performance alignment. Furthermore, it idealizes the figure of the data-driven leader, neglecting the cultural resistance and inertia typical of bureaucratic contexts.

Both models have limitations. CBHRM should consider analytical tools and predictive HR metrics. At the same time, the data-driven leadership model needs to be used into existing HR systems.

This put in evidence that a hybrid approach is necessary. This study aims to bridge the gap between the two paradigms and contribute to their mutual enrichment.

It shows how CBHRM can operationalize the insights of data-driven leadership, while the latter can breathe strategic agility and cultural transformation into CBHRM's structured approach. In this way, the paper proposes a synthesis model more attuned to the challenges of contemporary public sector innovation.

3. Methodology

This study adopts an exploratory qualitative approach rooted in the Gioia methodology (Gioia et al., 2013), which prioritizes the emic perspectives of organizational actors to inductively develop conceptual insights. The guiding epistemological assumption is that organizational members are knowledgeable agents, capable of articulating their experience in meaningful and analytically rich ways.

The sample comprises 10 HR directors and 48 group members across public sector organizations in Italy. Participants had 5 years of professional experience on average in which they managed five direct reports (70% of participants identified as male, 30% as female overall). The questionnaires consider an auto-evaluation for leaders and a leader's evaluation by the groups. While this number may appear limited from a quantitative standpoint, in qualitative and inductive research, depth and relevance of information are predominant compared to statistical representativeness (Patton, 2002). In line with qualitative research standards, the sample was selected using purposive and theoretical sampling, targeting those in leadership and HR supervisory roles, who could offer rich insights into the phenomenon of data-driven leadership in public administration. As Guest et al. (2006) note, saturation in thematic analysis can often be achieved within 6 to 12 interviews, particularly when the sample is relatively homogeneous in terms of experience and role—as in this case. The inclusion of

group-level perspectives (n=48) provides a meaningful triangulation of the HR managers' self-assessments, thus enhancing construct validity (Yin, 2014). The distribution across different levels of public administration - Municipalities (60%) to Provinces (30%) to Courts (10%) - and geographical areas -the majority were situated in North Italy (50%), then South Italy (30%), and Central Italy (20%)- ensures contextual diversity, which supports analytic generalizability rather than statistical generalization (Yin, 2014; Maxwell, 2013).

Analytical Strategy and Use of Gioia Methodology

The study draws on the Gioia methodology to develop a structured, conceptually rich understanding of emerging leadership competencies. This method allows for systematic coding and abstraction from raw data into second-order themes and aggregate dimensions. The process was carried out in several stages:

First-Order Coding (Informant Terms): Responses were initially analyzed using in vivo codes, retaining the language and meaning provided by participants. This process allows to understand the perception participants have on leadership and data use.

Second-Order Themes (Researcher Terms): Through iteration with participants, conceptual categories have emerged, that are included in the study after comparison with the literature framework.

Aggregate Dimensions: Conceptual categories were catalogued into constructs, such as "data self-efficacy," "strategic insight," or "relational leadership under digital transformation." To analyse the replies to a hybrid structure was used. For structured analysis it was used binary model, presence/absence, and Likert-scale for self and peer evaluation. It was integrated with open-ended responses and comparative interviews (Glaser and Strauss, 2017). This hybrid approach has allowed to develop a quantitative and qualitative interpretation of the present competencies within public administrations, allowing to understand the interplay between perceived leadership capabilities and actual workplace dynamics.

The questionnaire examines the presence (or absence) of 25 competencies, deduced by literature review. The skills were adapted to the public administrations, and they are listed in the table below.

Table 3: Data driven and CBHRM Skills

Skill / Competency	Description	Sources
Problem Solving	Critically analyze complex problems using data to identify key issues and propose effective solutions.	Jablokow (2008); Heifetz & Laurie (1997); Schmidt et al. (2023)
Strategic Vision	Anticipate future scenarios and define long-term goals and strategies accordingly.	Goldman & Casey (2010); Hughes et al. (2014); Schmidt et al. (2023); Faúndez & de la Fuente-Mella (2022)
Systemic Thinking	Understand interrelations among elements to develop an integrated and coherent perspective.	Kunc (2024); Senge (1990)
Process Management	Plan, organize, and manage resources and activities efficiently, aligned with strategic objectives.	Davenport (1993); Strielkowski et al. (2023)
Team Development	Promote employee growth through feedback, delegation, and recognition, ensuring fairness and motivation.	Goleman et al. (2013); Yukl (2012)
Team Building	Assembling and empowering the right talent to support data initiatives.	Schmidt et al. (2023); Niggli et al. (2023)
Team Leadership	Coordinate teams, assign roles, promote inclusion, and encourage collaboration, including remotely.	Zaccaro et al. (2001); Hoch & Kozlowski (2014)
Change Promotion	Embrace and foster continuous improvement and innovation, positioning change as a positive force.	Kotter (1996); Nelson & Squires (2017)
Responsible Decision-Making	Make timely, well-reasoned decisions under uncertainty, while assuming full accountability.	Schoemaker et al. (2013); Kahneman (2011)
Results Orientation	Set ambitious, value-oriented goals and take proactive action to achieve high-quality outcomes.	Locke & Latham (2002); Collins (2001)
Relationship Management	Build trust-based internal and external networks through effective, stakeholder-focused communication.	Goleman (1995); Boyatzis (2006)

Skill / Competency	Description	Sources
Negotiation	Facilitate agreement between differing interests through constructive conflict resolution.	Fisher et al. (2011); Lewicki et al. (2020)
Service Quality Orientation	Understand and respond to stakeholder needs through active listening and continuous improvement.	Zeithaml et al. (1990); Johnston (2001)
Emotional Resilience	Stay calm and maintain performance under stress, while managing one's own and others' emotions.	Luthans & Youssef (2007); Tugade & Fredrickson (2004)
Self-Development	Pursue ongoing growth through reflection, feedback, and continuous learning.	London (2002); Kolb (1984)
Organizational Awareness	Act in line with organizational values, promoting transparency, fairness, and public interest.	Goleman (2000); Ashkanasy & Daus (2005)
Data Literacy	Ability to read, understand, and interpret data for decision-making.	Schmidt et al. (2023); Chen (2019); Niggl et al. (2023)
Analytical Thinking	Critical thinking using data; pattern recognition and logical reasoning.	Schmidt et al. (2023); Faúndez & de la Fuente-Mella (2022)
Data Self-Efficacy	Confidence in using data and understanding its potential and limitations.	Schmidt et al. (2023); Chen (2019)
Problem Spotting	Identifying challenges or opportunities early using data insights.	Schmidt et al. (2023)
Influencing & Storytelling	Translating data into compelling narratives to influence stakeholders.	Schmidt et al. (2023); Niggl et al. (2023)
Knowledge Facilitation	Encouraging data sharing and cross-functional learning.	Schmidt et al. (2023); Niggl et al. (2023)
Technical Understanding	Awareness of tools, systems, and analytics capabilities.	Faúndez & de la Fuente-Mella (2022); Niggl et al. (2023)
Cultural Leadership	Creating an environment where data-informed decision-making is valued.	Niggl et al. (2023); Chen (2019)

4. Results

The results reflect perceived proficiency across 25 key skills, covering strategic, analytical, interpersonal, and data-related domains.

Table 4: Results of questionnaire

Skill	Description	Auto-evaluation Skill present	Valuation by members of group Skill present
Problem Solving	Critically analyze complex problems using data to identify key issues and propose effective solutions.	5	31
Strategic Vision	Anticipate future scenarios and define long-term goals and strategies accordingly.	4	23
Systemic Thinking	Understand interrelations among elements to develop an integrated and coherent perspective.	8	35
Process Management	Plan, organize, and manage resources and activities efficiently, aligned with strategic objectives.	3	27
Team Development	Promote employee growth through feedback, delegation, and recognition, ensuring fairness and motivation.	4	34
Team Building	Assembling and empowering the right talent to support data initiatives.	6	23
Team Leadership	Coordinate teams, assign roles, promote inclusion, and encourage collaboration, including remotely.	6	16

Skill	Description	Auto-evaluation Skill present	Valutation by memebers of group Skill present
Change Promotion	Embrace and foster continuous improvement and innovation, positioning change as a positive force.	7	24
Responsible Decision-Making	Make timely, well-reasoned decisions under uncertainty, while assuming full accountability.	7	28
Results Orientation	Set ambitious, value-oriented goals and take proactive action to achieve high-quality outcomes.	8	34
Relationship Management	Build trust-based internal and external networks through effective, stakeholder-focused communication.	9	45
Negotiation	Facilitate agreement between differing interests through constructive conflict resolution.	2	12
Service Quality Orientation	Understand and respond to stakeholder needs through active listening and continuous improvement.	3	11
Emotional Resilience	Stay calm and maintain performance under stress, while managing one's own and others' emotions.	3	12
Self-Development	Pursue ongoing growth through reflection, feedback, and continuous learning.	6	34
Organizational Awareness	Act in line with organizational values, promoting transparency, fairness, and public interest.	4	36
Data Literacy	Ability to read, understand, and interpret data for decision-making.	3	24
Analytical Thinking	Critical thinking using data; pattern recognition and logical reasoning.	7	41
Data Self-Efficacy	Confidence in using data and understanding its potential and limitations.	2	12
Problem Spotting	Identifying challenges or opportunities early using data insights.	5	35
Influencing and Storytelling	Translating data into compelling narratives to influence stakeholders.	4	23
Knowledge Facilitation	Encouraging data sharing and cross-functional learning.	8	43
Technical Understanding	Awareness of tools, systems, and analytics capabilities.	3	13
Cultural Leadership	Creating an environment where data-informed decision-making is valued.	1	11

Self-Evaluation and Skills

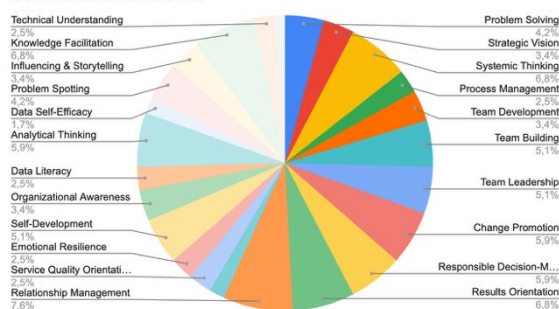


Figure 1: Self-evaluation and Skills

Peer Assessment

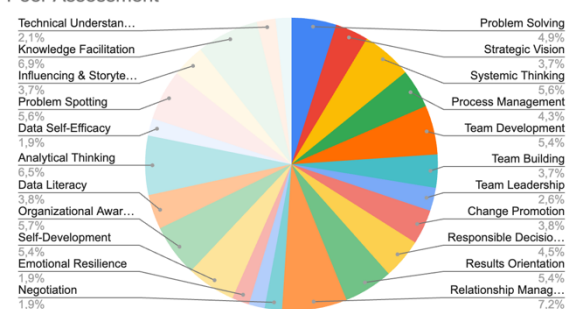


Figure 2: Peer Assessment

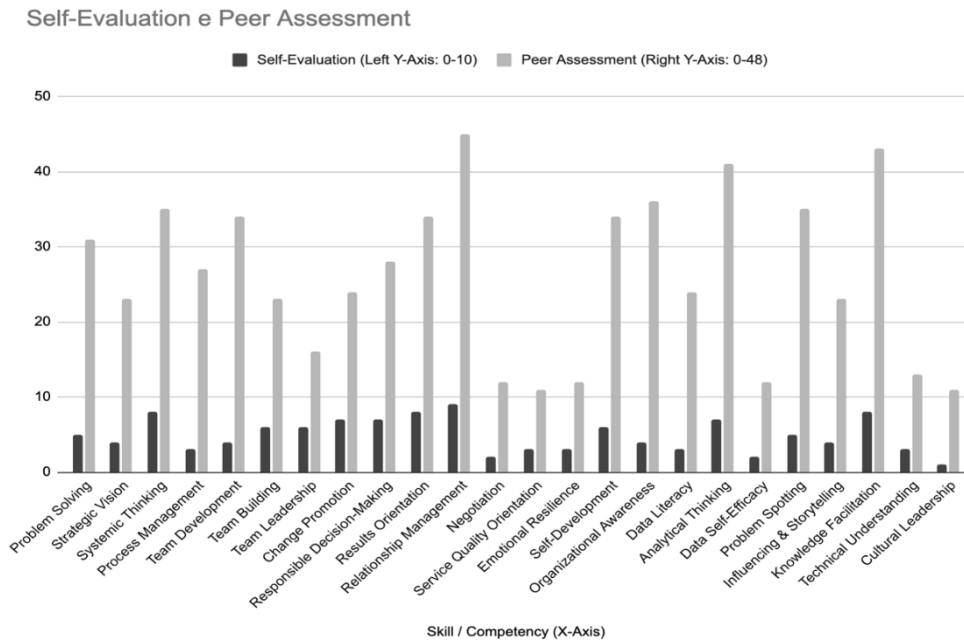


Figure 3: Comparison between self-evaluation and peer assessment

A consistent discrepancy is observed between self-evaluation scores and peer assessments. In nearly all competencies, the scores attributed by group members are significantly higher than the individual's self-ratings. This divergence may indicate a tendency towards self-critical judgment or anchoring heuristic in self-assessment, contrasting with external perceptions that are more favourable.

Strategic and Analytical Competencies

High self-perception and strong peer recognition are noted in Systemic Thinking (Self: 8; Peer: 35), Analytical Thinking (7; 41), and Results Orientation (8; 34). These findings suggest a recognized capacity for high-level thinking, goal-setting, and data-driven analysis. In contrast, there seem to be self-assessed muted scores for Strategic Vision (4; 23) and Process Management (3; 27), which have moderate to strong peer recognition. This could point to a lack of confidence in long-term planning and operational efficiency, although peer stakeholders recognize value and competency in these aspects.

Interpersonal and Leadership Skills

Strong interpersonal engagement and disposition as well as a commitment to one's own and the team's growth are well evidenced by the high peer scores in Relationship Management (Self: 9; Peer: 45), Team Development (4; 34), and Self-Development (6; 34). In contrast, the Team Leadership (6; 16) and Team Building (6; 23) have the lowest self-score and one of the lowest peer scores, confirming that this is an area that requires attention. Additionally, the Cultural Leadership (1; 11) received relatively low peer scores compared to other areas, highlighting that this is a critical area for development and in fostering a data-driven organizational culture.

Data Competencies

While Analytical Thinking and Knowledge Facilitation (Self: 8; Peer: 43) are strong, other skills such as Technical Understanding (3; 13), Data Self-Efficacy (2; 12), and Data Literacy (3; 24) have lower evaluations from both leader and peers. This suggests an uneven profile; enhancing confidence and technical capacity in handling data tools and methodologies could significantly bolster performance in data-intensive environments.

Personal and Emotional Competencies

Moderate to low scores in Emotional Resilience (Self: 3; Peer: 12) and Negotiation (2; 12) reflect challenges in managing stress and conflicts. These are critical soft skills, particularly in high-stakes or dynamic environments, and their development may contribute to more balanced and effective performance.

Underestimated Strengths

Organizational Awareness (4; 36) and Problem Solving (5; 31) suggest alignment with institutional values and analytical capacity that the individual may not fully recognize. This underestimation may signal a need for reflective practices that reinforce self-confidence and accurate self-perception.

5. Conclusion

While numerous studies have highlighted the importance of addressing the challenges posed by artificial intelligence (e.g., De Cremer, 2019; Petrucci and Rivera, 2018), there remains a gap in the empirical research on how AI influences the day-to-day experiences of leaders. This paper has explored how AI may drive changes in terms of skills required by managers who interact with such technologies.

The study has based on explorative research that has involved Italian HR of public administrations to put in evidence existing key managerial competencies, for assessing their relevance and adaptability in the AI-driven context.

The findings of this study offer several practical implications for policy-makers and human resources (HR) professionals operating within public administration. Firstly, there is a necessity to develop frameworks that promote AI-related leadership. This makes an investment necessary in the creation of integrated competencies for public sector leaders, providing, also, mechanisms for continuous training and professional development.

The possibility of realizing digital literacy training, publicly funded leadership programs, or incentive schemes tied to the implementation of AI-informed governance practices that could support organizations in this changing way. Then, policy-makers need to adopt a multi-level governance approach. Coordination across departments can be enhanced by data-driven leadership practices. To be profitable it's necessary to invest in recruitment, training, and evaluation practices in line with the AI-integrated contexts. This means that the new leaders need to possess additional competencies such as digital self-efficacy, data interpretation, emotional intelligence, and resilience in the face of technological disruption. Finally, the study underscores the need to bridge the strategic approach on data-driven leadership with tangible operational practices. It is incumbent upon both legislators and administrative leaders to embed AI leadership competencies into civil service statutes, performance appraisal criteria, and organizational design. In this way, it is useful for ensuring that public administration is not merely reactive but proactively shaped by the evolving digital context.

Ethics Declaration: In collecting empirical data, this study followed the ethical requirements of the respective university. This research study has not collected any sensitive data from the data subjects and, hence, did not require ethical approvals from the university. However, information about the study and the possibility of publication was provided to all workshop participants, and informed consent was obtained prior to data collection.

AI Declaration: No AI tools were directly used in conducting the research. Language correction tools were employed during the development of the workshop and the writing of the manuscript to proofread and correct language errors

References

- Abbu, H., Al-Dhaen, E. S., & Al-Kuwari, M. A. (2025). The role of digital leadership in public service innovation: A human-centric perspective. *Journal of Public Sector Innovation*, 12(1), 45–62.
- Adie, M., Naser, A., & Dandalt, M. (2024). Leading digital transformation in the public sector: Competency-based frameworks and leadership challenges. *Public Administration Review*, 84(2), 201–219.
- Arif, M., & Smiley, F. M. (2004). Competency-based performance appraisal for faculty. *Education*, 124(3), 538–547.
- Ashkanasy, N. M., & Daus, C. S. (2005). Rumors of the death of emotional intelligence in organizational behavior are vastly exaggerated. *Journal of Organizational Behavior*, 26(4), 441–452.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120.
- Bastidas, R., Moncayo, P., & Ortega, A. (2023). Strategic HRM in digital governance: The role of people analytics in public organizations. *Government Information Quarterly*, 40(1), 101769.
- Boyatzis, R. E. (1982). *The competent manager: A model for effective performance*. Wiley.
- Boyatzis, R. E. (2006). *Emotional intelligence competencies in the team and organization*. In V. Druskat, F. Sala, & G. Mount (Eds.), *Linking emotional intelligence and performance at work* (pp. 77–100). Lawrence Erlbaum Associates.
- Campion, M. A., Fink, A. A., Ruggeberg, B. J., Carr, L., Phillips, G. M., & Odman, R. B. (2011). Doing competencies well: Best practices in competency modeling. *Personnel Psychology*, 64(1), 225–262.
- Chamorro-Premuzic, T., Wade, M., & Jordan, J. (2018). The promise and peril of data-driven leadership. *MIT Sloan Management Review*, 59(2), 1–8.

- Chen, J. V., Jublee, M., & Choi, K. (2013). Perceived job prestige and applicant attraction in public vs. private sector: A comparison of IT professionals. *Public Personnel Management*, 42(3), 393–412.
- Chen, L. (2019). Developing data literacy for decision-making: A framework for public managers. *Journal of Public Affairs Education*, 25(4), 420–438.
- Chigbu, B. I., & Makapela, S. L. (2025). Data-driven leadership in higher education: advancing sustainable development goals and inclusive transformation. *Sustainability*, 17(7), 3116.
- Cho, Y., Lee, J., & Kim, H. J. (2023). Evidence-based human resource management in public administration: Data-driven approaches for strategic decision-making. *Public Personnel Management*, 52(2), 129–150.
- Ciarli, T., Kenney, M., & Massini, S. (2021). Artificial intelligence and the leadership challenge in public institutions. *Research Policy*, 50(10), 104375.
- Clutterbuck, D. and Crainer, S. (1990) *Makers of Management: Men and Women who Changed the Business World*, MacMillan, London.
- Collins, J. (2001). *Good to great: Why some companies make the leap... and others don't*. HarperBusiness.
- Conner, D.R. (1998) *Leading at the Edge-of-chaos: How to Create the Nimble Organization*, John Wiley, New York.
- Dandalt, M. (2024). Political-administrative leadership in a data-driven era. *International Review of Administrative Sciences*. Advance online publication. <https://doi.org/10.1177/0020852324123456>
- Davenport, T. H. (1993). *Process innovation: Reengineering work through information technology*. Harvard Business Press.
- Davenport, T. H. (2006). Competing on analytics. *Harvard Business Review*, 84(1), 98–107.
- Davenport, T. H., & Ronanki, R. (2018). Artificial intelligence for the real world. *Harvard Business Review*, 96(1), 108–116.
- Doherty, Noel and Delener, Nejd. (2001) "Chaos Theory: Marketing and Management Implications", *Journal of Marketing Theory and Practice*, Fall, Vol 9, No. 4, pp 66–75.
- Dolan, S.L., Garcia, S. and Auerbach, A. (2003) "Understanding and Managing Chaos in Organisations", *International Journal of Management*, Vol 20, No. 1, pp 23–35.
- Dubois, D. D., & Rothwell, W. J. (2004). *Competency-based human resource management*. Davies-Black Publishing.
- Evans, D. (1998) The arbitrary ape, *New Scientist*, Vol 159, No. 2148, 22 August, pp 32–35.
- Farrell, W. (1998) *How Hits Happen: Forecasting Predictability in a Chaotic Marketplace*, Harper Business, New York.
- Faúndez, M., & de la Fuente-Mella, H. (2022). Strategic thinking and analytical skills in data-driven management. *Journal of Decision Systems*, 31(2), 211–231.
- Fisher, R., Ury, W., & Patton, B. (2011). *Getting to yes: Negotiating agreement without giving in* (3rd ed.). Penguin Books.
- Fitzgerald, L.A. and van Eijnatten, F.M. (1998) "Letting Go For Control: The Art of Managing the Chaordic Enterprise", *The International Journal of Business Transformation*, Vol. 1, No. 4, April, pp 261-270.
- Forst, L., & Jeske, D. (2019). Reskilling the digital leader: Soft skills for adaptive transformation. *Organizational Dynamics*, 48(4), 100689.
- García, F. (2025). Leading public administration through digital competencies: Toward resilient and adaptive HRM systems. *Public Management Review*, 27(3), 451–474.
- Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013). Seeking qualitative rigor in inductive research: Notes on the Gioia methodology. *Organizational Research Methods*, 16(1), 15–31.
- Glaser, B. G., & Strauss, A. L. (2017). *The discovery of grounded theory: Strategies for qualitative research* (Rev. ed.). Routledge.
- Goldberg, J. and Markoczy, L. (1998) "Complex Rhetoric and Simple Games", [online], Cranfield University, www.Cranfield.ac.za/public/cc/cc047/papers/complex/html/complex.htm.
- Goldman, E. F., & Casey, A. (2010). Building a culture that encourages strategic thinking. *Journal of Leadership & Organizational Studies*, 17(2), 119–128.
- Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ*. Bantam Books.
- Goleman, D. (2000). *Leadership that gets results*. *Harvard Business Review*, 78(2), 78–90.
- Goleman, D., Boyatzis, R., & McKee, A. (2013). *Primal leadership: Unleashing the power of emotional intelligence*. Harvard Business Review Press.
- Gray, J., Bounegru, L., & Gerlitz, C. (2018). Data infrastructure literacy. *Big Data & Society*, 5(2), 2053951718786316.
- Gunawan, J., Aungsuroch, Y., & Fisher, M. L. (2019). Competency-based human resources management in nursing: A systematic review. *Nurse Education Today*, 73, 88–92.
- Heifetz, R. A., & Laurie, D. L. (1997). The work of leadership. *Harvard Business Review*, 75(1), 124–134.
- Hoch, J. E., & Kozlowski, S. W. J. (2014). Leading virtual teams: Hierarchical leadership, structural supports, and shared team leadership. *Journal of Applied Psychology*, 99(3), 390–403.
- Hughes, R. L., Beatty, K. M., & Dinwoodie, D. L. (2014). *Becoming a strategic leader: Your role in your organization's enduring success* (2nd ed.). Jossey-Bass.
- Jablokow, K. W. (2008). Developing problem-solving styles in engineering education. *Engineering Management Journal*, 20(3), 3–14.
- Johnston, R. (2001). Linking complaint management to profit. *International Journal of Service Industry Management*, 12(1), 60–69.
- Kahneman, D. (2011). *Thinking, fast and slow*. Farrar, Straus and Giroux.
- Kane, G. C. (2017). *The technology fallacy: How people are the real key to digital transformation*. MIT Sloan Management Review.

- Kewalramani, M., & Panyam, N. (2024). Transformative leadership in data-centric public organizations: Overcoming barriers to innovation. *Journal of Organizational Change Management*, 37(1), 101–119.
- Kim, S., & Kim, J. (2025). Shared leadership and talent analytics: A model for innovation in technology-driven organizations. *Leadership Quarterly*, 36(3), 101812.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice-Hall.
- Kollmann, T., Stöckmann, C., & Kensbock, J. M. (2021). The digital leadership transformation: Disrupting traditional management roles. *Journal of Business Research*, 130, 413–426.
- Kollmann, T., Peschl, A., & Stumpf-Wollersheim, J. (2023). Rethinking public leadership for the AI era: Limitations and opportunities. *Technology in Society*, 75, 102283.
- Kotter, J. P. (1996). *Leading change*. Harvard Business Press.
- Kunc, M. (2024). Systems thinking and public sector leadership: A modern approach to complexity. *Systemic Practice and Action Research*, 37(2), 223–241.
- McElwee, M. (1998) “Chaos Theory and Complexity as Fountainheads for Design of an Organization Theory Building Workshop”, Paper read at XIVth World Congress of the International Sociological Association, Montreal, Canada, July.
- Schmidt, D. H., van Dierendonck, D., & Weber, U. (2023). The data-driven leader: developing a big data analytics leadership competency framework. *Journal of Management Development*, 42(4), 297-326.
- Shava, E., & Ndebele, N. (Eds.). (2024). *Digital Transformation in Public Sector Human Resource Management*. IGI Global.
- Siregar, K. E., & Akhter, N. (2024). Digital leadership in the era of Industry 4.0: A comprehensive literature review. *Int. J. Educ. Eval. Policy Anal*, 1, 30-4

Public-Private Defence for Satellite Cybersecurity: Addressing Challenges Through Collaboration

Li Huang and Kimberly Cornell

University at Albany, USA

lh Huang9@albany.edu

kacornell@albany.edu

Abstract: Commercial satellites play a pivotal role in maintaining civil communications and military operations. However, these privately operated space systems remain vulnerable, particularly when deployed in high-stakes public emergency scenarios where secure and continuous communication is critical. This paper examines the cyber risks associated with commercial satellite communication (SATCOM) networks, such as those operated by SpaceX and Amazon, when deployed during civil conflicts and national emergencies. We argue that the convergence of military reliance, profit-driven motives, and emerging AI-enabled cyber threats has created a critical need for a public-private cybersecurity paradigm. We analyse three core challenges: misaligned stakeholder interests, the rise of generative AI-enabled attacks, and transparency gaps in satellite protocol governance. Building on the National Institute of Standards and Technology (NIST) Cybersecurity Framework (CSF) and the 2024 NIST AI Risk Management Framework (AI RMF), we propose an integrated approach for securing commercial SATCOMs. Our framework adapts NIST core functions to satellite systems and aligns sector-specific guidance from NIST Internal Reports (IR)s to facilitate coordination among government, military, and commercial actors. We further evaluate existing U.S. practices, including the Cybersecurity and Infrastructure Security Agency's Space System Working Group and the Space Force's Infrastructure Asset Pre-Assessment Program, to assess how cross-sectoral collaboration can be standardized and institutionalized. We argue for pre-emptive regulation on AI model deployment, cryptographic protocol disclosure, and open standards for hybrid satellite networks. By synthesizing technical frameworks with policy case studies, this study makes three contributions: first, it articulates a novel application of the NIST CSF to commercial satellite cybersecurity; second, it provides a conceptual bridge between AI risk management and satellite network governance; third, it offers practical strategies for harmonizing public benefit with private infrastructure in space-based communication. This research supports the development of a resilient satellite cybersecurity ecosystem that safeguards public trust and international stability.

Keywords: Commercial satellite, Cybersecurity, AI-Driven threat, Public-Private collaboration, NIST CSF, AI risk management framework

1. Introduction

Current estimates show over 7,500 satellites in orbit (Sebastian, 2025), potentially rising to nearly 100,000 in the next decade (Scharping, 2021). Private constellations like SpaceX and Kuiper are vital for global connectivity and security (Atlantic Council, 2024). Commercial satellite use expands to more actors, including agencies like the NSA (Greig, 2024). The U.S. must ensure trusted, secure space operations, driving innovation in launch, servicing, remote sensing, communication, and ground infrastructure (GeoTech Center, 2021). A strong space industry boosts U.S. security through industrial capacity, workforce, and innovation (Basham, 2024; Clark, 2024; Tucker, 2019).

Private companies like SpaceX, Amazon, and RocketLab focus on profit-driven innovation, which may conflict with cybersecurity (Atlantic Council, 2024; Basham, 2024; Clark, 2024; Tucker, 2019). Elon Musk's Starlink support to Ukraine initially aided critical communications, but subsequent threats to withdraw access due to funding constraints exposed vulnerabilities in proprietary systems for public benefit. As private satellites serve public and military needs, multiple stakeholders complicate security efforts (Starlink, 2022; Greig, 2024; Siegel, 2024; Industrial Cyber, 2024). Oversight is vital to balance profits and cybersecurity for national and humanitarian interests (Anderson and Moore, 2006; Quach et al., 2022; Van Camp and Peeters, 2022; Carlo and Obergfaell, 2024).

This study examines how public and private sectors can align interests to improve governance of AI-enabled satellite operations. We analyse cybersecurity challenges during emergencies, building on Cornell and Huang (Forthcoming). While that work is technical, this paper adds institutional, policy, and actor roles. Using NIST guidance, U.S. case studies, and governance practices, we propose a cybersecurity framework addressing mismatched interests, AI threats, and transparency, complementing technical models with governance for resilience and accountability.

2. Preliminaries

Space has become a conflict frontier involving governments, organizations, and entrepreneurs (Prado, 2024). Commercial satellites play a key role in warfare (Siegel, 2024), as they are vital for military and civilian communication. The Ukraine war shows how Starlink keeps Ukraine connected when terrestrial infrastructure fails (Starlink, 2022). Moreover, the dissemination of satellite imagery has bolstered U.S. and allied interests during the war in Ukraine. Photographic evidence of destroyed bases, bombed infrastructure, and the aftermath of missile strikes offered a glimpse into the realities of the war and exposed Russian hostilities and atrocities. Such imagery has the power to influence public opinion and, consequently, foreign policy. Russia targeted commercial space companies early, hacking Viasat during the invasion, harming Ukraine's space intelligence (Greig, 2024). Moscow also jams and disrupts unmanned aerial vehicles and satellites to hide troop movements, with jamming, cyberattacks, and electronic warfare, risking civil communication and space assets during conflicts.

However, as militaries increasingly target satellite intelligence, the civil services provided by commercial satellites are also being affected. Modern warfare, especially when it involves information infrastructure, cannot entirely separate military targets from public benefits. The US and its allies need to prioritize protecting commercial satellites from adversaries with advanced counter-space capabilities to prevent threats to future operations. Currently, no standard process exists for anti-satellite attack responses. Developing a flexible cybersecurity framework with communication protocols and data standards, adaptable to different actors, will secure space operations and serve the public. Without regulation, satellites cannot fully support humanitarian and civil services.

3. Literature Review

Cybersecurity of satellite communication (SATCOM) is a significant focus in academic research. Scholars have realized the vital role of commercial satellites during international humanitarian crises (Taggart et al., 2003; Doescher, Ristyb and Sunne, 2005). These satellites provide essential communication links when terrestrial infrastructure fails and offer invaluable imagery for assessing damage and directing aid efforts (Guida, 2021; Taggart et al., 2003; Doescher, Ristyb, and Sunne, 2023). Technological developments are making these commercial resources more accessible for government agencies, enhancing their ability to respond to crises. However, satellites and their ground stations are potential targets for cyber-attacks. These attacks aim to reduce the timely processing of satellite data into usable products and can disrupt communication, intercept sensitive information, or manipulate transmitted data (Bardin, 2025; Gilman, 2014). The increasing sophistication of cyber threats necessitates robust cybersecurity measures to protect SATCOM systems.

Various technological solutions have been proposed and implemented to enhance the security of SATCOMs in civil contexts (Maral, Bousquet and Sun, 2020). For instance, utilizing advanced encryption methods such as AES (Advanced Encryption Standard) ensures that data transmitted over satellite links is secure (Landau, 2000). End-to-end encryption further enhances security by protecting data from interception at any point in the communication chain (Cruickshank, 1996). However, despite the growing number of technical solutions, incidents involving SATCOM remain pervasive and severe (Industrial Cyber, 2024). As the space industry is increasingly competitive, actors in this field continuously develop and adopt new technologies and operational concepts for their space assets. However, these advancements not only introduce new risks but also create vulnerabilities in space systems through new data streams, communication links, and interconnected infrastructures. Cybercriminals strategically exploit these vulnerabilities to carry out their malicious intentions.

The increasing prevalence and severity of cyber threats to SATCOMs underscores the importance of external interventions (Elbert, 2004). Multiple mechanisms and institutions support SATCOMs for disaster response and humanitarian aid. The International Telecommunication Union (ITU) provides guidelines and support for deploying emergency communication systems during disasters, ensures the availability of SATCOM frequencies for emergency use, and offers training and resources to improve the use of SATCOMs in disaster response (Rothblatt, 1982).

Despite progress in technical safeguards, most studies emphasize encryption or data-link security rather than cross-sector governance. Existing scholarship often isolates technical safeguards from policy and governance considerations. Few examine how public-private coordination and AI risk management frameworks can be integrated into commercial satellite cybersecurity, leaving an interdisciplinary gap. This paper contributes by bridging NIST's technical standards with policy-driven governance mechanisms, generating a unified model that links technical, organizational, and regulatory dimensions of satellite cybersecurity.

4. Methodology Approach

This study adopts a qualitative document-analysis method, synthesizing guidance from NIST CSF, AI RMF, reports (such as NIST IRs 8270, 8323, 8401, 8441), U.S. Space Force (USSF) directives, and case analyses such as Starlink in Ukraine. Primary sources were selected for their relevance to commercial satellite security and cross-sector governance. The analysis maps policy provisions and institutional mechanisms to the NIST CSF core functions, identifying practical coordination gaps among stakeholders and best practices. The Starlink-Ukraine case reference illustrates practical implications and validates conceptual consistency.

5. Challenges

Several challenges hinder the development of a strong security posture in commercial SATCOM. During humanitarian crises, SATCOM can become vulnerable and less secure.

5.1 Misaligned Interests

Misaligned interests hinder network communication, leading to conflicts such as those between security responsibilities and beneficiaries (Anderson and Moore, 2006). These conflicts include profit versus privacy, as seen in hospitals and insurers prioritizing costs over patient privacy. In SATCOMs, private sector goals clash with regulatory aims; private satellite owners seek profits, risking vulnerabilities if costs are cut. There is also tension between corporate data privacy and security priorities, with private companies often valuing data monetization over privacy (Quach et al., 2022). These conflicts challenge regulation and security efforts.

5.2 Technological Challenges: AI-Driven Cyber Threats

The rapid advancement of AI technologies has introduced new threats to SATCOM (Sierra Space, 2024). Generative AI models can identify and exploit known vulnerabilities in real-world systems (Fang et al., 2024), significantly enhancing the effectiveness of cyber-attacks on satellite systems. Many legacy SATCOM systems still use outdated cryptographic units that conform to previously suggested standards (Breda et al., 2022).

AI algorithms can automate the detection of weak points in satellite networks (Wang et al., 2023), making it easier for attackers to launch sophisticated cyber-attacks. Large language model (LLM)-informed reconnaissance leverages generative AI to analyse SATCOM protocols and radar imaging tools, allowing attackers to gather crucial information about potential targets.

In international conflicts, the deployment of generative AI models on satellites can influence the course and outcome of wars by creating interference (Maguire, 2024). Recently, Fancy Bear, a division of the Russian GRU military intelligence, has begun applying AI models to leverage satellite and radar infrastructures, potentially interfering with the war process in Ukraine (Security Staff, 2024). Additionally, AI-driven spoofing attacks can mislead satellite navigation systems, causing significant disruptions in military and civilian operations (Egozi, 2024).

5.3 Lack of Transparency

The lack of access to standardized protocols and the potential unregulated actions of private companies in deploying generative AI models present significant risks to SATCOMs. Without commonly accepted protocols, ensuring the security and integrity of SATCOMs becomes challenging, increasing susceptibility to cyber-attacks. Moreover, private companies may not disclose their AI development processes, data sources, or training methodologies. This lack of transparency prevents regulatory authorities from recognizing the potential harmful consequences of these AI models and complicates effective regulation (Feuerriegel et al., 2024; Scherer, 2015; Felzmann et al., 2019). Furthermore, private companies might not adhere to rigorous testing and validation processes, increasing the likelihood of deploying flawed or insecure AI models that can be exploited by adversaries (Jobin, Ienca and Vayena, 2019).

6. Satellite Cybersecurity Framework

We propose a tiered satellite cybersecurity framework based on the NIST CSF and AI RMF, integrated with threat modelling and empirical risk analysis. First, the NIST framework (NIST, 2014) assesses security, offering a structured approach:

- **Identify:** Understand cybersecurity risks to satellite systems by cataloguing assets, assessing vulnerabilities, and identifying critical components.

- **Protect:** Implement safeguards to ensure the security of satellite operations, e.g., access control, encryption, etc.
- **Detect:** Promptly identify cybersecurity events, including monitoring SATCOMs and detecting unauthorized access or anomalies.
- **Respond:** Mitigate the impact of cybersecurity incidents affecting satellite systems, ensuring coordinated and effective response actions.
- **Recover:** Restore satellite systems and services after a cybersecurity incident, including repairing affected components and improving resilience for future threats.

Second, the NIST IRs offer detailed guidance for space assets, hardware, and infrastructure. IR 8270 covers spacecraft, IR 8401 addresses terrestrial infrastructure, IR 8323 targets GPS users, and IR 8441 covers hybrid systems like terminals and payloads.

6.1 Interest Alignment

NIST frameworks can address misaligned interests between private companies and authorities in commercial SATCOM security by fostering collaboration and establishing shared goals. Its cybersecurity framework is developed through collaborative input from both government and private sector stakeholders. The collaborative input ensured the formation of consensus-driven standards and guidelines, which balance national security needs with the operational priorities of private entities (Scarfone et al., 2009; Rivest et al., 1992). Second, NIST facilitates public-private partnerships, encouraging intelligence sharing among diverse stakeholders. By highlighting the economic risks of cybersecurity failures, the framework emphasizes the mutual benefits of robust cybersecurity, including the protection of critical infrastructure and the competitive advantage of securing communication networks (Van Camp and Peeters, 2022; Scholl, Scholl and Suloway, 2023; Carlo and Obergfaell, 2024). Furthermore, with a focus on transparency and adaptability, it helps harmonize regulatory requirements with business innovation, enabling a balanced and cooperative approach to SATCOM security (Carayannis and Roy, 2000).

6.2 AI Risk Management

In 2024, NIST published AI RMF to address risks in AI-driven SATCOM (NIST, 2024). Incorporating both traditional cybersecurity concerns and AI-specific threats, it guides organizations to identify vulnerabilities unique to AI systems, such as adversarial attacks, data poisoning, or model drift, which could compromise SATCOMs. Additionally, AI RMF emphasizes secure development of AI systems in SATCOM through practices such as robust model training to defend AI models against manipulated inputs, advocating for the use of verified and sanitized datasets, and employing interpretable AI models to detect malicious behaviour (Lim and Kwon, 2024; NIST, 2024). More importantly, NIST frameworks promote collaboration across sectors, working with industry and academia to develop threat intelligence and stay ahead of evolving AI cyber threats (Protik, 2023). By encouraging innovation in defensive AI technologies, the framework supports a secure and adaptive approach to managing AI risks in SATCOM.

The integration of the AI RMF outlines four core functions of SATCOM security:

- **Map:** Identify AI-enabled components within SATCOM systems, including where LLMs, routing optimization, or anomaly detection are deployed.
- **Measure:** Assess risk using metrics such as model interpretability, robustness to adversarial inputs, and the potential for misuse (e.g., spoofing or data extraction).
- **Manage:** Implement security controls and incident response strategies tailored to AI-specific vulnerabilities like data poisoning or model drift.
- **Govern:** Establish organizational policies for responsible AI use, ensuring transparency and accountability through audits and regulatory reports.

6.3 Transparency in Protocols

To address the lack of transparency in the deployment of generative AI in SATCOMs, greater transparency, and scholarly research on the protocols used are encouraged. Authorities should set clear guidelines and promote research on protocols. NIST has created frameworks emphasizing standardized protocols and regulations to reduce AI deployment risks (NIST, 2024). Companies should provide detailed documentation on their AI models, including training data, sources, and algorithms, accessible to regulators and researchers for accountability. The industry should also develop detailed open standards for SATCOM protocols. For example, NIST's 2023 'Cybersecurity Framework Profile for Hybrid Satellite Networks' (HSN, 2024) offers cybersecurity guidance that

can inform communication protocol standards. Table 1 shows the stakeholder responsibility matrix, pairing challenges with actors best suited to address them, translating conceptual frameworks into practical roles for accountability and coordination.

Table 1: Responsibility matrix among stakeholders

Challenge	Government	Military	Commercial	Multilateral Organizations
Misaligned Interests	Policy enforcement, procurement standards	Operational assurance, mission alignment	Profit-security trade-off decisions	Norm-setting and trust frameworks
AI-Driven Threats	Regulate AI development	AI Defence innovation, rapid response	Secure AI deployment, testing	Promote shared AI threat intelligence
Lack of Transparency	Mandate disclosure, standardization	Cyber vetting of contractors	Publish protocols, share risk data	Foster global accountability

6.4 Integrated Framework of Public-Private Satellite Cybersecurity

To visualize the proposed framework, we integrate the NIST CSF and the AI RMF into a layered model for satellite-network governance, depicted in Figure 1. The outer layer, incorporating the five CSF functions from Section 6, structures the technical and operational defences of SATCOM systems. The inner layer contains AI RMF’s four core functions from Section 6.2, overseeing AI components like threat detection, routing, and analytics. At the intersection are three actor domains, government, military, and commercial, linked by channels for sharing, transparency, and accountability. The model illustrates a continuous loop where safeguards, AI risk controls, and governance reinforce each other to maintain a resilient satellite-cybersecurity ecosystem.

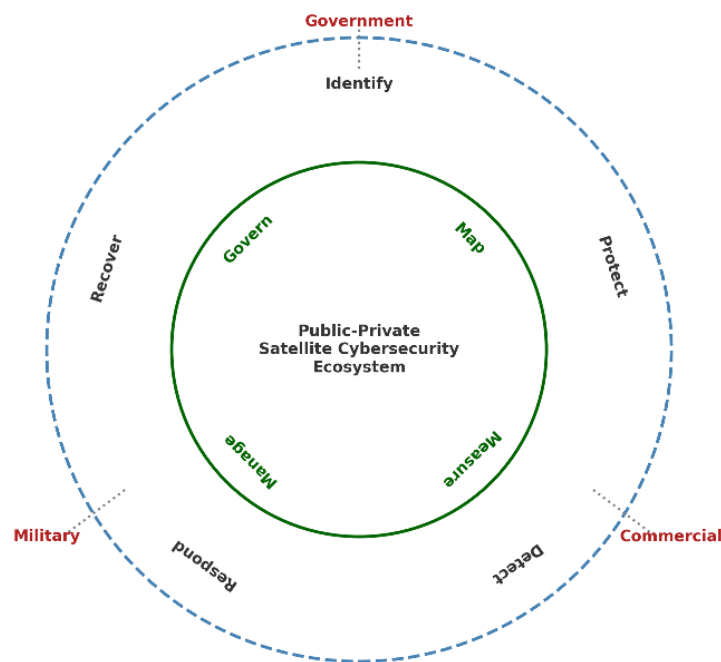


Figure 1: Integrated NIST CSF–AI RMF Framework for Public-Private Satellite Cybersecurity

7. The U.S. Practice

We outline key practices implemented by the U.S. to enhance satellite security and evaluate the collaborative efforts of multiple stakeholders in safeguarding SATCOM. The U.S. has adopted diverse strategies to establish and maintain multi-layered cooperation in satellite cybersecurity, aiming to prevent disruptions and ensure the resilience of SATCOMs for public benefits as well as national security.

7.1 Government Perspective

The U.S. government hosts forums, workshops, and research projects where agencies and private companies collaborate on cybersecurity and innovation. In 2021, the Cybersecurity and Infrastructure Security Agency formed the “Space System Critical Infrastructure Working Group,” which operates under the Critical Infrastructure Partnership Advisory Council (CISA, 2021). This group, comprising government and industry members, brings together stakeholders of critical space infrastructure to improve the security and resilience of U.S. space systems, identify areas for improvement, and develop solutions for managing cyber risks to protect critical space-based assets.

7.2 Military Perspective

The USSF focuses on the resilience of space infrastructure and the cybersecurity defence of space networks, underscoring the growing integration of space and cyber domains. In 2023, General B. Chance Saltzman outlined three priorities, including deploying combat-ready forces to enhance the resilience of ground stations, networks, and mission facilities (USSF, 2023). Currently, USSF coordinates with U.S. Cyber Command through a dedicated Air Force component (Dziwisz and Romaniuk, 2023). In the future, the USSF aims to establish its own Cyber Command component, like other combat commands, to better address space cybersecurity (USSF, 2023). The focus is shifting from traditional IT support to rapid cybersecurity defence of critical space networks (USSF, 2024).

7.3 Commercial – Government

Collaboration between private companies and public agencies frames SATCOM security as a shared priority that benefits both. The USSF’s Infrastructure Asset Pre-Assessment Program (IAPP), launched in 2022, serves as a model for evaluating the cybersecurity posture of commercial satellite assets prior to government and military procurement (Space Force, 2022). In 2020, the USSF’s Commercial Satellite Communications Office announced a new cybersecurity program, which was implemented as the Infrastructure Asset Pre-Assessment Program in January 2022, with an expected 18-month timeline (Infrastructure asset pre-assessment program, 2020). This program aims to test the cybersecurity qualifications of commercial SATCOM products and advance the security posture of current and future commercial SATCOMs procurements for the Department of Defence (Infrastructure asset pre-assessment program, 2020). By 2026, the program will apply standardized security assessments to all commercial satellite contracts, streamlining procurement and enhancing resilience (Infrastructure asset pre-assessment program, 2020).

The IAPP represents a significant step in embedding cybersecurity into satellite procurement. It provides a standardized mechanism for assessing the security posture of commercial satellite assets before government or military adoption. Using vulnerability assessments, compliance checks, and red-teaming simulations, the program generates cybersecurity ratings that inform procurement eligibility. Beyond fostering accountability in the private sector, IAPP offers a replicable model for allied nations. Its implications extend internationally; countries with limited cybersecurity capacity could adopt IAPP protocols to audit foreign satellite providers operating within their borders, thereby enhancing global resilience.

7.4 Commercial–Military

The development of military-commercial hybrid networks at the technological level is crucial to integrating SATCOM systems. In 2021, Viasat signed a seven-year research contract with the U.S. Air Force Research Laboratory to develop a “hybrid-network” framework suitable for both commercial and government SATCOMs, aiming to seamless network operations across commercial and military satellite networks (Erkel, 2023).

7.5 Collaboration

The collaboration between the U.S. government, private sector, and military in SATCOM security focuses on strengthening satellite cybersecurity through joint initiatives and shared expertise. It standardized cybersecurity practices across stakeholders to mitigate space risks. For instance, the U.S. could work with NATO, the European Space Agency, and Asia-Pacific space alliances to promote IAPP as a de facto standard. A global registry of certified satellite operators, aligned with NIST CSF and AI RMF guidelines, would provide a much-needed trust layer for space assets used in emergencies, defence, and international aid missions.

8. Discussion and Conclusion

This study explores a pathway through which public and private sectors can align their interests to enhance the cybersecurity of commercial SATCOMs, particularly in humanitarian crisis contexts. We identified three

interrelated challenges: misaligned stakeholder interests, AI-driven cyber threats, and a lack of transparency in protocol governance. These challenges highlight the complexity of securing satellite networks that are profit-driven, publicly utilized, and rapidly evolving technologically.

To address these issues, this study proposed an integrated NIST CSF–AI RMF model that bridges technical safeguards and governance mechanisms. The outer CSF layer organizes operational defences around the five functions, while the inner AI RMF layer focuses on risk management for AI-enabled systems. By embedding these frameworks within the collaborative domains of government, military, and commercial stakeholders, the model visualizes how transparency, intelligence sharing, and accountability can reinforce one another.

Case analyses of U.S. practices, including the Cybersecurity and Infrastructure Security Agency’s Space Systems Working Group and the USSF’s IAPP, demonstrate that structured collaboration and pre-procurement cybersecurity assessments can standardize trust among partners. Overall, these findings illustrate that technical resilience and institutional coordination must evolve together to secure commercial satellite ecosystems.

8.1 Implications

8.1.1 Theoretical implications

This study contributes to cybersecurity governance theory by integrating AI risk management into space cybersecurity frameworks. It shows how NIST CSF and AI RMF can jointly function as a socio-technical governance model, linking policy compliance with technical assurance. The framework supports public–private cyber governance by addressing asymmetric information, promoting standardization, and institutionalizing accountability.

8.1.2 Practical implications

The proposed model provides a structure for operationalizing collaboration among government agencies, defence institutions, and private satellite operators. For instance, commercial entities can adopt it as an internal compliance benchmark to ensure AI components meet risk-management requirements under the AI RMF. Defence sectors can employ the model to establish continuous cybersecurity assurance across hybrid commercial-military networks. The responsibility matrix in Section 6 translates coordination principles into actionable roles, enabling practitioners to implement layered accountability in real-world operations.

Overall, these findings show that technical resilience and institutional coordination must evolve together to secure commercial satellite ecosystems. Building on prior technical models that integrate NIST CSF and AI RMF into satellite cybersecurity architectures, this study contributes a governance-oriented extension that emphasizes stakeholder alignment, transparency, and policy mechanisms. Together, these efforts support the development of a robust, multi-layered defence strategy for space-based infrastructure.

8.2 Limitations and Future Research

This study is primarily based on qualitative document analysis using publicly available reports and policy documents, which limits empirical validation. Future research should include quantitative risk modelling, cryptographic protocol testing for satellite systems like Starlink, and expert interviews. Integrating economic valuation models (e.g., Return on Security Investment) and AI-based threat prediction could also enhance the analytical depth of future work.

Ethics declaration: Ethical approval was not required.

AI declaration: AI tools were not used in the creation of this paper.

References

- Anderson, R. and Moore, T., 2006. The economics of information security. *science*, 314(5799), pp.610-613.
- Atlantic Council (2024) *Assured space operations for public benefit*. Available at: <https://www.atlanticcouncil.org/content-series/geotech-commission/chapter-6/> (accessed: 2024-06-13).
- Bardin, J.S., 2025. Satellite cyber attack search and destroy. In *Computer and Information Security Handbook* (pp. 1561-1580). Morgan Kaufmann.
- Basham, S. (2024) *The critical role of space in modern warfare and the imperative of joint space capabilities in Europe*. Available at: <https://www.eucom.mil/article/42685/the-critical-role-of-space-in-modern-warfare-and-the-imperative-of-joint-space-capabilities> (accessed: 2024-06-13).
- Breda, P., Markova, R., Abidin, A., Jha, D., Carlo, A. and Manti, N.P., 2022, September. Cyber vulnerabilities and risks of AI technologies in space applications. In *73rd International Astronautical Congress (IAC), Paris, France*.

- Carayannis, E.G. and Roy, R.I.S. (2000) Davids vs Goliaths in the small satellite industry: The role of technological innovation dynamics in firm competitiveness. *Technovation*, 20(6), pp.287–297.
- Carlo, A. and Obergraffel, K. (2024) Cyber attacks on critical infrastructures and satellite communications. *International Journal of Critical Infrastructure Protection*, 46, 100701.
- Clark, S. (2024) Taking stock: Private investment in space companies rebounded in 2023. *Ars Technica*. Available at: <https://arstechnica.com/space/2024/01/taking-stock-privateinvestment-in-space-companies-rebounded-in-2023/> (Accessed: 2024-06-20).
- Cornell, K.A. and Huang, L., Forthcoming. *Resilient Satellite Cybersecurity: Integrating NIST and AI Governance*. To be presented at the 16th EAI International Conference on Digital Forensics & Cyber Crime (ICDF2C), Miami, Florida, November 2025. To appear in Springer LNCS series, expected May 2026.
- Cruikshank, H. (1996) A security system for satellite networks. In: *Fifth International Conference on Satellite Systems for Mobile Communications and Navigation*, pp.187–190. IET.
- Cybersecurity and Infrastructure Security Agency (2021) *CISA launches a space systems critical infrastructure working group*. Available at: <https://www.cisa.gov/news-events/news/cisa-launches-space-systems-critical-infrastructure-working-group>.
- Cybersecurity Framework Profile for Hybrid Satellite Networks (HSN) (2024) *NIST Interagency Report 8441*. Available at: <https://nvlpubs.nist.gov/nistpubs/ir/2023/NIST.IR.8441.pdf> (Accessed: 11 September 2024).
- Doescher, S., Ristyb, R. and Sunne, R. (2005) Use of commercial remote sensing satellite data in support of emergency response. In: *ISPRS Workshop on Service and Application of Spatial Data Infrastructure*, pp.14–16.
- Dziwisz, D. and Romaniuk, S.N. (2023) US Cyber Command (USCYBERCOM). In: *The Handbook of Homeland Security*, pp.305–314. CRC Press.
- Egozi, A. (2024) New protections deployed against attacks on navigation systems. *Aviation International News*. Available at: <https://www.ainonline.com/aviation-news/airtransport/2024-07-16/new-protections-deployed-against-attacks-navigationsystems>.
- Elbert, B.R. (2004) *The satellite communication applications handbook*. Artech House.
- Erkel, D. (2023) *The Success of Emerging Space Actors: Effective Strategies in the NewSpace Era*. Ph.D. thesis. Massachusetts Institute of Technology.
- Fang, R., Bindu, R., Gupta, A. and Kang, D. (2024) LLM agents can autonomously exploit one-day vulnerabilities. Available at: <https://arxiv.org/abs/2404.08144>.
- Felzmann, H., Villaronga, E.F., Lutz, C. and Tamò-Larrieux, A. (2019) Transparency you can trust: Transparency requirements for artificial intelligence between legal norms and contextual concerns. *Big Data & Society*, 6(1), 2053951719860542.
- Feuerriegel, S., Hartmann, J., Janiesch, C. and Zschech, P. (2024) Generative AI. *Business & Information Systems Engineering*, 66(1), pp.111–126.
- GeoTech Center (2021) *Cybersecurity of space-based assets and why this is important*. Available at: <https://www.atlanticcouncil.org/insight-impact/in-the-news/cybersecurity-of-space-based-assets-and-why-this-is-important/>.
- Gilman, D. (2014) Cyber-warfare and humanitarian space. In: *Communications Technology and Humanitarian Delivery: Challenges and Opportunities for Security Risk Management*. European Interagency Security Forum (EISF).
- Greig, J. (2024) NSA, Viasat say 2022 hack was two incidents; Russian sanctions resulted from investigation. Available at: <https://therecord.media/viasat-hack-was-two-incidentsand-resulted-in-sanctions> (Accessed: 13 June 2024).
- Guida, E. (2021) *The use of satellites in humanitarian contexts*. Norwegian Centre for Humanitarian Studies.
- Industrial Cyber (2024) *New Deloitte report addresses increasing danger of cyber threats in space, issues call to action*. Available at: <https://industrialcyber.co/reports/newdeloitte-report-addresses-increasing-danger-of-cyber-threats-in-space-issues-callto-action/#:~:text=Reports,of%20the%20space%20industry%20itself>.
- Infrastructure asset pre-assessment program (2020) Available at: <https://www.airandspaceforces.com/tag/infrastructure-asset-pre-assessment-program/>.
- Jobin, A., Ienca, M. and Vayena, E. (2019) The global landscape of AI ethics guidelines. *Nature Machine Intelligence*, 1(9), pp.389–399.
- Landau, S. (2000) Communications security for the twenty-first century: The Advanced Encryption Standard. *Notices of the AMS*, 47(4), pp.450–459.
- Lim, J.S. and Kwon, T. (2024) Applying NIST AI Risk Management Framework: Case study on NTIS database analysis using Map, Measure, Manage approaches. *Journal of Korean Society of Industrial and Systems Engineering*, 47(2), pp.21–29.
- Maguire, P. (2024) AI at the crossroads of cybersecurity, space and national security in the digital age. *SpaceNews*. Available at: <https://spacenews.com/ai-crossroads-cybersecurity-space-national-security-digital-age/> (accessed: 2025-01-17).
- Maral, G., Bousquet, M. and Sun, Z. (2020) *Satellite Communications Systems: Systems, Techniques and Technology*. 6th ed. Chichester: John Wiley & Sons.
- National Institute of Standards and Technology (NIST) (2014) *Cybersecurity Framework*. Available at: <https://www.nist.gov/cyberframework>.
- National Institute of Standards and Technology (NIST) (2024) *AI Risk Management Framework*. Available at: <https://www.nist.gov/itl/ai-risk-management-framework>.

- Prado, B. (2024) Space: The next frontier for innovation, economics, accessibility, and infrastructure. *Atlantic Council*. Available at: <https://www.atlanticcouncil.org/blogs/geotech-cues/event-recap-space-the-next-frontier-for-innovation-and-more/> (Accessed: 13 June 2024).
- Protik, R.C. (2023) Updated standard for secure satellite communications: Analysis of satellites, attack vectors, existing standards, and enterprise and security architectures. *arXiv preprint*, arXiv:2310.19105.
- Quach, S., Thaichon, P., Martin, K.D., Weaven, S. and Palmatier, R.W. (2022) Digital technologies: Tensions in privacy and data. *Journal of the Academy of Marketing Science*, 50(6), pp.1299–1323.
- Rivest, R.L., Hellman, M.E., Anderson, J.C. and Lyons, J.W. (1992) Responses to NIST's proposal. *Communications of the ACM*, 35(7), pp.41–54.
- Rothblatt, M.A. (1982) ITU regulation of satellite communication. *Stanford Journal of International Law*, 18, 1.
- Scarfone, K., Benigni, D., Grance, T. et al. (2009) Cyber security standards. Gaithersburg, MD: National Institute of Standards and Technology (NIST).
- Scharping, N. (2021) The future of satellites lies in the constellations. *Astronomy*, June. Available at: <https://astronomy.com/news/2021/06/the-future-of-satellites-lies-in-giant-constellations>.
- Scherer, M.U. (2015) Regulating artificial intelligence systems: Risks, challenges, competencies, and strategies. *Harvard Journal of Law & Technology*, 29, pp.353–400.
- Scholl, M., Scholl, M. and Suloway, T. (2023) *Introduction to cybersecurity for commercial satellite operations*. Gaithersburg, MD: US Department of Commerce, National Institute of Standards and Technology.
- Sebastian, K.A. (2024) *Union of Concerned Scientists (UCS) satellite database*. Available at: <https://www.ucsusa.org/resources/satellite-database> (Accessed: 21 November 2022).
- Security Staff (2024) US adversaries employ generative AI in attempted cyberattack. *Security Magazine*, February. Available at: <https://www.securitymagazine.com/articles/100418-us-adversariesemploy-generative-ai-in-attempted-cyberattack>.
- Siegel, J. (2024) Commercial satellites are on the front lines of war today. Here's what this means for the future of warfare. *Atlantic Council*. Available at: <https://www.atlanticcouncil.org/contentseries/airpower-after-ukraine/commercial-satellites-are-on-the-front-lines-of-war-today-heres-what-this-means-for-the-future-of-warfare/> (Accessed: 2024-06-13).
- Sierra Space (2024) Generative AI in the space industry: Revolutionizing engineering, monitoring, and support roles. Available at: <https://www.sierraspace.com/blog/generative-ai-in-the-space-industry-revolutionizing-engineering-monitoring-and-support-roles/>.
- Space Force (2022) *Space Force finally rolls out cyber standards for commercial SATCOM providers*. Available at: <https://www.airandspaceforces.com/space-force-finally-rolls-out-cyber-standards-for-commercial-satcom-providers/#:~:text=Space%20Force%20Finally%20Rolls%20Out,Space%20Force%20graphic>.
- Starlink (2022) Why is Elon Musk launching thousands of satellites? *BBC News*, August. Available at: <https://www.bbc.com/news/technology-62339835>.
- Taggart, D., Bayuk, F., Ping, D., Hant, J. and Marshall, M. (2003) Usage of commercial satellite systems for homeland security communications. In: *2003 IEEE Aerospace Conference Proceedings* (Cat. No. 03TH8652), vol. 2, pp.2_1155–2_1165. IEEE.
- Tucker, P. (2019) The NSA is studying satellite hacking. *Defense One*, September. Available at: <https://www.defenseone.com/technology/2019/09/nsa-studying-satellite-hacking/160009/> (Accessed: 2022-11-23).
- U.S. Space Force (USSF) (2024) *Commercial Space Strategy*. Available at: <https://www.spaceforce.mil/Portals/2/Documents/Space%20Policy/USSF%20Commercial%20Space%20Strategy.pdf>.
- United States Space Force (USSF) (2023) *CSO releases lines of effort*. Available at: <https://www.spaceforce.mil/News/Article/3270867/cso-releases-lines-of-effort/>.
- Van Camp, C. and Peeters, W. (2022) A world without satellite data as a result of a global cyber-attack. *Space Policy*, 59, 101458.
- Wang, Y., Chen, P., Ai, S., Liang, W., Liao, B., Mo, W. and Wang, H. (2023) Two-stage anomaly detection in LEO satellite network. In: Yung, M., Chen, C. and Meng, W. (eds.) *Science of Cyber Security*. Cham: Springer Nature Switzerland, pp.423–438.

Increasing Organisational Effectiveness With Managerial Interpersonal Skills: The Role of Organisation Design

Ana Juras and Ivan Matić

Department of Management, Faculty of Economics, Business and Tourism, University of Split, Croatia

ajuras@efst.hr

imatic@efst.hr

Abstract: The impact of managerial interpersonal skills on various organisational phenomena, including organisational effectiveness, is still somewhat unclear and requires additional, more in-depth insights. The interpersonal dynamics through which managerial interpersonal skills can contribute to performance enhancement at all organisational levels take place within a predefined organisational context, highlighting the importance of organisation design for achieving organisational goals and high organisational performance. However, the role of organisational context, defined by organisation design choices, in the effective demonstration and use of managerial interpersonal skills on a daily basis and in the subsequent positive impact of these skills on the organisation is still poorly understood. The main objective of this paper is to examine the role of organisation design characteristics in the relationship between managerial interpersonal skills and organisational effectiveness. To this end, an empirical study was conducted using a specially designed questionnaires on a sample of 89 medium-sized and large companies (over 100 employees) from Croatia. The collected data was processed using SPSS statistical software, with the main statistical analyses being correlation and linear regression. The results indicate that the interpersonal skills of managers overall and at different management levels (top, middle and lower levels) are moderately strongly related to organisational effectiveness and that the organisation design context in which these skills are expressed plays an important role in the aforementioned relationship. Design characteristics such as the number of hierarchical levels, span of control, communication system or the number of geographical locations in which the company operates significantly alter the impact of managerial interpersonal skills on organisational effectiveness. These and other interesting findings of the study represent a valuable contribution to the relevant literature by providing a deeper understanding of the role of organisation design in promoting the positive impact of managerial competent interpersonal behaviour on enhancing organisational effectiveness.

Keywords: Managerial interpersonal skills, Organisation design, Differentiation, Organisational effectiveness, Medium-sized and large companies

1. Research Background

High managerial interpersonal skills (MIPS) are in high demand in today's business environment. The decades-long shift in focus in organisational theory from hard to soft organisational elements and aspects has further emphasised the key role of managers' emotional and behavioural skills in managing organisations, influencing employee behaviour and achieving organisational goals. Identified as the one of the three main groups forming a manager's competency, alongside conceptual and technical skills (Katz, 1955, 2009, Mintzberg, 1980, Dierdorff et al, 2009), MIPS refer to competence in dealing with people, which is demonstrated in communication, building and maintaining relationships, and showing concern for the feelings and desires of others (Kaiser et al, 2011, pp. 82). Dulewicz and Higgs (2004) and Beenen et al (2021) emphasise that relevant studies show that MIPS are most critical for the managerial effectiveness, especially for the leadership effectiveness, compared to the other two main groups of skills, especially at the executive level. With behaviours and skills such as managing-self, successful communication, leadership and motivation, teamwork and creating a positive and supportive work environment and managing conflicts, MIPS differentiate outstanding from average managers (Boyatzis, 2008) or good from bad bosses (Beenen et al, 2021).

The relationship between MIPS and employee's and organisational performance has been investigated number of times in the relevant literature. In this sense, Tonidandel et al (2012) and Anzenbruder et al (2017) concluded that MIPS ultimately influence organisational effectiveness (OE) through their strong influence on managerial effectiveness, while Bhanugopan et al (2017) emphasised that managerial skills, including MIPS, influence managerial performance as evidenced in the existing literature. Although the relationship between MIPS and managerial effectiveness is well established, the role of organisational context in achieving managerial effectiveness has received significantly less attention from researchers. Context, including interpersonal dynamics, structural arrangements, cultural support, and resource base, plays an important role in managerial effectiveness (Page et al, 2003). In addition, the development and effectiveness of managerial skills, including MIPS, depend on the context or characteristics of work situation in which managers operate on a daily basis (Whitley, 2019). Therefore, the above-mentioned and well-established MIPS-OE relationship needs to be examined from the perspective of the intervening, primarily organisational contextual factors that

play an important role for managers to demonstrate their skills and manage their organisations effectively. Although there are studies that examine the link between MIPS and specific aspects of organisational context, such as those that examine the role of management levels or organisational climate, there are few studies that focus on the relationship between the totality of organisational arrangements, i.e. organisation design elements, and managerial skills, including MIPS (Verle et al, 2014). This is particularly true for those studies that focus on the intervening role of organisation design elements and choices in the relationship between MIPS and OE.

Based on the above, and considering that despite their critical importance for organisational success and for managerial effectiveness, MIPS remain an organisational phenomenon and a research construct without a comprehensive definition, conceptual model and a widely accepted, validated measurement scale (Beenen et al, 2021), the aim of this paper is to explore the role of organisational context, conceptualised as the STAR model (Kates and Galbraith, 2010) led organisation design elements and choices, in increasing OE levels with MIPS. The following research questions guided our study:

- What is the nature of the relationship between MIPS overall and at specific management levels and OE in medium-sized and large companies?
- Does MIPS effects on OE change with regards to organisation design elements and choices?

The rest of the paper is divided into three parts. After a description of the methodological aspects and the characteristics of the research sample, the findings section details the obtained results related to the research questions. The paper concludes with a conclusion section.

2. Methodology and Sample

In order to provide answers to the main research questions, companies with 100 or more employees in the Republic of Croatia were selected as the research polygon. In accordance with the theoretical and practical recommendations from the relevant literature (Nahm et al, 2003; Turkulainen and Keotkivi, 2013, Verle et al, 2014), the main research constructs in this paper, especially organisation design elements, are to be investigated in companies with a certain minimum size measured by the number of employees, i.e. companies with 100 or more employees. The research instruments used were two specially developed questionnaires, which together contained four sets of questions, most of which were closed questions with a 5-point Likert scale. These question blocks focused on the company's demographic data and on specific research constructs. The basis for the design of the questionnaires and the formulation of the specific claims/questions was provided by the relevant literature, respectively for the MIPS section the contributions of Rippin (1995) and Dulewicz and Higgs (2005), for the organisational design section the contributions of Hall et al (1967), Burton and Obel (2004), and Collinson and Jay (2012), and for the OE section the contributions of Kaplan and Norton (1996) and Niven (2002). The reliability estimates conducted for the MIPS and OE scales show that both scales have excellent reliabilities (and internal consistencies) as both Cronbach alpha values were close to .90 (Hair et al, 2019), i.e. for MIO $\alpha = .877$ (6 items) and for OE $\alpha = .890$ (20 items).

One questionnaire was sent to the director or a board member of a particular company to get his/her opinion on the characteristics of their managers' skills and the company's OE, and the second questionnaire was sent to company's organisation design specialist or HR manager to get his/her opinion on the company's organisational arrangements. For a total of 89 companies, both the directors/board members and organisation design specialists/HR managers completed the questionnaires, representing a response rate of 7.5% of the total population of these companies in the country. In this way, a random research sample of 89 medium-sized and large companies from the Republic of Croatia was formed (Figure 1). The collected data was processed using SPSS statistical software, with correlation and linear regression as the main statistical analyses.

One third of the research sample were manufacturing companies (33.7%), followed by construction (14.6%), trade (12.4%) and hospitality companies (10.1%). The vast majority of the companies analysed are privately owned (70.8%) and older than 20 years (81.4%). The size of the companies analysed ranged from 101 to 7000 employees, with an average size of 518 employees. The vast majority of the companies analysed (80%) have fewer than 600 employees. Respondents' perceptions of company management's characteristics shows that the vast majority of companies have a management team that predominantly holds a Master degree (69.7%).

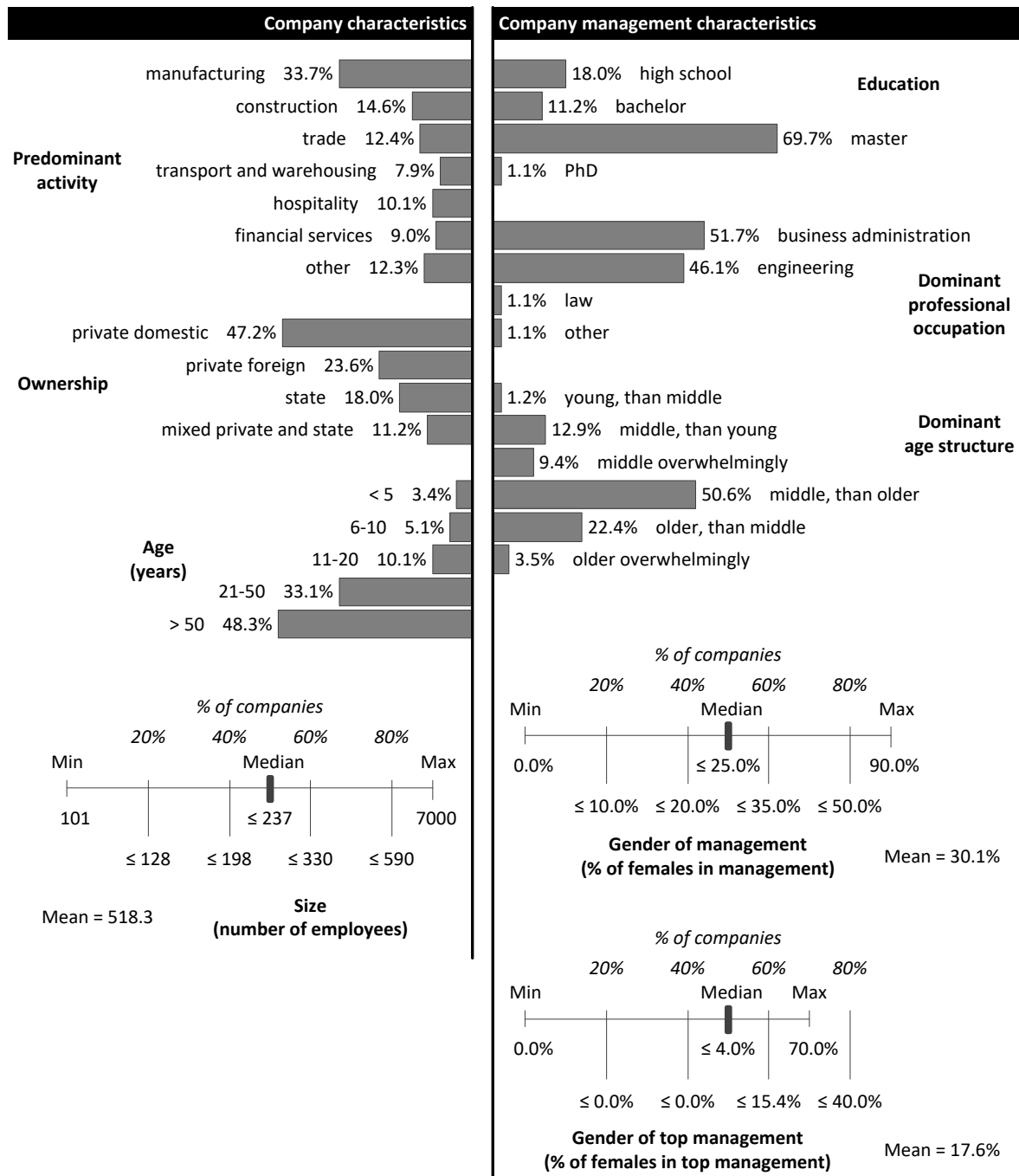


Figure 1: Research sample characteristics

The sample is balanced with companies run by managers with business degrees (51.7%) and companies run by managers with engineering degrees (46.1%). In the vast majority of companies, middle-aged and older managers dominate the management structure (85.9%), with middle-aged managers strongly predominant (60.0% compared to 25.9%). The proportion of female managers in the overall management structure is 30.1% on average and 17.6% if the proportion at the top management level is considered. The well-known glass ceiling problem is more than evident in the research sample, as 40% of the companies analysed have no female managers at the top level, and in 80 % of the companies the proportion of women at the top management level is 40 % or less.

3. Findings

In the companies analysed, MIPS are at a medium to high level ($M = 3.58$, $SD = .45$), and their development scores decrease as the managers' hierarchical levels decrease (from $M = 3.73$, $SD = .68$ for top managers to M

= 3.42, $SD = .60$ for lower-level managers) (Table 1). OE is also at a medium to high level ($M = 3.51$, $SD = .58$), which indicates that both MIPS and OE still have considerable room for improvement in the companies analysed. Correlation tests show that MIPS at all management levels in the analysed companies have a moderately strong positive relationship with OE ($.519 \leq r \leq .536$, $p < .01$).

Table 1: Correlation results among research constructs

Research constructs	N	M	SD	1	2	3	4	5
MIPS	87	3.58	.45	-				
MIPS (top-level)	89	3.73	.68	.900**	-			
MIPS (middle-level)	87	3.59	.61	.958**	.808**	-		
MIPS (low-level)	87	3.42	.60	.895**	.648**	.833**	-	
OE	89	3.51	.58	.567**	.533**	.519**	.536**	-

Note. N = number of cases, M = mean, SD = standard deviation, * $p < 0.05$; ** $p < 0.01$

The importance and positive impact of MIPS for achieving a desirable level of OE is also confirmed by a linear regression test (Table 2), resulting in following formula for predicting OE:

$$\text{Organisational Effectiveness} = 1.95 + .43 \times \text{Managerial Interpersonal Skills}.$$

Thus, for every 1 point increase in MIPS, OE increases from .30 to .57 points, generally by .43 points. According to the regression model, 32% of the variation in OE can be determined by MIPS. The results regarding the impacts of MIPS on the OE from specific management levels are very similar to the one just emphasized.

Table 2: Regression output predicting OE from MIPS

Independent variable	B	SE	95% CI	β	t	p	Model
MIPS	.43	.07	[.30, .57]	.56	6.35	.000	Constant = 1.95, $F(1,85) = 40.32$, $p < .001$, $R^2 = .32$
MIPS (top-level)	.36	.06	[.24, .48]	.53	5.88	.000	Constant = 2.17, $F(1,87) = 34.52$, $p < .001$, $R^2 = .28$
MIPS (middle-level)	.37	.06	[.24, .50]	.52	5.60	.000	Constant = 2.16, $F(1,85) = 31.33$, $p < .001$, $R^2 = .27$
MIPS (low-level)	.39	.07	[.26, .52]	.54	5.86	.000	Constant = 2.16, $F(1,85) = 34.26$, $p < .001$, $R^2 = .29$

Note. In tables 2-7 following abbreviations are used: B = unstandardized coefficient, SE = Standard error, CI = confidence interval for B , β = standardized coefficient, t = t-test statistics, p = significance level, F – F-value statistics, R^2 = R square value.

To gain deeper insights into the relationship between MIPS and OE, the identified relationship was tested in different organisation design arrangements and choices (Tables 3-7). Although certain organisation design arrangements and choices cannot be assigned exclusively to one dimension of the STAR model, for clarity of results, we assigned such arrangements or choices to only one dimension of the model for which the specific arrangement or choice is most important. Considering strategic context, MIPS are more important for OE in companies faced with strategy formulation and implementation in a volatile and complex industry ($R^2 = .42$, $F(1,50) = 35.74$, $p < .001$, $B = .46$). The same applies to the company's decision to pursue a differentiation strategy compared to a low-cost strategy ($R^2 = .39$, $F(1,29) = 18.19$, $p < .001$, $B = .56$). For companies operating in volatile and complex industries, 42% of the variation in OE can be determined by MIPS, while 39% of the variation in OE for companies pursuing a differentiation strategy can be determined by MIPS.

Table 3: Regression output predicting OE from MIPS in different strategic contexts

MIPS => OE								
Strategic context		B	SE	95% CI	β	t	p	Model
Industry	Stable and simple	.36	.14	[.08, .64]	.41	2.59	.014	Constant = 2.24, = 6.69, $p = .014$, $R^2 = .17$ $F(1,33)$
	Volatile and complex	.46	.08	[.31, .61]	.65	6.00	.000	Constant = 1.84, = 35.74, $p < .001$, $R^2 = .42$ $F(1,50)$

MIPS => OE								
Strategic context		B	SE	95% CI	β	t	p	Model
Strategy	Low cost	.39	.08	[-.23, .56]	.55	4.84	.000	Constant = 2.06, = 23.39, $p < .001$, $R^2 = .30$ $F(1,54)$
	Differentiation	.56	.13	[-.29, .83]	.62	4.27	.000	Constant = 1.52, $F(1,29) = 18.19$, $p < .001$, $R^2 = .39$

Table 4: Regression output predicting OE from MIPS in different structural contexts

MIPS => OE								
Structural context		B	SE	95% CI	β	t	p	Model
Size	< 250 employees	.41	.09	[-.24, .58]	.58	4.77	.000	Constant = 2.00, = 22.8, $p < .001$, $R^2 = .34$ $F(1,44)$
	> 250 employees	.45	.11	[-.23, .67]	.55	4.16	.000	Constant = 1.90, $F(1,39) = 17.3$, $p < .001$, $R^2 = .31$
Org structure	Functional	.39	.10	[-.20, .59]	.53	4.09	.000	Constant = 2.08, = 16.69, $p < .001$, $R^2 = .28$ $F(1,42)$
	Divisional or matrix	.45	.10	[-.25, .65]	.58	4.54	.000	Constant = 1.89, = 20.61, $p < .001$, $R^2 = .34$ $F(1,40)$
Number of mgmt levels	Low	.50	.09	[-.32, .69]	.63	5.41	.000	Constant = 1.63, = 29.22, $p < .001$, $R^2 = .40$ $F(1,44)$
	High	.35	.10	[-.16, .55]	.51	3.61	.001	Constant = 2.30, = 13.00, $p = .001$, $R^2 = .26$ $F(1,38)$
Top mgmt span of control	Narrow	.45	.07	[-.31, .83]	.60	6.22	.000	Constant = 1.87, = 38.71, $p < .001$, $R^2 = .34$ $F(1,76)$
	Wide	.23	.29	[-.52, .97]	.33	.78	.470	Constant = 2.78, $F(1,5) = .61$, $p = .470$, $R^2 = .11$
Middle mgmt span of control	Narrow	.45	.08	[-.29, .60]	.60	5.85	.000	Constant = 1.89, $F(1,62) = 34.23$, $p < .001$, $R^2 = .36$
	Wide	.29	.18	[-.09, .66]	.35	1.59	.129	Constant = 2.52, $F(1,18) = 2.54$, $p = .129$, $R^2 = .12$
Low mgmt span of control	Narrow	.54	.13	[-.28, .80]	.59	4.21	.000	Constant = 1.54, $F(1,33) = 17.70$, $p < .001$, $R^2 = .35$
	Wide	.38	.09	[-.20, .55]	.54	4.39	.000	Constant = 2.16, $F(1,47) = 19.30$, $p < .001$, $R^2 = .29$
Horizontal differentiation of jobs	Low	.45	.10	[-.25, .65]	.53	4.57	.000	Constant = 1.88, $F(1,53) = 20.89$, $p < .001$, $R^2 = .28$
	High	.41	.11	[-.19, .63]	.58	3.85	.001	Constant = 2.03, $F(1,29) = 14.80$, $p = .001$, $R^2 = .34$
Number of org units	Low to moderate	.45	.09	[-.26, .63]	.50	4.83	.000	Constant = 1.88, $F(1,69) = 23.33$, $p < .001$, $R^2 = .25$
	Large	.45	.11	[-.22, .68]	.78	4.25	.001	Constant = 2.00, $F(1,12) = 18.05$, $p = .001$, $R^2 = .60$
Geographic dispersion-locations	Low	.48	.08	[-.31, .65]	.64	5.69	.000	Constant = 1.79, $F(1,47) = 32.42$, $p < .001$, $R^2 = .41$
	High	.33	.12	[-.09, .57]	.43	2.79	.008	Constant = 2.31, $F(1,35) = 7.80$, $p = .008$, $R^2 = .18$
Geographic dispersion-employees	Low	.48	.08	[-.32, .65]	.63	5.94	.000	Constant = 1.77, $F(1,53) = 35.26$, $p < .001$, $R^2 = .40$
	High	.27	.13	[-.01, .53]	.36	2.10	.045	Constant = 2.49, $F(1,29) = 4.41$, $p < .045$, $R^2 = .13$

MIPS are generally equally important for the OE in medium-sized and large companies, as just over 30% of the variations in the OE in both types of companies can be determined by MIPS. Looking at the formal organisational structure in the companies studied, MIPS in companies with divisional or matrix organisational arrangements are slightly more important for achieving the companies' target OE ($R^2 = .34$, $F(1,40) = 20.61$, $p < .001$, $B = .45$). The impact of MIPS on OE is significantly greater in companies with a low number of management levels ($R^2 = .40$, $F(1,44) = 29.22$, $p < .001$, $B = .50$) and in companies in which lower-level managers have a narrow span of control ($R^2 = .35$, $F(1,33) = 17.70$, $p < .001$, $B = .54$). In these companies, between 35% (context with lower management's narrow span of control) and 40% variations (context with low number of management levels) in OE can be determined by MIPS. The results in relation to the span of control of top and middle management are not conclusive, as the degrees of freedom for situations with a wide span of control are relatively small. Nevertheless, the effects of MIPS on OE in companies with narrow span of control of top and middle management are similar to those in companies with narrow span of control of lower management ($.34 \leq R^2 \leq .36$). Regarding the horizontal differentiation of jobs, MIPS are generally equally important for OE in companies with low and high job differentiation, as about 30% of variations in OE in these two contexts can be determined by MIPS. Apart from the existence of a significant effect of MIPS on OE in the situation of a low to medium number of organisational units ($R^2 = .25$, $F(1,69) = 23.33$, $p < .001$, $B = .45$), the results related to the number of organisational units are inconclusive due to the relatively small number of degrees of freedom for the context of a large number of organisational units. Finally, the impact of MIPS on OE is significantly greater in companies with lower geographical dispersion, as measured by the number of locations ($R^2 = .41$, $F(1,47) = 32.42$, $p < .001$, $B = .48$) and the proportion of the total number of employees working in dislocated parts of the company ($R^2 = .40$, $F(1,53) = 35.26$, $p < .001$, $B = .48$).

The results in relation to the different HRM contexts are twofold. On the one hand, MIPS have a significantly greater effect on OE when there is a low match between the employees' qualifications and the job ($R^2 = .45$, $F(1,37) = 29.97$, $p < .001$, $B = .53$), while on the other hand, MIPS have a significantly greater effect on OE in the context of a medium to high match between the employees' training and the job ($R^2 = .41$, $F(1,32) = 22.22$, $p < .001$, $B = .52$). Closely related, a developed motivation system, compared to an undeveloped one, and committed employees, compared to non-committed ones, are a better contexts for the positive effects of MIPS on OE ($R^2 = .39$, $F(1,45) = 28.94$, $p < .001$, $B = .45$; $R^2 = .33$, $F(1,47) = 22.78$, $p < .001$, $B = .42$). In addition, MIPS prove to be more important for OE when there is a non-supportive work climate ($R^2 = .40$, $F(1,26) = 17.13$, $p < .001$, $B = .37$), indicating their potential compensatory role in mitigating the negative effects of a non-supportive climate on employee performance.

Table 5: Regression output predicting OE from MIPS in different HRM contexts

MIPS => OE								
HRM context		B	SE	95% CI	β	t	p	Model
Employee's qualification- job match	Low	.53	.10	[.33, .72]	.67	5.48	.000	Constant = 1.63, $F(1,37) = 29.97$, $p < .001$, $R^2 = .45$
	Moderate to high	.31	.10	[.10, .51]	.42	3.04	.004	Constant = 2.39, $F(1,44) = 9.23$, $p = .004$, $R^2 = .17$
Employee's training- job match	Low	.34	.09	[.16, .53]	.47	3.72	.001	Constant = 2.26, $F(1,49) = 13.81$, $p = .001$, $R^2 = .22$
	Moderate to high	.52	.11	[.30, .75]	.64	4.71	.000	Constant = 1.62, $F(1,32) = 22.22$, $p < .001$, $R^2 = .41$

Finally, looking at the dimension of business processes and lateral links, process and task definition are not a factor for the impact of MIPS on OE, as in both contexts (low or high) about 30 % of the variations in OE can be determined by MIPS. MIPS have significantly larger effects in the context of numerous coordination mechanisms ($R^2 = .24$, $F(1,56) = 17.17$, $p < .001$, $B = .46$) and are more important for OE when there is an underdeveloped formal communication system in the company ($R^2 = .30$, $F(1,44) = 18.65$, $p < .001$, $B = .35$). The latter, similar to the non-supportive climate result, indicates the potential compensatory role of MIPS in mitigating the negative effects of underdeveloped formal communication on the company's OE.

Table 6: Regression output predicting OE from MIPS in different motivational contexts

MIPS => OE								
Motivational context		B	SE	95% CI	β	t	p	Model
Motivation system	Undeveloped	.34	.08	[.17, .51]	.54	3.99	.000	Constant = 2.08, $F(1,38) = 15.95, p < .001, R^2 = .30$
	Developed	.45	.08	[.28, .62]	.63	5.34	.000	Constant = 2.05, $F(1,45) = 28.94, p < .001, R^2 = .39$
Employee commitment	Low	.30	.09	[.12, .48]	.49	3.33	.002	Constant = 2.22, $F(1,36) = 11.08, p = .002, R^2 = .24$
	High	.42	.09	[.24, .59]	.57	4.77	.000	Constant = 2.14, $F(1,47) = 22.78, p < .001, R^2 = .33$
Working climate	Non-supportive	.37	.09	[.19, .55]	.63	4.14	.000	Constant = 1.95, $F(1,26) = 17.13, p < .001, R^2 = .40$
	Supportive	.30	.09	[.11, .49]	.39	3.20	.002	Constant = 2.53, $F(1,57) = 10.26, p = .002, R^2 = .15$

Table 7: Regression output predicting OE from MIPS in different process contexts

MIPS => OE								
Process context		B	SE	95% CI	β	t	p	Model
Comm system	Undeveloped	.35	.08	[.19, .52]	.55	4.32	.000	Constant = 2.11, $F(1,44) = 18.65, p < .001, R^2 = .30$
	Developed	.28	.14	[-.01, .57]	.30	1.98	.055	Constant = 2.63, $F(1,39) = 3.90, p = .055, R^2 = .09$
Coordination mechanisms	Scarce	.34	.10	[.13, .55]	.54	3.31	.003	Constant = 2.20, $F(1,27) = 10.94, p = .003, R^2 = .29$
	Numerous	.46	.11	[.24, .68]	.48	4.14	.000	Constant = 1.87, $F(1,56) = 17.17, p < .001, R^2 = .24$
Process and task definition	Low	.30	.09	[.13, .48]	.49	3.47	.001	Constant = 2.23, $F(1,38) = 12.05, p = .001, R^2 = .24$
	High	.34	.11	[.11, .56]	.41	3.00	.004	Constant = 2.44, $F(1,45) = 9.02, p = .004, R^2 = .17$

4. Conclusion

This study, barring several limitations, such as the sample size and the cross-sectional nature, provided answers to both research questions. In medium-sized and large companies, MIPS tend to decrease from the top to the lower-level managers, while MIPS at all management levels have fairly strong impact on OE. The results of the study confirm findings from similar studies on this relationship. The most valuable contribution of the study to the relevant literature is the findings on the role of organisation design elements in the relationship between MIPS and OE. For companies facing a very challenging business environment and pursuing a differentiation strategy, appropriately developed MIPS are significantly more important for increasing OE than for companies operating in a stable and simple environment and pursuing a low-cost strategy. As the strategic orientations of prospectors and analysers heavily rely on teamwork and the autonomy, creativity and innovation of employees, a supportive work climate and motivating interpersonal behaviour of managers is required.

The importance of MIPS for OE is emphasised by the findings of the study that MIPS are more important for OE when a company has significant problems in developing an effective communication system or when the work climate is not supportive for employees. The results suggest that in such contexts, highly developed MIPS play a compensatory role by filling the gaps and overcoming problems and barriers related to the richness, speed and accuracy of communication, by providing additional support to employees, and by generally improving the work climate in the company. Satisfied and committed employees are in the best interest of managers because, according to study results, managers who work with employees that are motivated and highly committed to their company tend to utilise their MIPS far more effectively and thus significantly impact the company's OE. The above-mentioned compensatory role of MIPS in achieving desirable OE levels will be more pronounced when managers have more opportunities to demonstrate their interpersonal skills, e.g. when

company has established various coordination mechanisms (coordination meetings, liaison roles, temporary or permanent task forces, etc.) to facilitate cross-functional collaboration and integrate work efforts from different parts of the company.

When considering the structural arrangements of the company, the size of the company and whether the company has a functional or divisional structure are of little importance for the impact of MIPS on OE, while the number of hierarchical levels is very important for MIPS to be beneficial for OE. In fact, concrete and specific work situations characterised by how many superiors or bosses and subordinates one has (number of levels) and whether the manager has continuous and intensive interaction with other managers and his/her subordinates (span of control, geographical dispersion) determine the demonstration and effectiveness of MIPS. In this sense, work situations in which managers have the opportunity to work and interact directly with their colleagues and subordinates, such as structural arrangements with a small number of hierarchical levels, a narrow span of control and a smaller number of geographical locations and dislocated colleagues and subordinates, are favourable for a stronger MIPS effect on OE. Surprisingly, and in contrast to vertical and spatial differentiation, the study results indicate that the horizontal differentiation of jobs and the extent of process and task definition have no influence on the demonstration and positive effects of MIPS on OE.

Ethics declaration: Ethical clearance was not required for this research.

AI declaration: AI tools were not used in the creation of this paper.

References

- Anzengruber, J., Goetz, M. A., Nold, H. and Woelfle, M. (2017). Effectiveness of managerial capabilities at different hierarchical levels. *Journal of Managerial Psychology*, 32(2), pp 134-148. <https://doi.org/10.1108/JMP-12-2015-0451>
- Beenen, G., Pichler, S., Livingston, B. and Riggio, R. (2021). The good manager: Development and validation of the managerial interpersonal skills scale. *Frontiers in psychology*, 12, 631390. <https://doi.org/10.3389/fpsyg.2021.631390>
- Bhanugopan, R., Wang, Y., Lockhart, P. and Farrell, M. (2017). Managerial skills shortages and the impending effects of organizational characteristics: Evidence from China. *Personnel Review*, 46(8), pp 1689-1716. <https://doi.org/10.1108/PR-04-2016-0093>
- Boyatzis, R. E. (2008). Competencies in the 21st Century. *Journal of Management Development*, 27(1), pp 5-12. <https://doi.org/10.1108/02621710810840730>
- Burton, R. M. and Obel, B. (2004). *Strategic organizational diagnosis and design: The dynamics of fit* (Vol. 4). Springer Science & Business Media.
- Collinson, S. and Jay, M. (2012). *From complexity to simplicity - Unleash Your Organisation's Potential*. Springer, Berlin/Heidelberg.
- Dierdorff, E. C., Rubin, R. S. and Morgeson, F. P. (2009). The milieu of managerial work: An integrative framework linking work context to role requirements. *Journal of Applied Psychology*, 94(4), pp 972-988. <https://psycnet.apa.org/doi/10.1037/a0015456>
- Dulewicz, S. V. and Higgs, M. J. (2004). Design of a New Instrument to Assess Leadership Dimensions and Styles. *Selection and Development Review*, 20(2), pp 7-12.
- Dulewicz, V. and Higgs, M. (2005). Assessing leadership styles and organisational context. *Journal of managerial psychology*, 20(2), pp 105-123. <https://doi.org/10.1108/02683940510579759>
- Hair Jr, J., Page, M. and Brunsveld, N. (2019). *Essentials of business research methods*. Routledge.
- Hall, R. H., Johnson, N. J. and Haas, J. E. (1967). Organizational size, complexity, and formalization. *American sociological review*, pp 903-912. <https://doi.org/10.2307/2092844>
- Kaiser, R. B., Craig, S. B., Overfield, D. V. and Yarborough, P. (2011). Differences in Managerial Jobs at the Bottom, Middle, and Top: A Review of Empirical Research. *The Psychologist-Manager Journal*, 14(2), pp 76-91. <https://doi.org/10.1080/10887156.2011.570137>
- Kaplan, R. S. and Norton, D. P. (1996). *The Balanced Scorecard: Translating Strategy into Action*. Harvard Business School Press, Boston.
- Kates, A. and Galbraith, J. R. (2010). *Designing your organization: Using the STAR model to solve 5 critical design challenges*. John Wiley & Sons.
- Katz, R. L. (1955, 2009). *Skills of an effective administrator*. Harvard Business Review Press.
- Mintzberg, H. (1973). *The nature of managerial work*. Harpercollins College Div.
- Nahm, A. Y., Vonderembse, M. A. and Koufteros, X. A. (2003). The impact of organizational structure on time-based manufacturing and plant performance. *Journal of operations management*, 21(3), pp 281-306. [https://doi.org/10.1016/S0272-6963\(02\)00107-9](https://doi.org/10.1016/S0272-6963(02)00107-9)
- Niven, P. R. (2006). *Balanced scorecard step-by-step: Maximizing performance and maintaining results*. John Wiley & Sons, New Jersey. <https://doi.org/10.1002/9781119205081>
- Page, C., Wilson, M., Meyer, D. and Inkson, K. (2003). "It's the situation I'm in": The importance of managerial context to effectiveness. *Journal of Management Development*, 22(10), pp 841-862. <https://doi.org/10.1108/02621710310505458>

- Rippin, S. M. (1995). *The competencies used to assess the effectiveness of New Zealand managers*. Doctoral dissertation, Open Access Te Herenga Waka-Victoria University of Wellington.
- Tonidandel, S., Braddy, P. W. and Fleenor, J. W. (2012). Relative importance of managerial skills for predicting effectiveness. *Journal of Managerial Psychology*, 27(6), pp 636-655. <https://doi.org/10.1108/02683941211252464>
- Turkulainen, V. and Ketokivi, M. (2013). The contingent value of organizational integration. *Journal of Organization Design*, 2(2), pp 31-43. <http://dx.doi.org/10.7146/jod.7864>
- Verle, K., Markič, M., Kodrič, B. and Gorenc Zoran, A. (2014). Managerial competencies and organizational structures. *Industrial management & Data systems*, 114(6), pp 922-935. <https://doi.org/10.1108/IMDS-01-2014-0019>
- Whitley, R. (2019). On the nature of managerial tasks and skills: their distinguishing characteristics and organization. In *Managerial work* (pp 337-352). Routledge, New York.

The Role of Leadership Style in Fostering Innovation Culture in Dubai Government Organisations

Amira Kamali

Dubai Government, United Arab Emirates

ms_kamali@hotmail.com

Abstract: Leadership and Innovation have been two key areas of research over the last decade. Innovation is crucial in organisational survival and growth, and it is a force of change in today's competitive market. To be competitive in the global market, especially in the public sector, organisations must adopt innovative approaches to service delivery, governance and operational efficiency. Innovation is identified as a critical element for the success of an organisation. Effective leadership is essential in driving innovation within organisations, still the role of leadership style to foster innovation and encourage experimentation are still not fully understood. While considerable research has been conducted globally, studies examining the association between leadership style and innovation in the United Arab Emirates, particularly Dubai government organisations, is still rare. Accordingly, this study seeks to address the following research question: How do leadership styles foster a culture of innovation within Dubai government organisations? As a conceptual paper, this study adopts a synthesis approach, drawing on existing regional and global literature to develop a theoretical foundation, identify research gaps, and propose directions for future empirical study. The research aims to shed light on the vital role of leadership style in fostering a culture of innovation in Dubai government organisations, with specific focus on how leadership styles foster a culture that support experimentation, innovation, and continuous improvement. The research highlights innovation initiatives implemented by Dubai government organisations, examining how leadership has driven initiatives, for example the Mohammed Bin Rashid Centre for Government Innovation, and the Dubai Future Accelerators to promote digital transformation, agile governance, and promote a culture of experimentation. The research addresses the persistent barriers to innovation commonly faced by Dubai government organisations, including bureaucratic inertia, rigid hierarchies, and resistance to change. In addition, the study offers practical recommendations to the public sector to help overcome the challenges through strategic leadership practises, capability building, and supportive policy frameworks. Finally, the underlying mechanisms and determinants of effective leadership style and its impact on innovation are critical to understand, as the existing literature tends to focus on leadership style practices, rather than its drivers. This research offers practical guidance for leaders to create a culture of innovation within the Dubai government organisations.

Keywords: Leadership styles, Innovation, Dubai government, Transformational leadership

1. Introduction

With the rapid economic development that the United Arab Emirates (UAE) has witnessed in the past three decades, leadership is becoming an increasingly significant factor to the development and future of organisations (Kamali, 2018). Leadership plays a pivotal role in aligning organisational vision with long-term objectives, especially in the public sector, where leaders are responsible for leading change, fostering innovation, and improving performance (Bin Attan & Mahmood, 2019). Recently, innovation has become a central focus of government transformation globally, and the UAE taking a leading role in adopting innovation-led policies and practices (Alblooshi, 2018). Studies (Jia et al, 2018; Zheng et al, 2019) have confirmed that organisations should be informed of the impact of leadership style on fostering innovation culture. Dubai government organisations provide a wide range of services, including education, healthcare, transport, licensing, utilities and digital platforms. This creates a quasi-market environment, elevating citizen expectations and raising service delivery standards, making innovation a strategic necessity rather than an option. Aligned with the UAE's National Innovation Strategy, which mandates that government organisations dedicate specific budgets to innovation, Dubai has established itself as a regional and global leader in public sector innovation. Within this context, leadership plays a pivotal role in promoting organisational agility, fostering experimentation, and ensuring that public services remain citizen-centred, efficient, and internationally competitive. Currently, most government organisations in the United Arab Emirates focus on creativity. However, there is limited insight into the extent to which the leadership style used influences the development of innovation, and culture, within Dubai government organisations (Tafvelin et al, 2011; Agarwal & Gupta, 2021). Focusing on the UAE, particularly in Dubai government organisations, this study examines how different leadership styles influence the development of an innovative culture within Dubai government organisations. The present study is a conceptual paper, with the aim of identifying the role of leadership styles—such as transformational, transactional, and participative leadership—and their impact on fostering an innovative culture in Dubai government organisations. A conceptual approach has been employed as there is a notable scarcity of empirical studies in this context. This approach permits the integration and synthesis of existing international literature with the UAE public sector experience, facilitating the development of a theoretical foundation, highlighting gaps in

existing research, and providing directions for future empirical work. By using this method, the study provides a robust conceptual framework while highlighting the practical implications for leadership and innovation in Dubai government organisations. In addition, the study identifies the barriers to innovation in the public sector which influences the innovation outcomes and provides evidence-based recommendations to overcome these challenges. The underlying mechanisms and determinants of effective leadership style and its impact on innovation are crucial to understand, as the existing literature tends to focus on leadership style practices, rather than the drivers.

2. Leadership and Innovation

Leadership is increasingly important as the global business environment is more competitive (Jia et al, 2018). In today's dynamic and rapidly evolving environments, leadership plays a crucial role in shaping organisational strategies and fostering innovation (Scheepers & Storm, 2019). Leaders contribute to organisational success by fostering innovation and creativity, maintaining a results-driven focus, inspiring, and empowering employees to achieve their goals (Waite et al, 2014). Leadership plays a pivotal role in shaping the conditions that enable innovation to thrive within organisations (Fontana & Musa, 2017). Classic and contemporary leadership scholars emphasise these dimensions: Bennis (1989) highlighted the role of visionary leadership in shaping the future direction of organisations, arguing that leaders must not only articulate a compelling vision but also cultivate a culture that supports creativity and innovation. Kouzes and Posner (2012) focused on modelling behaviour and enabling others to act; Antonakis (2017) explored the impact of transformational leadership on organisational outcomes such as innovation capacity, adaptability, and long-term performance. Parker-Follett (1926) emphasised participatory leadership; and Alvesson (2016) discussed leadership as a social process that shapes organisational culture and innovation potential. In addition to these contributions, scholars in the field of public administration have emphasised the distinct leadership requirements of the public sector. For example, Van Wart (2013) recognised competencies such as strategic thinking, integrity, and collaboration as critical for public leaders to manage change and drive innovation efficiently. Hartley (2018) argued that leadership in the public sector requires balancing political accountability with creativity and risk-taking, making innovation both challenging and essential. Collectively, these perspectives demonstrate that leadership involves more than vision and influence, requiring leaders to navigate complex institutional environments, building capacity, and foster conditions that enable enduring innovation in both private and public sector organisations.

Effective leaders shape both the strategic direction and the organisational culture, both are crucial for fostering creativity, encouraging risk-taking, and promoting collaboration (Zheng et al, 2019). Leaders should be capable to inspire and motivate their followers by boosting their confidence, enabling them to meet organisational goals (DuBrin, 2015). Leadership involves influencing someone, or a group, to achieve a particular goal (Waite et al, 2014). Leadership is the exchange of ideas between leaders and their followers that collectively inspire and empower them to accomplish a shared vision or goal (Reed et al, 2019). According to (House et al, 2004), leadership is defined as the ability of a person to inspire, enable, or influence other individuals to work toward the success and effectiveness of an organisation. Innovation is vital for long-term organisational success, particularly in dynamic marketplaces (Wegner et al, 2021). There are numerous management scholars and practitioners whose main concern is innovation (Udwadia, 1990; Lin & Liu, 2012). Innovation plays an essential role in organisations, being a major driver of business growth and long-term survival (Waite et al, 2014). In addition, organisations are relying more on innovation to stay competitive and adapt to changes driven by rapid technological development (Jia et al, 2018). Innovation is defined as the process of generating and executing a novel concept (Demircioglu & Van der Wal, 2022). According to (Wegner et al, 2021), innovation is the process of bringing in new problem-solving concepts and putting it into practise, including the implementation of novel ideas, processes, products, and services. According to (Sorensen & Stuart, 2000), innovation is considered as one of the fundamental drivers of an organisation's output, and significantly impacts on the viability of the organisation, playing a crucial role in shaping demographic change. Thus, understanding how effective leadership can foster innovation is crucial for Dubai government organisations, as they strive to lead regional transformation, improve public service delivery, and enhance organisational agility.

3. Innovation Initiatives in Dubai Government Organisations

Innovation is a critical driver of organisational growth and long-term sustainability, serving as a key factor in maintaining competitive advantage. Innovation can enable organisations to differentiate themselves from competitors, positioning them as industry leaders which can enhance their market share and improve their reputation (Waite et al, 2014). Organisations are increasingly drawing on innovation to answer fast-technological development (Jia et al, 2018). The UAE aims to enhance the innovative culture among employees, particularly

within Dubai's government organisations, through several initiatives (Alosani & Al-Dhaafri, 2023). Dubai government is actively fostering innovation across multiple sectors, aiming to become a global leader in this area (Moonesar et al, 2019). The ability to develop new products and services has prompted Dubai government organisations to actively pursue global excellence and surprise the world with its iconic construction innovations (Alosani & Al-Dhaafri, 2023). Over the past decade, Dubai government has introduced numerous ambitious initiatives, embedding innovation within its public sector, with the aim of transforming traditional bureaucratic systems into more agile, and future-ready organisations (Chigova, 2021). This is reflected in various initiatives, for example the Mohammed Bin Rashid Centre for Government Innovation, the Mohammed Bin Rashid Innovation Fund, and the adoption of advanced technologies into government services. The Mohammed Bin Rashid Centre for Government Innovation (MBRCGI) was established in 2014. Its aims are to establish an integrated system of modern tools to adopt innovation within government organisations and deliver innovative services to the public (Runco & Jaeger, 2012). Aligned with the goals of Vision 2031 "We the UAE", MBRCGI is dedicated to unlocking the individual's potential and enhancing the UAE's status as a leading hub for innovation (Chigova, 2021). In addition, MBRCGI plays a crucial role in the achievement of the UAE's Centennial 2071 goals by building a strong innovation ecosystem, and continuously evolving the governmental work, to position the UAE government as one of the most innovative governments in the world (Krzyszowski, 2020). MBRCGI is also committed to driving continuous renewal of the UAE Government by embedding innovation into their daily practices. It also serves as the main catalyst for government work and offering the platforms that enable innovation. The mission of MBRCGI is to build and leverage innovation intelligence in order to significantly enhance the government effectiveness (Moonesar et al, 2019). The Mohammed Bin Rashid Innovation Fund is another key initiative. The fund offers financial and advisory support to innovative ideas and startups, strengthening the ecosystem that cultivates creative solutions with commercial and societal impact (Alblooshi, 2018). The One Million Arab Coders initiative has upskilled thousands of government employees and young individuals in digital and coding competencies, aligning their workforce capabilities with technological advancement (One Million Arab Coders, 2022). Additionally, the Dubai Future Accelerators, launched under the Dubai Future Foundation, facilitates direct collaboration between international startups and government entities to co-develop and test innovative solutions for public service challenges. These e programs reflect a broader move toward experimental governance, agility, and public-private innovation partnerships (Dubai Future Foundation, 2023). Collectively, these initiatives demonstrate the government's commitment to cultivating an innovation-friendly culture, enhancing digital transformation, and positioning Dubai as a global hub for public sector innovation.

4. Leadership Styles Fostering Innovative Cultures

Leadership styles have received significant attention in academic literature (Avolio & Bass 2004) and can be defined as patterns of emphases, indexed by the intensity of particular leadership behaviour, which a leader places on different leadership situations (Andersen, 2008). Leadership significantly affects decision-making processes, communication expectations, employee motivation, and the overall work environment (Northouse, 2018). Scholars have sought to identify leadership styles that are suited for promoting innovation in their efforts to understand the link between leadership and innovation (Jia et al, 2018). While some researchers argue that supportive, participative, democratic, visionary, and collaborative leadership styles are effective in fostering innovation (Zheng et al, 2019). While others claim that transformational leadership is the most effective style for promoting innovation (Bin Attan & Mahmood, 2019). Numerous leadership styles have been recognized as conducive to enabling an innovative culture within organisations (Jia et al, 2018). Transformational leaders are people who elevate subordinates, and themselves, to a higher level of inspiration and morals (Bass, 2008). This leadership style encourages subordinates to rise above their self-interest, to attain organisational goals beyond stated expectations (Bass, 1985). In environments that require high levels of employee creativity, transformational leadership proves effective by intellectually stimulating critical thinking among workers (Costa et al, 2023). According to Liao et al (2017), transformational leaders influence the implementation of innovation by helping followers recognize its value and offering the necessary support. A cultivated environment motivates individuals to perform at their best, embedding innovation into the organisation's culture. In addition, they create an environment where individuals feel inspired to contribute their best, fostering a culture where innovation is encouraged, thereby embedding innovation into the organisation's culture. Transformational leadership is strongly linked to fostering innovation, mainly through its focus on visionary thinking, intellectual stimulation and inspirational motivation (Bass & Riggio, 2006). Participative leadership supports innovation by engaging employees in decision-making processes and building a culture of collaboration and trust (Kim, 2002). In contrast, transaction leadership, while effective for maintaining accountability, can hinder innovation because

it focuses on rules, routine and risk aversion (Fernandez & Rainey, 2017). Adaptive and servant leadership approaches support innovation by encouraging flexibility, responsiveness and dedication to public service values (Choi & Chandler, 2015). Overall, leadership that empowers and motivates employees plays a vital role in driving innovation within the often complex and bureaucratic context of the public sector (Van Wart, 2013). According to the study conducted by Kamali (2023) through qualitative interviews with senior Emirati leaders, the research revealed that the dominant leadership style in the context of Dubai's government organisations is transformational leadership style, a style that also promotes innovation. Kamali emphasizes the importance of developing transformational leadership, which has become a critical enabler of innovation within Dubai government organisations and can help in meeting future challenges and support the UAE's goals for innovation. In addition, in the context of Dubai government organisations, leadership is particularly influential, as rigid bureaucratic structures and formal hierarchies can either limit or support innovation depending on how they are managed. Therefore, examining the relationship between leadership style and innovation is essential to understand how government organisations can adapt, and change in line with national development objectives (Alsalami, Bosbary & Abdullah, 2014). Consequently, leaders play a crucial role in managing and guiding the complex innovation process within a constantly evolving environment (Demircioglu & Van der Wal, 2022). Leaders are responsible for establishing a work environment, which could either foster or stifle innovation (Jia et al, 2018).

5. Addressing Barriers to Innovation in the Public Sector

In a rapidly changing environment, the necessity to introduce innovation is becoming increasingly critical within organisations (Kozioł-Nadolna, & Beyer, 2021). Innovation has been recognized in the private sector as a source of growth and competitive advantage, while in the public sector it has been comparatively limited due to different factors (Hansen, 2014). These include rigid bureaucratic structures and hierarchies that slow decision-making, risk aversion and a low tolerance for failure given the high level of public scrutiny, and limited financial and human resources that restrict flexibility (De Vries et al, 2016). A lot of studies argued that (Kozioł-Nadolna & Beyer, 2021; Kozioł-Nadolna, 2020) there are many factors that inhibit innovation in the public sector. It is essential to address the barriers to innovation, and identify the obstacles to introducing innovation (Cinar, Trott & Simms, 2019). The barriers in the public sector not only hinder the process of innovation, but organisations must also possess the ability to recognize the barriers and to implement appropriate management tools to address them (Raipa & Giedraityte, 2014). Literature review shows a growing scholarly interest in exploring the barriers to innovation within public sector organisations, for example, a study conducted by (Kozioł-Nadolna, & Beyer, 2021) declared that the barriers to innovation identified by managers were classified as internal and external. Within the internal barriers, there were encompassed organisational constraints, communication challenges, human resource limitations, poor management, and financial obstacles. In contrast, only one external barrier was recognized. The absence of a governmental policy framework that supports innovations in public sector organisations. In addition, another study (Cankar & Petkovsek, 2013) argued that the primary barrier to innovation in the public sector is the lack of relevant skills, followed by restricted access to the external financial resources, and an inadequate knowledge base. In the context of the Dubai government, there are numerous initiatives and strategies that were launched to accelerate innovation, for example the Mohammed Bin Rashid Centre for Government Innovation which aims to establish an integrated system of modern tools, to adopt innovation with government organisations, and deliver innovative services to the public (Runco & Jaeger, 2012). Yet, bureaucratic rigidities continue to inhabit innovation at operational level within public sector entities. These rigidities comprise hierarchical decision-making, inflexible procedures, and centralized authority, which hinder creativity and delay the adoption of innovative solutions (Jaskyte, 2022). Resistance to change is one of the most pervasive barriers to innovation within Dubai government organisations, some entities continue to demonstrate resistance to adopt new technologies, digital tools or processes (Fernandez & Rainey, 2017). Furthermore, Taneva, et al (2016) declared that resistance to change is another barrier as employees are reluctant to embrace changes, due to several different reasons for example age, job insecurity and poor skills. To effectively overcome these barriers, the role of leadership style is crucial for dismantling bureaucratic inertia and cultivating a culture where innovation is not only accepted, but expected (Jaskyte, 2022). Recent studies highlight that transformational leadership significantly enhance innovation in public sector entities by building trust, employee engagement, and willingness to explore novel approaches (Liao et al, 2017). Thus, fostering transformational leadership across all level of Dubai government organisations is important to effectively enhance innovation, and to empower the employees in order to navigate beyond bureaucratic boundaries.

6. Conclusion

The research identifies the critical role of leadership styles, and the impact in fostering an innovation-oriented culture in Dubai government organisations. Despite the robust global research and interest in the varied the leadership styles of leaders within organisations, there is still a notable lack of research addressing the barriers and enablers of innovation in the context of the UAE, particularly in Dubai government organisations. Previous research has often focused on examining the role of innovation in the workplace (Halpern, 2010; Forsman, 2011), their research has rarely examined the role of leadership styles, and the impact of fostering an innovative culture in Dubai government organisations. The rationale for focusing on Dubai lies in its strategic ambition to position itself as a global hub for government innovation, exemplified through initiatives such as the Mohammed Bin Rashid Centre for Government Innovation. Drawing on a conceptual research approach, this study synthesised insights from global leadership and innovation literature with the particular context of Dubai government organisations. Transformational leadership emerges as particularly effective in promoting creativity, experimentation, and organisational agility. These insights echo the arguments scholars such as Bennis (1989), Kouzes and Posner (2012), and Antonakis (2017), while also highlighting the relative scarcity of empirical research examining these dynamics within the public sector. This study makes an important contribution to both theory and practice. Conceptually, it offers a foundation for understanding how leadership styles can shape innovation outcomes in the Dubai government organisations. The study is essential because it provides an impetus for managers, HR professionals and policymakers by demonstrating that transformational leadership style plays a vital role in enabling innovation. The research offers a roadmap for government leaders to drive innovation effectively and lead their organisations toward success. Also, this study brings valuable insights for both managers and policymakers, highlighting that adopting transformational leadership styles can significantly strengthen innovation within organisations. Additionally, human Resource managers, in particular, should recognise the impact of leadership on cultivating an innovative culture and align policies and strategies accordingly. Developing targeted programs and initiatives will help embed innovation within Dubai government organisations while ensuring consistency, sustainability, and measurable impact. As a conceptual paper, the study is subject to certain limitations, notably the lack of empirical testing. Future studies should therefore employ interviews, surveys, or case studies to empirically validate the proposed relationships and extend the analysis across various government sectors and emirates for comparative perspectives. Through such efforts, researchers can help bridge the gap between theory and practise, offering a more comprehensive understanding of how leadership fosters innovation within the UAE and beyond.

Ethics Declaration: The present research study relies solely on secondary sources and publicly available literature. As no human participants, personal data, or experimental interventions were involved, formal ethical approval was not required.

AI Declaration: Generative AI tools (ChatGPT) were used only in a limited manner to assist with paraphrasing and idea generation during the writing process. No AI tools were involved in producing the core analysis, arguments, or conclusions. The author takes full responsibility for the originality, accuracy, and final content of the paper.

References

- Agarwal, R. and Gupta, B. (2021) 'Innovation and Leadership: A Study of organizations based in the United Arab Emirates', *Foundations of Management*, 13(1), pp.73-84.
- Alblooshi, M. (2018) 'Assessing factors that influence employees' creativity in public-sector organisations. The case of Dubai government organisations' (Doctoral Dissertation, University of Wollongong in Dubai) [online]
- Alosani, M. and Al-Dhaafri, H. (2023) 'Stimulating HRM practices through innovative culture: an empirical study on the UAE's government agencies' *International Journal of Quality and Service Sciences*, 15(2), pp.120-135.
- Alsalam, E., Behery, M. and Abdullah, S. (2014) 'Transformational leadership and its effects on organizational learning and innovation: evidence from Dubai', *Journal of applied management and entrepreneurship*, 19(4), p.61.
- Alvesson, M. (2016) 'Leadership and organizational culture'. In A. Wilkinson, S. Armstrong, & M. Lounsbury (Eds.), *The Oxford handbook of management* (pp. 203–222). Oxford University Press.
- Antonakis, J. (2017) 'Transformational and charismatic leadership', In J. Antonakis & D. V. Day (Eds.), *The nature of leadership* (3rd ed., pp. 55–81). SAGE Publications.
- Avolio, B.J. and Bass, B.M. (2004) 'Multifactor Leadership Questionnaire Manual 3rd edition'. Mind Garden, California.
- Andersen, J. A. (2008) 'Style theories In A. Marturano & J. Gosling (Eds.), *Leadership: The Key Concepts*', Routledge, New York.
- Bass, B. M. (2008) 'The Bass handbook of leadership: Theory, research and managerial applications', 4th ed., Free Press, New York.
- Bass, B. M. (1985) *Leadership and performance beyond expectations*, Free Press, New York.

- Bennis, W. (1989) *On becoming a leader*. Addison-Wesley.
- Bin Attan, J. and Mahmood, N.H.N. (2019) 'The role of transformational leadership style in enhancing employees' competency for organization performance', *Management Science Letters*, 9(13), pp.2191-2200.
- Cankar, S.S. and Petkovsek, V. (2013) 'Private and public sector innovation and the importance of cross-sector collaboration', *Journal of Applied Business Research*, 29(6), p.1597.
- Chigova, L.E. (2021) 'The National Development Plan 2030: A focus on innovation issues'. *Journal of Public Administration*, 56(4.1), pp.1069-1073.
- Choi, T. and Chandler, S.M. (2015) 'Exploration, exploitation, and public sector innovation: An organizational learning perspective for the public sector'. *Human Service Organizations: Management, Leadership & Governance*, 39(2), pp.139-151.
- Cinar, E., Trott, P. and Simms, C. (2019) 'A systematic review of barriers to public sector innovation process'. *Public management review*, 21(2), pp.264-290.
- Costa, J., Pádua, M. and Moreira, A.C. (2023). Leadership styles and innovation management: What is the role of human capital?. *Administrative Sciences*, 13(2), p.47.
- De Vries, H., Bekkers, V. and Tummers, L. (2016) 'Innovation in the public sector: A systematic review and future research agenda'. *Public administration*, 94(1), pp.146-166.
- Demircioglu, M.A. and Van der Wal, Z. (2022) 'Leadership and innovation: what's the story? The relationship between leadership support level and innovation target'. *Public Management Review*, 24(8), pp.1289-1311.
- Dubai Future Foundation (2023) *Dubai Future Accelerators*. <https://www.dubaifuture.ae>
- DuBrin, A. J. (2015) *Leadership: Research Findings, Practice, and Skills* (7th ed.). Nelson Education.
- Fernandez, S. and Rainey, H.G. (2017) 'Managing successful organizational change in the public sector. In' *Debating public administration* (pp. 7-26). Routledge.
- Fontana, A. and Musa, S. (2017) 'The impact of entrepreneurial leadership on innovation management and its measurement validation'. *International Journal of Innovation Science*, 9(1), pp.2-19.
- Forsman, H. (2011) 'Innovation capacity and innovation development in small enterprises. A comparison between the manufacturing and service sectors', *Research policy*, 40(5), pp.739-750.
- Halpern, N. (2010) 'Marketing innovation: Sources, capabilities and consequences at airports in Europe's peripheral areas' *Journal of Air Transport Management*, 16(2), pp.52-58.
- Hansen, E. (2014) 'Innovativeness in the face of decline: Performance implications', *International Journal of Innovation Management*, 18(05), p.1450039.
- Hartley, J., (2018) 'Ten propositions about public leadership', *International Journal of Public Leadership*, 14(4), pp.202-217.
- House, R.J., Hanges, P.J., Javidan, M., Dorfman, P.W. and Gupta, V. eds. (2004) *Culture, leadership, and organizations: The GLOBE study of 62 societies*. Sage publications.
- Jia, X., Chen, J., Mei, L. and Wu, Q. (2018) 'How leadership matters in organizational innovation: a perspective of openness' *Management Decision*, 56(1), pp.6-25
- Jaskyte, K. (2022) 'The Role of Leadership in Promoting Innovation in Public Organizations' *Public Organization Review*, 22(1), 115–132.
- Kamali, A. (2023) 'The Impact of Leadership Style on Employee Wellbeing in Dubai Government Organisations' In *European Conference on Management, Leadership & Governance* (pp. 577-582). Academic Conferences International Limited.
- Kamali, A.A. (2018) 'Leadership Development Programs (LDPs): Factors Impacting on Learning Transfer in Dubai Government Organisations' (Doctoral dissertation, University of Wollongong).
- Kim, S. (2002) 'Participative management and job satisfaction: Lessons for management leadership' *Public administration review*, 62(2), pp.231-241.
- Kouzes, J. M., and Posner, B. Z. (2012) *The leadership challenge: How to make extraordinary things happen in organizations* (5th ed.). Jossey-Bass.
- Kozioł-Nadolna, K. (2020) 'The role of a leader in stimulating innovation in an organization', *Administrative Sciences*, 10(3), p.59.
- Kozioł-Nadolna, K. and Beyer, K. (2021) 'Barriers to innovative activity in the sustainable development of public sector organizations' *Procedia Computer Science*, 192, pp.4376-4385.
- Krzymowski, A. (2020) 'Sustainable development goals in Arab region—United Arab Emirates' case study', *Problemy Ekorozwoju*, 15(1), pp.211-220.
- Liao, S.H., Chen, C.C., Hu, D.C., Chung, Y.C. and Liu, C.L. (2017) 'Assessing the influence of leadership style, organizational learning and organizational innovation'. *Leadership & organization development journal*, 38(5), pp.590-609.
- Lin, C. Y. and Liu, F. (2012) 'A cross-level analysis of organizational creativity climate and perceived innovation The mediating effect of work motivation', *European Journal of Innovation Management*, 15 (1), pp. 55-76.
- Moonesar, I.A., Stephens, M., Batey, M. and Hughes, D.J. (2019) 'Government innovation and creativity: a case of Dubai' In *Future Governments* (pp. 135-155). Emerald Publishing Limited.
- Northouse, P. G. (2018) *Leadership: Theory and practice* (8th ed.). Thousand Oaks, CA: Sage Publications.
- One Million Arab Coders. (2022) *Initiative Report*. <https://www.arabcoders.ae>
- Parker-Follett, M. (1926) 'The giving of orders', *Scientific Foundations of Business Administration*, 1(1), pp. 1–19. Reprinted in: Metcalf, H.C. (ed.) (1941) *Dynamic administration: The collected papers of Mary Parker Follett*. New York: Harper & Brothers.
- Runco, M.A. and Jaeger, G.J. (2012) 'The standard definition of creativity'. *Creativity research journal*, 24(1), pp.92-96.

- Raipa, A. and Giedraityte, V. (2014) 'Innovation process barriers in public sector: A comparative analysis in Lithuania and the European Union' *International Journal of Business and Management*, 9(10), p.10.
- Reed, B.N., Klutts, A.M. and Mattingly II, T.J. (2019) 'A systematic review of leadership definitions, competencies, and assessment methods in pharmacy education', *American journal of pharmaceutical education*, 83(9), p.7520.
- Scheepers, C.B. and Storm, C.P. (2019) 'Authentic leadership's influence on ambidexterity with mediators in the South African context' *European Business Review*, 31(3), pp.352-378.
- Sørensen, J.B. and Stuart, T.E. (2000) 'Ageing, obsolescence, and organizational innovation', *Administrative Science Quarterly*, 45(1), pp. 81–112.
- Saeed, H., Som, H.M. and Mahmood, R. (2022) 'Leadership styles, organizational culture, and innovation in healthcare: A conceptual framework', *International Journal of Academic Research in Business and Social Sciences*, 12(8), pp.1390-1408.
- Taneva, Stanimira K., John Arnold, and Rod Nicolson. (2016) 'The experience of being an older worker in an organisation: A qualitative analysis', *Work, aging and retirement* 2(4): 396-414.
- Tafvelin, S., Armelius, K. and Westerberg, K. (2011) 'Toward understanding the direct and indirect effects of transformational leadership on well-being: A longitudinal study' *Journal of Leadership & Organizational Studies*, 18(4), pp.480-492.
- Udwadia, F.E. (1990) 'Creativity and innovation in organizations: Two models and managerial implications', *Technological forecasting and social change*, 38(1), pp.65-80.
- Van Wart, M. (2013) 'Lessons from leadership theory and the contemporary challenges of leaders', *Public administration review*, 73(4), pp.553-565.
- Wegner, R.D.S., Tontini, J., Costa, V.M.F., Muller Junior, A. & Silva, D.J.C.D. (2021) 'An analysis of the influence of organizational leadership on innovation management using the Fuzzy-AHP Method'. *Revista de Administração da UFSM*, 14, pp. 521–544.
- Waite, R., McKinney, N., Smith-Glasgow, M.E. and Meloy, F.A. (2014) 'The embodiment of authentic leadership'. *Journal of Professional Nursing*, 30(4), pp.282-291.
- Zheng, J., Wu, G., Xie, H. and Li, H. (2019) 'Leadership, organizational culture, and innovative behavior in construction projects: The perspective of behavior-value congruence', *International Journal of Managing Projects in Business*, 12(4), pp.888-918.

Agile Culture, Agile and Non-Agile Minded Employees' Interrelations in the Context of Agile-Minded Leader Paradox

Wioleta Kucharska¹, Maciej Kucharski¹ and Jari Jussila²

¹Gdansk University of Technology – Gdansk TECH, Fahrenheit Universities Association, Poland

²Häme University of Applied Sciences, HAMK Design Factory, Finland

wioleta.kucharska@pg.edu.pl

maciej.kucharski@pg.edu.pl

jari.jussila@hamk.fi

Abstract: This study follows previous research indicating that leaders with an agile mindset are essential for establishing an agile organization. They directly influence the creation of such an organization, support agile-minded employees, and motivate non-agile staff to change their attitudes and behaviors. This study examines the relationships between agile and non-agile employees in environments characterized by agile culture and those without it, while excluding the impact of agile-minded leaders from the analysis. The results indicate that a firm or robust agile culture within an organization leads to a negative perception of non-agile-minded employees, while the opposite relationship is not significant. Thus, addressing the research question to which this study is dedicated—whether agile culture mitigates tensions between agile and non-agile staff—the answer is no; it does not. Consequently, the Agile-Minded Paradox remains one of the biggest challenges agile-minded leaders face when building or managing agile organizations. So, this constant tension caused the Agile Minded Leader Paradox to remain unsolved, but with awareness of it, agile-minded leaders can manage these tensions more effectively. Furthermore, this study provides insights into this complex situation. Specifically, in an agile culture where high standards are established, agile-minded staff (the minority) are not victims of non-agile-minded employees (the majority). Thus, even as a minority, agile-minded staff are very efficient and influential when working in a company dominated by agile culture.

Keywords: Agile-Minded leader paradox, Agile mindset, Agile culture, Agile mindset leader, Agile mindset follower, Non-Agile mindset follower

1. Introduction

The essence of the Agile-Minded Leader Paradox is a tension stemming from the fact that agile organizations cannot exist without agile-minded leaders, who support agile-minded employees and organizations but are perceived by non-agile employees as severe stressors. Since agile-minded employees are typically a minority and non-agile employees constitute the majority, the authors view this situation as a curious managerial paradox (Kucharska et al., 2025a). Agile leaders must navigate the daily challenge of managing a company where critical agile mindsets are in the minority. At the same time, the non-agile-minded majority operates under continuous pressure from the agile culture, viewing agile leaders as “stressors” (Kucharska et al., 2025b). On one hand, this scenario may motivate non-agile followers to leave their ‘comfort zone’ (McCauley and Yost, 2021) and adapt. On the other hand, the intense pressure from the contradictory climate can hinder their capabilities. Recent studies indicate that agile culture can help mitigate this tension. Specifically, Kucharska et al.’s (2025b) cross-country study confirmed the presence of the agile-minded leadership paradox. This paradox arises from the tension created because agile organizations depend on both agile leaders and agile staff. However, friction often occurs between agile leaders and staff (who are in the minority) and non-agile staff (who make up the majority). Non-agile staff perceive agile leaders, culture, and colleagues as stressors. The authors of this study demonstrated that an agile culture could help alleviate the challenges posed by this paradox. Nonetheless, it also revealed varied perceptions regarding the effectiveness of implementing an agile culture. To ease this tension, it is essential to adopt balanced, diverse, and multi-level shared leadership, all supported by the agile culture, to foster agility. The authors emphasized that tailoring the influence of agile leaders to the mindsets of their followers—applying a direct approach for those with an agile mindset and a mediated approach through agile culture for those with a non-agile mindset—appears to be best practice.

Thus, agile culture, when used as an agile leadership practice, can significantly mediate between agile leaders and their followers to achieve an agile organization (Kucharska et al., 2025b). Following this line of research, this study aims to explore the interrelations between agile and non-agile employees under the condition that agile culture dominates and without it, and when the power of the agile-minded leader is ignored (excluded from the investigation). Therefore, the research question to which this study is dedicated is:

RQ: How does an agile culture moderate the relation between agile and non-agile co-workers?

2. Conceptual Framework

In a rapidly changing world, adaptability and flexibility skills are essential for survival (Jussila and Suominen, 2009). Organizational agility allows businesses to respond quickly and efficiently, thus improving performance during volatile times, which is vital today (Tanushree-Sahoo and Chaubey, 2024). As a result, leadership must be as dynamic as the business environment itself. Agile-minded leaders have recently been proven to be a key influencing power in the development of dynamic capabilities (Kucharski et al., 2025) and in the overall agility of organizations (Kucharska et al., 2025a,b; Kumar and Ray, 2023; Tarken and Hart, 2023). Therefore, agile-minded leadership is of high interest today.

Leadership is seen as “the process through which an individual becomes influential to relevant others in a manner that involves the implicit or explicit granting of the leader role” (Badura et al., 2022, p. 2070). Therefore, leadership is a dynamic process of social influence (Day and Antonakis, 2013; Kumar and Ray, 2023). Effective leadership today requires an understanding of and respect for diverse cultural norms and values, along with the ability to adapt leadership styles to various contexts (Jain and Ovais, 2025). Furthermore, the adaptive power of culture, both internal and external, highlights its significant role in supporting organizational adaptability, survival, and growth, as emphasized by Dwairy (2019). Consequently, this study proposes an agile culture as an effective tool influencing social processes within agile organizations. What is pioneering, in comparison to former studies, is that this research explores how the relationships between agile and non-agile employees, as well as agile organizations, change when facilitated or not by agile culture, notably if the agile-minded leader is excluded from the model.

Agile organizations and their agile and non-agile mindset employees

Agile thinking and acting are key to establishing a successful agile enterprise that prioritizes customers and society, empowers employees, and boosts productivity by 20% to 40% through enhanced engagement (Rigby et al., 2020). Thus, the development of such organizations is currently an object of desire. At the heart of any organization are the people (employees) and their smooth cooperation, knowledge sharing, and learning, which enhance its collective intelligence and serve as the root of organizational agility (Kucharska, 2025). Since organizations are composed of people, employee agility rooted in their mindset is the focus of this study.

So, employees' mindsets' agility directly impacts an agile organization (Bablo et al., 2023; Eilers et al., 2022; Ozkan et al., 2023). Employees' agility is rooted in their mindset. According to Kucharska et al. (2025a) agile mindset is defined as “a state of mind that positively evaluates change as intellectual stimuli and sees it as a challenge; next, channels this challenge into opportunity; finally, smoothly adapts own actions to win the maximum advantage of this opportunity, thanks to critical thinking, risk analyzing, smooth learning and unlearning with special attention to contextual (tacit) knowledge gathering from experience, fluently operating on paradoxes and taking decisions timely and accurately.” Moreover, these authors define the agile organization as “an efficient, comprehensive adaptive system that encompasses the coordination of people, processes, technology, culture, and resources; which critically depends on its agile-minded leadership and agile minded employees'; technology adoption, agile management methods application; and also firmly on its culture, structure, and strategic resource identification and security; and where all of those elements combination is synergically oriented toward sustaining a long-term competitive strategy. Moreover, it is clear that employees' mindsets directly impact organizational performance (Murphy and Reeves, 2019). Therefore, this study aims to explore in more depth the relationship between agile and non-agile staff's potential options for cooperation to support agile organization achievement.

Kucharska et al. (2025a,b) examined the impact of agile and non-agile-minded employees on agile organizations [AO]. They found that agile-minded employees impact AO positively, whereas non-agile-minded employees negatively, and that both groups cannot cooperate without friction (Figure 1). Therefore, as stated in the introduction section, this study aims to check if agile culture can mitigate this friction. However, in contrast to the previous studies, this paper focuses only on the relation between agile and non-agile employees, excluding leaders' power. Such an approach is necessary to understand the nature of relations between these two groups fully. Ambituuni et al. (2021) clearly stated that some employees are agile (minority), whereas others are not (majority) and probably never will be. Both groups must co-exist and cooperate. Therefore, it is important to find out the best options for how these groups can not only co-exist but also cooperate. Agile culture conditions can matter. So, this study aims to find out.

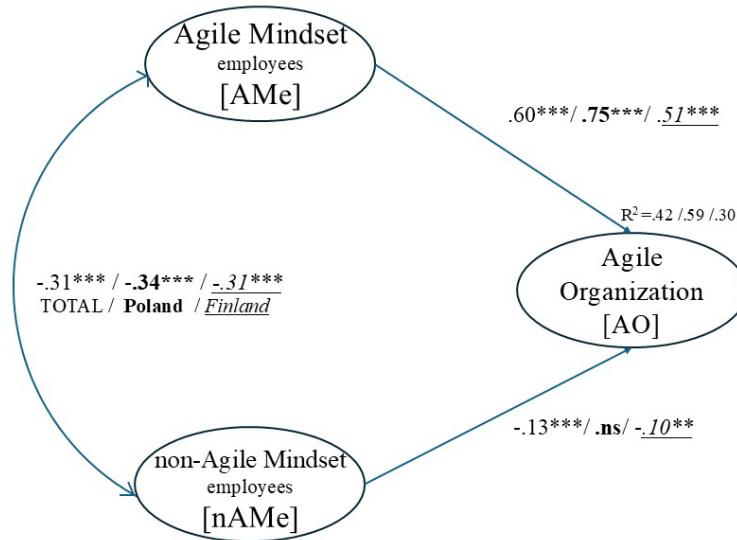


Figure 1: Agile and non-agile-minded employees' impact on the agile organization (this study's inspiration)

N=1871/953/918 (TOTAL/Poland/Finland); Cmin/df=3.87/2.61/3.05 CFI=.969/.967/.953 TLI=.966/.965/.949 RMSEA=.039(.037-.041)/.041(.038-.044)/.047(.044-.050) ; ML-maximum likelihood, standardized estimates; *p < .05; **p < .01; ***p < .001; ns—not significant result. **Source: Kucharska et al. (2025b)**

Agile culture

The concept of agile culture and the principles of agility have ignited a vibrant interest among both scholars and practitioners, highlighting their remarkable potential to drive innovation and elevate performance (Magistretti and Trabucchi, 2025; Uwasomba et al., 2025; Zeitoun, 2023). As described by Payol (2022), an agile culture thrives in an environment free from bureaucracy, control, and fear. In this dynamic landscape, an agile leader stands out, embodying qualities such as energy, resilience, unwavering motivation, a growth mindset, courage, and vulnerability. Company culture greatly influences member behavior (Edmonds, 2014; Steers and Sánchez-Runde, 2017). Therefore, fostering an agile culture is invaluable, positively impacting both agile and non-agile staff. Following Kucharska et al. (2025b), we define an agile culture as one characterized by an open mind and a strong collective spirit oriented towards continual improvement, viewing change simultaneously as a norm and as an opportunity. Moreover, Kucharska et al. (2025b) empirically proved that the impact of agile leadership on both agile and non-agile-minded staff is mitigated by agile culture and confirmed that agile leadership is an agile-cultural practice. Since this study focuses on the relations between agile and non-agile staff, it aims to determine whether the agile culture mitigates the negative relationship between agile and non-agile workmates. Therefore, the hypothesis is proposed as follows:

H1a: Agile culture positively facilitates (mitigates) the negative impact of agile-minded employees on non-agile-minded employees

H1b: Agile culture positively facilitates (mitigates) the negative impact of non-agile-minded employees on agile-minded employees

All the above assumptions are summarized in Figure 2.

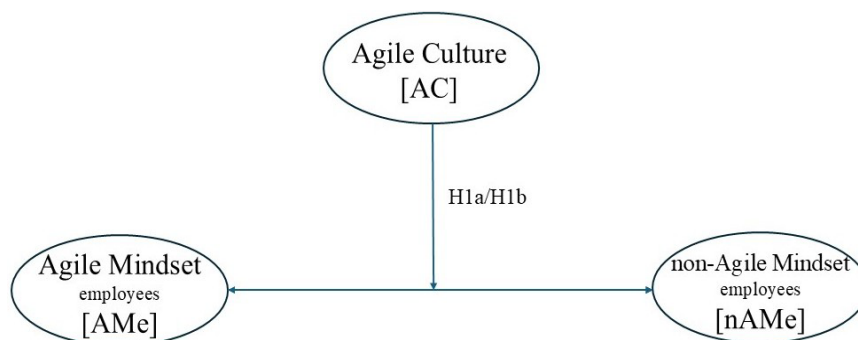


Figure 2: Theoretical model (serves this study's purpose)

3. Methodology

The models reflect the perceptions of the participants: male and female, specialists and leaders from Poland and Finland. Data were collected in March 2025 using the CAWI (Computer-Assisted Web Interview) method. The total sample size is 1871 cases (country input and gender balance are secured). Respondents provided their subjective opinions and observations regarding their working environments by answering the statements (Appendix 1) on a 7-point Likert scale (1- totally disagree; 7- perfectly agree). The cross-loading matrix (Appendix 2) proves good quality of the measures taken (loadings exceed 0,5, and scales do not overlap). Moreover, the KMO (Kaiser-Meyer-Olkin) test of adequacy yielded a result of 0.971, and the CMV was 68%, indicating good quality of the measures (Byrne, 2016). Table 1 below presents the details of the measurement scales, their sources, and the measure quality metrics. Next, the OLS regression using SPSS PROCESS was conducted to verify the theoretical model shown in Figure 1.

Table 1: Scales and their reliabilities

Scale	Statements	Reliabilities based on CFA models
Agile mindset employee [AMe] Kucharska et al. (2025a)	About workmates perceived as an agile mindset: a. they quickly adapt to new conditions b. they usually achieve their aims c. they never give up d. they learn, unlearn, and relearn smoothly e. they can work in unpredictable environments (they accept uncertainty) f. they act dynamically g. they see change as an opportunity h. they are passionate, enthusiastic, and engaged at work (all conditions met) i. they can follow schemes but also can act creatively beyond schemes (both conditions met) j. they accept the challenge k. they are open to change l. they accept risk m. they learn from mistakes	Cronbach alpha = .90 AVE = 0.64 CR = 0.92 Cmin/df = 4.6 CFI = .960 TLI = .952 RMSEA = .062
Non-agile mindset employee [nAMe] Kucharska et al. (2025a)	About workmates perceived by you as a non-agile mindset: a. they quickly adapt to new conditions b. they usually achieve their aims (deliver) c. they never give up/ they easily give up d. they learn, unlearn, and relearn smoothly e. they can work in unpredictable environments (they accept uncertainty) f. they act dynamically g. they see change as an opportunity h. they are passionate, enthusiastic, and engaged at work (all conditions met) i. they can follow schemes but also can act creatively beyond schemes (both conditions met) j. they accept the challenge k. they are open to change l. they accept risk m. they learn from mistakes	Cronbach alpha = .97 AVE = .76 CR = .96 Cmin/df = 4.4 CFI = .979 TLI = .972 RMSEA = .078

Scale	Statements	Reliabilities based on CFA models
	ATTENTION: Participants responded to the same statements as they did for agile mindsets but usually responded negatively or oppositely (disagreed with statements given).	
Agile culture [AC] Kucharska et al. (2025b)	About company's culture orientation towards agility: a. we have common goals, vision, and values concerning constant development b. we have a common willingness to learn and improve our work methods so that we can achieve more and more together c. we are inclusive (we care that everyone feels part of the team) d. we communicate openly and solve problems on an ongoing basis e. together we are very efficient f. we constantly search for the best solutions, so we are ready to be wrong g. change is a norm ~~h. nothing is set-up forever~~ i. we accept ambiguity (not everything looks as it seems – so, we stay open-minded)	Cronbach alpha = .87 AVE = .55 CR = .80 Cmin/df = 4.0 CFI = .979 TLI = .972 RMSEA = .058

Note: statements included in final measures securing AVE> 0.5 are bolded

4. Results

Results showed that an agile culture makes the negative perception of non-agile-minded employees even stricter (H1a). The opposite relationship is not significant (H1b). Thus, a strong agile culture establishes agile thinking and acting as a company standard. Consequently, those who do not fit this standard are perceived as much less agile (Figure 3; AC-7 very strong AC) compared to when the standard is lower (Figure 3; AC-6 or AC-4).

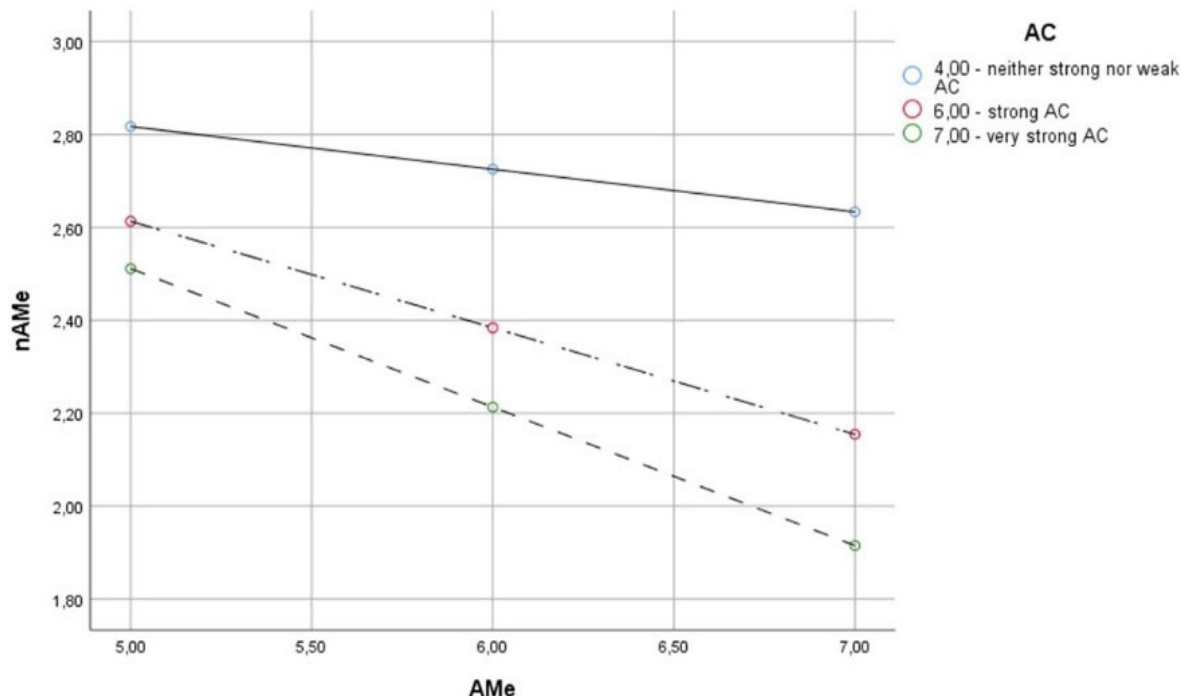


Figure 3: Moderation effect of AMe*AC on nAMe [H1a]

H1a verification – OLS regression by SPSS PROCESS

```
Run MATRIX procedure:
***** PROCESS Procedure for SPSS Version 4.2 *****
Written by Andrew F. Hayes, Ph.D. www.afhayes.com
Documentation available in Hayes (2022). www.guilford.com/p/hayes3
*****
```

```

Model : 1
Y : nAme X : AMe W : AC
Sample Size: 1871
*****
OUTCOME VARIABLE: nAme
Model Summary
      R      R-sq      MSE      F      df1      df2      p
,2308 ,0533  2,1468  35,0083  3,0000  1867,0000 ,0000
Model
      coeff      se      t      p      LLCI      ULCI
constant  2,3072 ,5403  4,2706 ,0000  1,2476  3,3667
AMe ,1835 ,0973  1,8859 ,0495 -,0073 ,3743
AC ,2421 ,1069  2,2642 ,0237 ,0324 ,4519
Int_1 -,0688 ,0184 -3,7439 ,0002 -,1049 -,0328
Product terms key: Int_1 : AMe x AC
Covariance matrix of regression parameter estimates:
      constant      AMe      AC      Int_1
constant ,2919 -,0505 -,0547 ,0093
AMe -,0505 ,0095 ,0092 -,0017
AC -,0547 ,0092 ,0114 -,0019
Int_1 ,0093 -,0017 -,0019 ,0003
Test(s) of highest order unconditional interaction(s):
      R2-chng      F      df1      df2      p
X*W ,0071  14,0166  1,0000  1867,0000 ,0002
Focal predict: AMe (X) Mod var: AC (W)
Conditional effects of the focal predictor at values of the moderator(s):
      AC      Effect      se      t      p      LLCI      ULCI
4,0000 -,0918 ,0359 -2,5560 ,0107 -,1622 -,0214
6,0000 -,2294 ,0354 -6,4752 ,0000 -,2988 -,1599
7,0000 -,2982 ,0474 -6,2847 ,0000 -,3912 -,2051
***** ANALYSIS NOTES AND ERRORS *****
Level of confidence for all confidence intervals in output: 95,0000
W values in conditional tables are the 16th, 50th, and 84th percentiles.
----- END MATRIX -----

```

H1b verification – OLS regression by SPSS PROCESS

```

Run MATRIX procedure:
***** PROCESS Procedure for SPSS Version 4.2 *****
      Written by Andrew F. Hayes, Ph.D.      www.afhayes.com
      Documentation available in Hayes (2022). www.guilford.com/p/hayes3
*****
Model : 1 Y : A1_11 X : A2_4 W : A4_6
Sample Size: 1871
*****
OUTCOME VARIABLE: AMe
Model Summary
      R      R-sq      MSE      F      df1      df2      p
,3951 ,1561  1,2130  115,1309  3,0000  1867,0000 ,0000
Model
      coeff      se      t      p      LLCI      ULCI
constant  4,2797 ,2154  19,8711 ,0000  3,8573  4,7021
nAme -,1124 ,0751 -1,4974 ,1345 -,2597 ,0348
AC ,3101 ,0371  8,3490 ,0000 ,2373 ,3830
Int_1 ,0040 ,0135 ,2930 ,7695 -,0225 ,0304
Product terms key: Int_1 : NAME x AC
Covariance matrix of regression parameter estimates:
      constant      nAme      AC      Int_1
constant ,0464 -,0140 -,0078 ,0024
nAme -,0140 ,0056 ,0024 -,0010
AC -,0078 ,0024 ,0014 -,0004
Int_1 ,0024 -,0010 -,0004 ,0002
Test(s) of highest order unconditional interaction(s):
      R2-chng      F      df1      df2      p
X*W ,0000 ,0859  1,0000  1867,0000 ,7695
***** ANALYSIS NOTES AND ERRORS *****
Level of confidence for all confidence intervals in output: 95,0000
----- END MATRIX -----

```

5. Discussion, Limitations, and Further Study Directions

The results show that a strong or very strong level of agile culture within the organization leads to a negative perception of employees who do not have an agile mindset. The opposite relationship is not significant. Therefore, a strong agile culture encourages agile thinking and establishes a company standard. As a result, those who do not adhere to this standard are perceived as significantly less agile compared to a situation where the agile culture standard in the company is lower.

Further studies should examine the consequences of strong and very strong agile cultures on agile organizations, especially concerning non-agile-minded staff, which is the most controversial aspect. Previous studies by Kucharska et al. (2025b) highlighted the potential of agile culture when employed as a leadership practice. What conditions must be met to mobilize non-agile-minded staff through agile culture, and what factors contribute to non-agile-minded staff becoming paralyzed under agile culture conditions? Additional research is needed to

address these questions. So far, in addressing whether agile culture mitigates the tensions between agile and non-agile staff, the answer is: it does not. Therefore, the Agile-Minded Paradox remains one of the biggest challenges agile-minded leaders must face when building or managing agile organizations.

Ambituuni et al. (2021) previously emphasized the existence of tensions in the cooperation between agile and non-agile staff. Kucharska et al. (2025a,b) examined this issue more thoroughly through empirical research. They uncovered the nature of this tension, which was analyzed within the broader context of agile-minded leaders, culture, and agile organizations. Their findings specifically revealed the phenomenon referred to as the Agile Minded Leader Paradox. The essence of this paradox lies in the necessity of maintaining a constant balance between two contradictory and somewhat controversial scenarios:

Scenario 1: An agile-minded leader (AML) acknowledges their role as a stressor for non-agile-minded employees (nAMe), which can create pressure and lead to a hostile work environment. This situation may negatively impact their performance and is not advantageous for the organization in any respect.

or

Scenario 2: Allowing a non-agile-minded employee to remain non-agile as they are (the majority), by simply assigning them non-agile responsibilities (routines) and providing a secure environment in which they can excel under predictable working conditions, while risking the mental well-being of the agile-minded staff (minority) due to the ongoing friction between agile and non-agile personnel. This situation endangers organizational efficiency due to the friction.

None of these scenarios seems permanently acceptable. Therefore, this constant tension has caused the Agile Minded Leader Paradox to remain unresolved. However, aware of it, agile-minded leaders can manage these tensions more wisely. The study findings shed light on this challenging situation. Specifically, working in a company with an agile culture and high standards, agile-minded staff (the minority) are not victims of non-agile-minded employees (the majority). This study showed that the impact of non-agile-minded employees on agile-minded employees is not significant. Conversely, the opposite effect is significant and strong. Thus, even as a minority in an agile culture-dominated company, agile-minded staff are highly efficient and powerful.

Earlier, Vilas-Boas et al. (2018) introduced leadership as a cultural practice. Regarding agile organizations, agile-minded leaders, and agile culture, Kucharska et al. (2025b) confirmed this. Furthermore, the study demonstrated that an agile culture has the power to empower agile-minded staff. In short, it revealed that agile-minded individuals are extremely valuable for organizations aiming to be agile.

The key limitation of this study is that it is based on the perception of the phenomenon by 1871 employees. On one hand, this is quite a large sample; on the other hand, the self-awareness and honesty of respondents are always more critical than the number of answers. Since we examined only knowledge workers (probably the most self-aware respondents), we consider the results worthy of attention from both science and practice.

6. Practical Implications

The research has significant practical implications for building an agile organization. First, and most importantly, is a strong agile culture and agile-minded leaders. Next, it involves wisely managing the Agile Leadership Paradox, which can be achieved by separating employees with agile and non-agile mindsets, allowing non-agile-minded employees to remain non-agile and dedicating them to non-agile duties (routines). This should enable them to feel safe and perform at their best in very predictable working conditions. To avoid the friction between the agile-minded staff (minority) and the non-agile-minded staff (majority), a special bridge role is required. As indicated by Kucharska et al. (2025b), female agile-minded leaders can work with both agile and non-agile-minded staff, preventing any friction. However, further studies in this matter can be beneficial.

7. Conclusion

The answer to the research question of whether agile culture mitigates tensions between agile and non-agile staff is that it does not. Therefore, the Agile-Minded Paradox remains one of the biggest challenges agile-minded leaders must confront when building or managing agile organizations. This ongoing tension has left the Agile Minded Leader Paradox unresolved, but by being aware of it, agile-minded leaders can navigate these tensions more wisely. However, the findings of this study illuminate this challenging situation. Specifically, within a company that fosters an agile culture with high standards, agile-minded staff (the minority) are not victims of non-agile-minded employees (the majority). This study demonstrated that non-agile-minded employees have a nonsignificant impact on agile-minded employees. Conversely, the influence is significant and strong in the

opposite direction. Thus, even as a minority, when working in a company dominated by agile culture, agile-minded staff are highly efficient, and their contributions are powerful.

Acknowledgments

The presented research results from the project 'Agile learning culture influence on dynamic capabilities of knowledge-based organizations: Polish-Finnish cross-country analysis,' No. UMO-2022/47/B/HS4/00597, financed by the National Science Center (NCN), Poland.

AI usage declaration: We used Grammarly to make language corrections.

Ethics statement: Respondents voluntarily participated in the research, and their anonymity was fully respected and secured.

References

- Ambituuni, A., Azizsafaei, F. and Keegan, A. (2021) "HRM operational models and practices to enable strategic agility in PBOs: Managing paradoxical tensions," *Journal of Business Research*, Vol. 133, pp. 170-182. <https://doi.org/10.1016/j.jbusres.2021.04.048>
- Bablo, J., Marcinkowski, B. and Przybylek, A. (2023) "Overcoming challenges of virtual Scrum teams: Lessons learned through an action research study", in *International Conference on Agile Software Development* (pp. 34-49). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-33976-9_3
- Byrne, B.M. (2016), *Structural Equation Modeling with Amos*, Routledge.
- Day, D.V. and Antonakis, J. (2013) "The future of leadership", *The Wiley-Blackwell Handbook of the Psychology of Leadership, Change, and Organizational Development*, pp. 221-235. <https://doi.org/10.1002/9781118326404.ch11>
- Dwairy, M. (2019) "Culture and leadership: Personal and alternating values within inconsistent cultures," *International Journal of Leadership in Education*, Vol. 22 No. 4, pp. 510-518. <https://doi.org/10.1080/13603124.2017.1394498>
- Edmonds, S.C. (2014), *The culture engine: A framework for driving results, inspiring your employees, and transforming your workplace*, John Wiley & Sons.
- Eilers, K., Peters, C. and Leimeister, J.M. (2022) "Why the agile mindset matters?", *Technological Forecasting & Social Change*, Vol. 179, Article 121650. <https://doi.org/10.1016/j.techfore.2022.121650>
- Hayes, A.F. (2017) *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*, Guilford Publications.
- Jain, R. and Ovais, D. (2025) "Cross-Cultural Leadership in Tech-Driven World," *Indigenous Empowerment through Human-Machine Interactions: The Challenges and Strategies from Business Lenses*, pp. 93-113. <https://doi.org/10.1108/978-1-83608-068-820251006>
- Jussila, J. and Suominen, A. (2009) "Organizational Innovation Capability," in N. Oza, P. Abrahamsson (eds.), *Building Blocks of Agile Innovation* (pp. 101–108), Charleston, BookSurge Publishing. <http://dx.doi.org/10.13140/RG.2.1.4823.4088>
- Kucharska, W. (2025) *Organizational Intelligence for Change Adaptability: The Knowledge, Learning, and Collaboration Cultures Approach*, Routledge.
- Kucharska, W., Balcerowski, T., Kucharski, M. and Jussila, J. (2024) "Who is an Agile Leader? Technological vs. Non-technological Mindset Employees' Views," in *Proceedings of The 19th European Conference on Management, Leadership and Governance*, Vol. 20 No.1, pp. 246-254. <https://doi.org/10.34190/ecmlg.20.1.2960>
- Kucharska, W., Kucharski, M., Balcerowski, T., Jussila, J. and Laanti, M. (2025a) "Why does the Agile leader mindset matter the most? The agile-minded leadership paradox," *Heliyon*. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4988722
- Kucharska, W., Kucharski, M. and Jussila, J. (2025b) "Agile-minded leadership as agile-cultural practice. Leaders' and followers' views per gender," *Gender in Management* (under review).
- Kucharski, M., Kucharska, W. and Jussila, J. (2025c) "Agile Team Leaders' Mindset Impact on Agile Software Development Innovativeness", *Proceedings of the 33rd International Conference on Information Systems Development (ISD2025 Belgrade, Serbia)*.
- Kumar, S. and Ray, S. (2023) Moving towards agile leadership to help organizations succeed, *IUP Journal of Soft Skills*, Vol. 17 No. 1, pp. 5–17.
- Magistretti, S. and Trabucchi, D. (2025) "Agile-as-a-tool and agile-as-a-culture: a comprehensive review of agile approaches adopting contingency and configuration theories," *Review of Managerial Science*, Vol. 19 No. 1, pp. 223-253. <https://doi.org/10.1007/s11846-024-00745-1>
- McCauley, C.D. and Yost, P.R. (2021) "Stepping to the edge of one's comfort zone", in V. S. Harvey and K. P. De Meuse (Eds.), *The age of agility: Building learning agile leaders and organizations* (pp. 204–228). Society for Industrial and Organizational Psychology; Oxford University Press. <https://doi.org/10.1093/oso/9780190085353.003.0008>
- Murphy, M.C. and Reeves, S.L. (2019) "Personal and organizational mindsets at work", *Research in Organizational Behavior*, Vol. 39, Article: 100121. <https://doi.org/10.1016/j.riob.2020.100121>
- Ozkan, N., Eilers, K. and Gok, M.S. (2023) "Back to the essential: A literature-based review on agile mindset," in *Proceedings of the 18th Conference on Computer Science and Intelligence Systems*, Vol. 35, pp. 201–211. <https://doi.org/10.15439/2023F6360>

- Payol, J. (2022) "Agile servant leadership is not fluffy," in B. Underhill, J. Passmore, and M. Goldsmith (eds.) *Coach me! Your personal board of directors: Leadership advice from the world's greatest coaches* (pp. 114–116), Wiley.
- Rigby, D., Elk, S. and Berez, S. (2020) "Doing agile right: Transformation without chaos," *Harvard Business Review Press*.
- Steers, R.M. and Sánchez-Runde, C.J. (2017) "Culture, motivation, and work behavior," *The Blackwell handbook of cross-cultural management*, pp. 190-216, Wiley. <https://doi.org/10.1002/9781405164030.ch10>
- Uwasomba, C., Deshpande, A., Sharp, H., Gregory, P., Willis, R., Barroca, L., ... and Taylor, K. (2025) "Data-Driven Agility: Assessing Agile Culture transformation in a technology organization," *Information and Software Technology*, 107729. <https://doi.org/10.1016/j.infsof.2025.107729>
- Tarken, W. and Hart, S.G. (2023) "Coaching The Agile Leader: Mindset and Methods to Transform Performance," *Building an Organizational Coaching Culture* (pp. 295-309), Routledge.
- Tanushree, Sahoo, C.K. and Chaubey, A. (2024) "Evolution of organizational agility research: a retrospective view", *Benchmarking: An International Journal*, Vol. 31 No. 4, pp. 1181-1224. <https://doi.org/10.1108/BIJ-02-2023-0086>
- Vilas-Boas, O.T., Davel, E.P.B. and de Sousa Bispo, M. (2018) "Leadership as cultural practice," *Human and Social Management*, Vol. 19 No. 1, pp. 3-23. <https://doi.org/10.1590/1678-6971/eRAMG180076>
- Zeitoun, A. (2023) *Program management: Going beyond project management to enable value-driven change*, Wiley.

Artificial Intelligence, Strategic Foresight, and Competitive Intelligence: Towards Convergence for Morocco's Augmented Competitiveness

Abdelmjid Lafram¹ and Salah Eddine Bahji²

¹School of Information Sciences, Rabat, Morocco

²Mohammadia School of Engineers, Mohammed V University, Rabat, Morocco

alafram@esi.ac.ma

salaheddinebahji@research.emi.ac.ma

Abstract: This paper explores how Artificial Intelligence, Strategic Foresight and Competitive Intelligence convergence can significantly contribute to enhancing Morocco's national competitiveness, transformational growth, and consequently, placing the new development model within a new AI-driven paradigm by converging different intelligences to serve competitiveness, performance, sovereignty, resilience, and Morocco's strategic and digital transformation. To this end, we adopted a mixed approach, combining a literature review, semi-structured interviews with experts and professionals in these fields, a benchmark of best practices for converging this triptych of AI, strategic foresight and competitive intelligence, and conceptual and systemic modelling that operationalizes this convergence across the entire Moroccan foresight and intelligence ecosystem. Thus, we proposed the LOUMAR Framework as part of a holistic, inclusive and convergent-oriented approach designed to harness the largely untapped synergistic potential between artificial intelligence, strategic foresight and competitive intelligence. This strategic and integrative model is based on six key levers, primarily focusing on Leadership and strategic vision, Organizing the National augmented foresight and intelligence ecosystem, Utilizing AI-enhanced competitive intelligence, Modelling AI-driven strategic foresight, Advancing AI-powered and intelligence-driven transformation, Resilience, realignment and continuous evaluation. Furthermore, we have outlined Morocco's main achievements and strengths with regards to this tripartite convergence, the constraints and points for improvement, the opportunities to be seized and the perspectives and development paths to follow, through the implementation of a strategic and digital transformation model that drives transformational growth and boosts Morocco's augmented competitiveness.

Keywords: Artificial Intelligence, Strategic foresight, Competitive intelligence, Augmented competitiveness, Transformational growth, LOUMAR framework

1. Introduction

In a VUCA world characterized by volatility, uncertainty, complexity, and ambiguity, which is accelerating radical geopolitical, economic, social, environmental, and technological shifts (Biloslavo et al., 2024), States are compelled to adopt new paradigms of strategic analysis, develop their strategic foresight (SF) and competitive intelligence (CI) capacities, and integrate AI-based technological advances into their strategic thinking processes, anticipatory governance systems, and long-term strategic planning. States are not immune to this new reality of rapid and disruptive changes and global geopolitical, technological, and algorithmic shifts, requiring them to review their strategic thinking, governance, strategic steering, and management practices. They are also called upon to review their operating software and mindset in the era of unprecedented global trends and disruptive technological changes induced by the AI revolution.

It is in this context that the highly strategic importance of having a forward-looking and strategic governance system emerges in order to rehabilitate and strengthen the State role as a strategic, forward-looking, intelligent, competitive, and resilient actor, but above all, augmented by Artificial Intelligence (AI), which is no longer a luxury but an imperative necessity. It constitutes the DNA of agile, resilient, competitive, and forward-looking organizations. This shows the importance of the dynamic convergence between AI, strategic foresight and competitive intelligence to achieve the objective of increased global competitiveness and transformational growth.

In this context, the strategic management of organizations, as well as their governance and strategic steering, are also inevitably impacted by AI. The use of various AI-driven technologies has made it possible to easily and quickly process huge amounts of data, facilitating well-informed decision-making based on qualitative and quantitative analyses through the use of automatic data processing, analytical and predictive models, automatically generated scenarios, AI-driven modeling, monitoring and scanning processes, and weak signal detection. Moreover, the integration of Foresight, Artificial Intelligence and Data Science contributes also to "Develop Dynamic Futures Analysis" (Trujillo-Cabezas, 2020).

Furthermore, it is in this context of uncertainty and ambiguity that strategic foresight is also emerging as a strategic approach to building possible futures for States and Organizations. Foresight in general, and strategic foresight in particular, have been addressed by several international organizations to strengthen anticipatory governance systems and improve countries' capacity-building (OECD, 2025 a, 2025 b; OECD, 2024; OECD 2023; OECD, 2021). Strategic foresight has also been addressed by the UNDP (2022), UN Futures Lab (2025) European Commission (2023) and many other researchers (Galvin, 2025; Polchar, J., 2024; Monteiro, B. and R. Dal Borgo, 2023; Rohrbeck, Kum, 2018 ; Habegger, 2010, Costanzo, 2004). For Becker « "Foresight should be understood as a participatory, future intelligence gathering and medium-to-long-term vision-building process that systematically attempts to look into the future of science, the economy and society in order to support present-day decision-making and to mobilise joint forces to realise them".

As for Sjöblom (2024), he considers that leading countries in innovation invest in strategic foresight, citing several pioneering countries such as Singapore, which has developed one of the most advanced foresight systems in the world thanks to the Centre for Strategic Futures (CSF) (Sjöblom, 2024). Sjöblom (2024) also emphasized that "Many countries, organizations, or bodies working with strategic foresight include three main elements in their work: analysis and future scenarios, building foresight capacity (futures literacy), participation, and collaboration" (Sjöblom, 2024). Recognizing the strategic importance of strategic foresight, the OECD (2025) has developed a Strategic Foresight Toolkit for Resilient Public Policies to anticipate the challenges and opportunities likely to reshape the political landscape between 2030 and 2050. Its objective is to help countries and organizations make effective and relevant use of strategic foresight to design and prepare public policies that are sustainable, resilient, robust, effective, and adaptable to a range of possible futures (OECD, 2025).

Our research is part of this strategic framework linked to the strategic, forward-looking and competitive State, and to anticipatory governance systems linked to AI-Powered strategic foresight and competitive intelligence. It focuses on the Moroccan context by identifying Morocco's practices and experiences in AI, strategic foresight and competitive intelligence with a view to increased competitiveness and transformational growth. Thus, our exploratory and qualitative research aims to provide answers to our central research question: to what extent can a well-integrated and better orchestrated convergence between artificial intelligence, strategic foresight and competitive intelligence strengthen Morocco's competitiveness, enhance its transformational growth?

Thus, we first retraced the Moroccan experience by outlining the main practices and experiences relating to these three disciplinary fields. We then identified also, based on our methodological triangulation approach, the major challenges and constraints that could hinder their convergence. Finally, we concluded by presenting our model and development levers in the form of strategic recommendations that the Moroccan public authorities can implement for enhanced competitiveness and transformational growth. This model is designed to be exportable and exploitable by other countries, and it can be generalized at the macro level of the State, the meso level of sectoral activities and micro level of competitive organizations and companies. It can also be implemented at the central and territorial levels within the framework of a new decentralized governance and territorial intelligence for sustainable, inclusive and resilient development of territories in the new vision rehabilitating the regions as dynamic actors of their own integrated and increased development as well.

2. Theoretical Framework and Research Methodology

2.1 Theoretical Framework

Aware of the multidimensionality of our research, we adopted a holistic and systemic approach to understand the national ecosystem of AI, strategic foresight and competitive intelligence in its different components and stakeholders, its interactions, its complexity and its organizational diversity. To this end, we mobilized several theories that are complementary and enrich our perspective of synergy, convergence and strategic nexus between these three disciplinary fields. These include the theory of Anticipatory Governance (Guston, 2014), strategic foresight (Slaughter, 1997; Voros, 2003), strategic intelligence (Calof and Wright, 2008), and the Dynamic Capabilities Theory (Teece, Pisano & Shuen, 1997) in its dimensions of sensing, seizing and transforming to analyze the convergence between AI, strategic foresight and competitive intelligence within the framework of an anticipatory governance system of strategic transformation reinforcing the role of the strategic, foresight-driven and competitive State.

2.2 Research Methodology

To conduct our research, we opted for a qualitative and exploratory approach. Thus, through methodological triangulation, we used the documentary approach by focusing on government reports, studies and several other researchers conducted by international organizations about AI, strategic foresight and competitive intelligence,

in addition to the analysis of Moroccan context, case studies and experiences. We also used international benchmarks of national strategies and government programs in these fields. To get a clear idea of the views of experts, professionals and institutions about the convergence and strategic nexus of these three concepts, we conducted semi-structured interviews with twenty-five resource persons. Based on all these elements, we have developed a conceptual, integrative and intellectually abstract model that outlines our thinking in relation with this tripartite convergence, along with key success factors and recommendations in the form of levers for developing a convergent ecosystem based on the richness of data, the power of intelligence and the potential of AI.

3. The Assets and Achievements of Moroccan Ecosystem of AI, Strategic Foresight and Competitive Intelligence

The findings of our research allowed us to identify five major assets that predestined Morocco to play a fundamental role in Africa in the areas of AI, strategic foresight, and competitive intelligence.



Figure 1: Assets promoting Moroccan convergence between AI, strategic foresight and competitive intelligence

The first is linked to the political will linked to the strategic support of these elements by the highest authority of the country, which gives the Moroccan ecosystem an undeniable advantage materialized by the launch of major structuring projects, ambitious strategic initiatives included in a long-term vision which aims to ensure its competitiveness and its resilience and its leadership in Africa. The second asset stems from the importance Morocco places on its proactive economic diplomacy, particularly in Africa and with several international partners, and its quest to strengthen its competitiveness and attractiveness. The third Moroccan strength point identified is the existence of public and private structures and entities for monitoring, forecasting, foresight and competitive intelligence.

The fourth asset is related to the Morocco's active digital diplomacy and pioneering commitment to global governance of ethical, responsible, secure, and inclusive AI (Lafram, Bahji, 2024). The fifth strength point is Morocco's experience in strategic planning. In addition to its New Development Model for 2035, Morocco has initiated several strategic plans and several sectoral strategies with long-term timescales to structure, reform, and transform different sectors such as industry, renewable energy, agriculture, tourism, in addition to the strategy "Morocco Digital 2030".

The sixth asset relates to its technological strengths and its advances in infrastructure and connectivity, and its progress in these fields in Africa, as well as its stated ambitions in terms of technological sovereignty, which it is working on. Morocco thus has considerable assets related in particular to connectivity, access to data and the protection of personal data, which we consider to be fundamental and structuring foundations of any successful AI ecosystem (Lafram, Bahji, 2024).

The seventh asset is the existence of an academic and scientific ecosystem increasingly investing in these three disciplinary fields, placing a greater emphasis on AI, competitive intelligence, and foresight. In addition to the creation of schools and higher education institutions dedicated to AI, other established schools and higher education institutes offer training in the fields of AI, data science, competitive intelligence, and strategic intelligence. Another point is the investment efforts in telecommunications networks have ensured widespread internet coverage, particularly through the expansion of fiber optics and the widespread use of 4G. All these elements constitute a solid foundation for integrating AI into strategic foresight and competitive intelligence, which also benefits from an environment favorable to their full growth and development.

4. The Challenges and Constraints of the Convergent Ecosystem: AI, Strategic Foresight and Competitive Intelligence

Although Morocco has strengths that predestined it to succeed in the synergy between AI, strategic foresight and competitive intelligence to boost its national competitiveness and its transformational growth, it also encounters constraints and challenges to be taken into consideration to succeed in this strategic Nexus which is in its embryonic state. The main challenges we have identified are as follows:

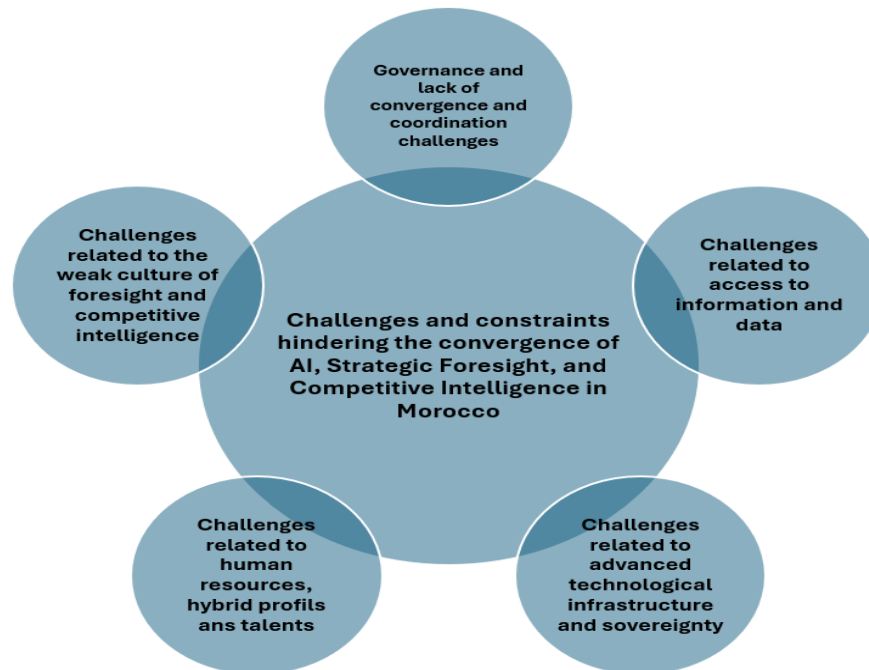


Figure 2: Main challenges and constraints of AI, strategic foresight and competitive intelligence convergence

- **Governance and lack of convergence and coordination challenges:** The various actors and multiple stakeholders involved in the fields of AI, foresight and competitive intelligence work without coordination or convergence. By working in functional and decision-making silos, the actors of these three disciplinary fields still fail to converge towards a common vision integrating the impacts of global trends, weak signals and prospective changes that can be analyzed and interpreted within the framework of collective intelligence to develop future scenarios for Morocco by relying on the benefits that can be drawn from the enormous possibilities of AI in this context (AI-based strategic intelligence, AI-enhanced foresight and competitive intelligence based on the potential of AI, etc.).
- **Challenges related to access to information and data:** These challenges were also frequently mentioned, highlighting the various issues related to data governance, the weak open data culture, and the lack of a clear, integrated, and synergistic policy on sovereign data, shareable data, and

strategically exploitable data to strengthen the country's economic competitiveness and strengthen its resilience.

- **Challenges related to advanced technological infrastructure and sovereignty** capable of supporting this convergence between AI, foresight, and competitive intelligence. Being totally dependent on foreign suppliers and global equipment manufacturers still poses major challenges to both digital and infrastructure sovereignty.
- **Challenges related to human resources and hybrid profiles and talents:** The lack of hybrid profiles in foresight AI and competitive intelligence is a major issue that should be addressed as quickly as possible. Our research showed that the academic ecosystem remains siloed and not yet totally open to the country's strategic priorities and foresight needs. Transdisciplinarity is strongly recommended to train a new generation of data scientists, managers and engineers, as well as high-performing analysts and futurists, combining proven traditional methods with new AI-based technologies and other disruptive and emerging technologies.
- **Challenges related to the weak culture of foresight and competitive intelligence:** Despite the existence of several structures in charge of foresight and competitive intelligence, the culture of foresight, anticipation, systematic monitoring and competitive intelligence remains not very widespread and requires work on mentalities with more awareness and training

5. Towards a Convergent and Holistic Model for AI, Strategic Foresight and Competitive Intelligence: Perspectives and Levers of Development According to the Proposed LOUMAR Framework

5.1 Presentation of LOUMAR Framework

By clarifying Morocco's strengths to capitalize on, the challenges to overcome, and the areas of vigilance to consider in terms of the convergence of AI, strategic foresight, and competitive intelligence, we have developed a clear idea of the approach to be recommended to lay the foundations for an integrated and convergent national ecosystem ensuring the strategic nexus between these three disciplinary fields, which remains undeveloped and requires special attention. To this end, we have developed a conceptual model synthesizing our strategic thinking on how the convergence between the components of this triptych can significantly and effectively contribute to the emergence of a prosperous, competitive, intelligent, and forward-looking nation in the era of disruptive and emerging technologies such as AI.

This conceptual model synthesizes the essence of our thinking and identifies the strategic levers for the Morocco's augmented competitiveness and transformational growth. We have named it LOUMAR Framework, and each letter of this acronym designates a strategic lever to be put in place to succeed in this Nexus of AI, strategic foresight and competitive intelligence in the service of the Morocco's augmented competitiveness and transformational growth.

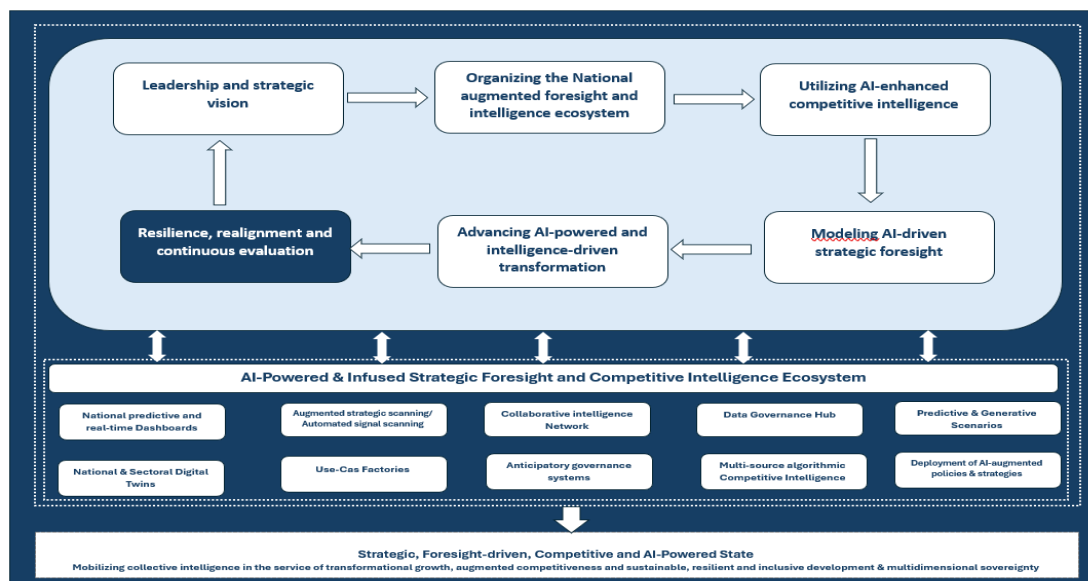


Figure 3: LOUMAR Framework Overview

Leadership and Strategic Vision: Without engaging leadership and a mobilizing strategic vision that sets the strategic course to be achieved, any transformative initiative is nothing more than wishful thinking, and an unrealizable wish. To this end, the existence of a visionary leader in each government department is a fundamental condition for achieving the optimal convergence of artificial intelligence, foresight, and strategic intelligence, which will merge and integrate intelligently to produce the desired effect, namely the transformational growth and augmented competitiveness.

Organizing the National augmented foresight and intelligence ecosystem: A clear-sighted and visionary strategic and foresight vision can only work in the presence of a structuring organization of the national ecosystem for foresight and augmented business intelligence. The entire institutional framework and organizational engineering should be completely overhauled to lay the foundations for a new interconnected, agile, learning-friendly, and intelligent ecosystem. Indeed, the governance of an unifying ecosystem for this AI Nexus, Competitive and Prospective Intelligence, requires in-depth work on strategic management frameworks, institutional, strategic, and operational mechanisms that can be put in place to coordinate and control flows, processes, and stakeholders, and to contain and manage challenges, creating a fluid symbiosis, partnership synergy, and enriched, augmented, and agile collaboration.

The Use of AI-Enhanced Business Intelligence: Once the vision is established, leadership is engaged, and the organization is implemented, we should also consider the use of AI-enhanced business intelligence for greater speed, efficiency, rapidity, and impact. Indeed, the time for traditional business intelligence is over. AI should be integrated into the DNA of the competitive intelligence approach in all processes and stages, from monitoring and information collection, through its analysis, processing, and storage, to augmented decision-making and the training of AI models.

AI-Driven Strategic Foresight Modeling: Currently, foresight modeling and the construction of projection models are greatly facilitated by the enormous potential of AI to process impressive quantities of data in terms of collection, analysis, processing, and AI-assisted modeling.

Advancing AI-powered and intelligence-driven transformation: This lever consists of translating the vision into concrete and transformative actions and of piloting and accelerating the strategic, digital, economic and social transformation of the country through intelligent, innovative and large-scale integration of AI. This involves agile and AI-powered piloting of transformation programs and projects, strengthening institutional capacities in AI and the digital transformation of public and private organizations, as well as training, upskilling, reskilling and awareness-raising of human resources to support the country's major structuring projects and next-generation structural reforms.

Resilience, realignment, and continuous evaluation: Building the resilience of the national ecosystem for foresight and augmented competitive intelligence is also a crucial step for the sustainability and agility of the transformation. This requires the establishment of monitoring, continuous evaluation, and system readjustment mechanisms, with a set of clear key performance indicators (KPIs) for monitoring and evaluation based on SMART objectives. This ecosystem should be focused on results and overall performance, favoring an operational, technological, and strategic accountability approach, focused on the elements that strengthen, protect, and secure the entire ecosystem.

5.2 Key Success Factors for a Convergent Ecosystem of AI, Strategic Foresight and Competitive Intelligence

To successfully implement this AI, Strategic Foresight, and Competitive Intelligence Nexus, several key success factors should be combined, which can be summarized as follows:

- **Clarity of vision and strong leadership:** A clear vision translated into a far-sighted strategy based on a national policy for convergence between AI, strategic foresight, and competitive intelligence is a sine qua non condition to ensure the success of the dynamic and agile convergence of the Moroccan ecosystem of strategic foresight and economic intelligence powered by AI, data and intelligence.
- **Institutional and tripartite public-private and non-profit coordination and multi-sector convergence:** Intra- and inter-sectoral coordination, in addition to coordination between the public-private and non-profit sectors, is highly recommended to unify the vision, share points of view, and pool resources and resources among the various technological, institutional, economic, non-profit, and academic stakeholders.
- **Connectivity and interoperability of ecosystem components:** Connectivity and interoperability of ecosystem components: It is clear that connectivity and interoperability of AI-based convergence

ecosystem components are an absolutely necessary condition to aspire to a truly robust, secure and well-connected ecosystem.

- **Translating visions and plans into concrete actions on the ground:** It is not enough to develop policy papers, nor sectoral, national, or departmental strategies. The challenge lies in the ability to execute and translate projected visions into smart and convergent programs, projects, and initiatives that will enable national champions, regional clusters, and national, regional, and local skill centers integrated into networks of professionals in strategic foresight and competitive intelligence and AI.
- **Investment in data, infrastructure, and talent:** The desired convergence of these three tripartite disciplinary fields will not be successful without massive, innovative investment by mobilizing new alternative forms of financing such as crowdfunding, business angles, and public-private partnerships to foster new startups in the fields of technological, strategic, and foresight innovation. These fields are very promising, and the potential of AI combined with other technologies such as blockchain, quantum computing, the metaverse, and immersive technologies is evident. We should also invest in training hybrid profiles mastering AI tools with the methods, approaches, and tools of strategic foresight and competitive intelligence.
- **An appropriate, clear, and agile legal and regulatory framework:** Legal and regulatory safeguards are essential to regulate the ethical and responsible use and development of AI, as well as to institutionalize strategic foresight and competitive intelligence in Morocco by dedicating a clear public policy to them, supported by a clear, agile, and ambitious doctrine. A specific law on AI, as well as legal and regulatory texts facilitating intra- and inter-sectoral collaboration and data sharing, are also key success factors.

5.3 Strategic Recommendations for an Effective Convergence Model of AI, Strategic Foresight and Competitive Intelligence to Strengthen Morocco's Transformational Growth and its Augmented Competitiveness.

As shown in the figure below, and in line with our integrative conceptual model converging AI, strategic foresight and competitive intelligence, we have identified a range of recommendations resulting from our research that we can outline as follows:



Figure 4: Levers of development of an integrated and convergent Moroccan ecosystem of AI, Strategic foresight and Competitive Intelligence

It is strongly recommended that an integrated national public policy be developed for AI-driven strategic foresight and competitive intelligence, giving it the necessary importance to ensure convergence between these three components. This public policy cannot be implemented and be sustainable without a clear, integrated and augmented strategic and visionary doctrine combining AI, strategic foresight and competitive intelligence, with

a clear positioning and a line of conduct based on data, artificial intelligence and the collective intelligence of all stakeholders. Furthermore, for the tripartite ecosystem to converge effectively and connect with each other in synergy, it is also strongly proposed that a National Agency for Foresight and Strategic Intelligence be created as a modern, AI-driven governance structure equipped with all the necessary human, material, and technological resources to oversee all aspects of the country's foresight and strategic and competitive intelligence. The creation of a specialized agency should also be accompanied by the institutionalization of foresight and competitive intelligence as strategic functions within all ministerial structures, agencies, public enterprises, and government entities. While several Moroccan ministerial departments already have highly dynamic foresight structures launching several forward-looking actions, tools, studies, and reports, it is important to generalize these departmental best practices and those of Moroccan think tanks that have long invested in the field of foresight and competitive and strategic intelligence. In this context, we should not forget the strengthening of institutional capacity building and enhanced strategic management (Ministries, Agencies, Offices, Observatories). Another recommendation that also seems very urgent to us is massive investment in R&D, technological infrastructure and data by strengthening the infrastructural, technical, and data capacities capable of supporting this tripartite strategic nexus.

Furthermore, the training of hybrid skills and prospective and technological talents is of paramount importance to support the new vision of convergence and integration of technology, foresight, and competitive and strategic intelligence. Furthermore, we cannot speak of a convergent, open, and cutting-edge technological ecosystem without discussing co-construction, cooperation, and bilateral and multilateral partnerships to share experiences, benefit from feedback from other pioneering countries in this field and launch collaborative projects with technology operators and specialized international organizations. Other recommendations include the territorialization of the tripartite convergent approach (AI, SF, and CI) and its regional and local implementation for sustainable, inclusive, and resilient regional and local development, awareness-raising and promotion of a culture of foresight and enhanced competitive intelligence, and regular and ongoing evaluation and monitoring.

6. Conclusion

This research demonstrated the existence of a sound technological foundation and encouraging strengths to co-construct, with all stakeholders, a convergent Moroccan ecosystem integrating artificial intelligence, strategic foresight, and competitive intelligence. Thus, by capitalizing on its achievements, its assets, particularly geopolitical, diplomatic, economic, and infrastructure, leading in Africa, and its attractiveness as an African AI hub and a committed player in favour of ethical, inclusive, secure, and responsible global AI governance, Morocco is sufficiently prepared and equipped to move to another level of enhanced competitiveness by investing in a rethought convergence of AI-driven strategic foresight and competitive intelligence to serve its new model, its strategic objectives, and its desirable future. Our research also revealed the existence of several challenges and constraints characterizing these three disciplinary fields operating in compartmentalized silos, without unified, integrated, and adapted governance. These challenges are linked to data, cutting-edge infrastructure, and the specific skills needed to support this qualitative leap toward a truly integrated and coordinated AI-powered system that intelligently blends augmented strategic foresight and AI-driven competitive intelligence as part of an ambitious strategic vision for the country's strategic and digital transformation.

To this end, we have developed the LOUMAR Framework as a conceptual and strategic model that synthesizes our thinking on this Nexus, connecting strategic foresight and competitive intelligence with artificial intelligence to transform these previously scattered functional islands into a connected and integrated smart archipelago. By incorporating AI into the DNA of strategic foresight and competitive intelligence management and governance systems, we will have a head start, intelligent capture of major trends, weak signals, and AI-powered scenarios, and increased capacity for data collection, analysis, processing, scenario development, and enhanced prediction for a strategic, forward-looking, competitive, intelligent, and AI-powered Nation. To achieve this, we concluded our research with a range of strategic and institutional recommendations, including integrated national public policy, global strategy, a clear and integrated visionary doctrine on AI-Powered strategic foresight and competitive intelligence, National Agency or High Council for Foresight and Strategic Intelligence, institutionalization of foresight and competitive intelligence, investment in R&D, technological infrastructure and data, training hybrid skills and talents in these three fields and emerging technologies, strengthening institutional capacity building and augmented strategic management (Ministries, Agencies, Offices), co-construction & bilateral and multilateral cooperation and partnership, territorialization of the approach and regional and local implementation, raising awareness and promoting the culture of augmented foresight and

competitive intelligence, evaluation and monitoring. Although, this research has certain limitations, namely the complexity of effective integration and the global scope of its applications, it opens new perspectives for future research, particularly sectoral and organizational analysis. The objective is to achieve both global and sectoral application of this nexus between AI, strategic foresight and competitive intelligence, which is largely unexplored, and analyse how a practical implementation of disruptive and emerging technologies can enhance the socio-economic development of countries and strengthen their competitiveness and transformational growth.

Ethics Declaration: No ethical approval was required for this paper.

AI Declaration: No AI tools were used in the preparation and writing of this paper.

References

- Becker, P. (2002). Corporate Foresight in Europe: A First Overview [working Paper]. Institute for Science and Technology Studies, University of Bielefeld.
- Biloslavo, R., Edgar, D., Aydin, E. & Bulut, C. (2024). Artificial intelligence (AI) and strategic planning process within VUCA environments: a research agenda and guidelines. *Management Decision* 2024. <https://doi.org/10.1108/MD-10-2023-1944>
- Calof, J. L., & Wright, S. (2008). Competitive intelligence: A practitioner, academic and inter-disciplinary perspective. *European Journal of Marketing*, 42(7/8), 717–730.
- Costanzo, L.A. (2004). Strategic foresight in a high-speed environment. *Futures*, 36(2), 219-235. [https://doi.org/10.1016/S0016-3287\(03\)00145-9](https://doi.org/10.1016/S0016-3287(03)00145-9)
- European Commission (2023). Institutionalising foresight capability and creating wide foresight communities in the R&I system (1st ed.). Publications Office of the European Union.
- Galvin, B. (2025). The role of foresight in public policy: lessons from deliberative democracy and perspectival realism. *Eur J Futures Res* 13, 1. <https://doi.org/10.1186/s40309-024-00246-0>
- Guston, D. H. (2014). Understanding anticipatory governance. *Social Studies of Science*, 44 (2), 218 - 242.
- Habegger, B. (2010). Strategic foresight in public policy: Reviewing the experiences of the UK, Singapore, and the Netherlands. *Futures*, 42 (1), 49-58. <https://doi.org/10.1016/j.futures.2009.08.002>
- Lafram, A., & Bahji, S. E. (2024). Artificial intelligence in Morocco: Towards holistic, responsible and ethical national AI strategy for Moroccan competitiveness and strategic intelligence. *Proceedings of the 20th European Conference on Management Leadership and Governance (ECMLG 2024)*. 14 -15 November 2024, Universidade Lusófona Lisbon, Portugal. pp. 255–263.
- Monteiro, B. and R. Dal Borgo (2023). Supporting decision making with strategic foresight: An emerging framework for proactive and prospective governments. *OECD Working Papers on Public Governance*, No. 63, OECD Publishing, Paris, <https://doi.org/10.1787/1d78c791-en>.
- OECD (2025 a). Building Anticipatory Capacity with Strategic Foresight in Government: Lessons from Lithuania, Italy, and Malta, *OECD Public Governance Reviews*, OECD Publishing, Paris, <https://doi.org/10.1787/d7eb0bb6-en>.
- OECD (2025 b). Strategic Foresight Toolkit for Resilient Public Policy: A Comprehensive Foresight Methodology to Support Sustainable and Future-Ready Public Policy, OECD Publishing, Paris, <https://doi.org/10.1787/bcdd9304-en>.
- OECD (2024). The Strategic Foresight System of the Government of Flanders, Belgium, *OECD Public Governance Reviews*, OECD Publishing, Paris, <https://doi.org/10.1787/e55125c5-en>.
- OECD (2021). Global Scenarios 2035: Exploring Implications for the Future of Global Collaboration and the OECD, OECD Publishing, Paris, <https://doi.org/10.1787/df7ebc33-en>.
- Polchar, J. (2024). Using foresight to anticipate emerging critical risks: Proposed methodology, *OECD Working Papers on Public Governance*, No. 79, OECD Publishing, Paris, <https://doi.org/10.1787/84820cd8-en>.
- Rohrbeck, R., Kum, M.E. (2018). Corporate foresight and its impact on firm performance: A longitudinal analysis. *Technological Forecasting and Social Change*, 129, 105-116. <https://doi.org/10.1016/j.techfore.2017.12.013>
- Sjöblom, J. (2024). Strategic Foresight for Innovation: International Insights to Address Sweden's Future Challenges (Skog, J., Trans.). Vinnova - Sweden's Innovation Agency.
- Slaughter, R.A. (1997). Developing and Applying Strategic Foresight. *Foresight*, 1(1), 5-24.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533.
- Trujillo-Cabezas, R. (2020). Integrating Foresight, Artificial Intelligence and Data Science to Develop Dynamic Futures Analysis. *Journal of Information Systems Engineering and Management*, 5(3), em0120. <https://doi.org/10.29333/jisem/8428>
- UNDP (2022). UNDP RBAP: Foresight Playbook. New York, New York
- UN Futures Lab/Global Hub and the International Science Council (2025). *Futures Thinking and Strategic Foresight in Action: Insights from the Global South*, New York.
- Voros, J. (2003). A generic foresight process framework. *Foresight*, 5(3), 10-21.

The Impact of Covid-19 on the Type of Auditor's Opinion: Evidence from the Largest Non-Listed Portuguese Companies

Kátia Lemos, Sara Serra and Andreia Freitas

Research Centre on Accounting and Taxation, School of Management, IPCA, Barcelos, Portugal

klemos@ipca.pt

sserra@ipca.pt

aandreiaa.f2010@gmail.com

Abstract: In 2020, the world was surprised by a pandemic caused by Covid-19, which emerged and devastated the entire world economy, forcing several companies to adapt to a new health reality that affected the lives of people and the companies themselves, forcing the population to readapt. In this follow-up, the present research arises with the aim of analysing the impact of Covid-19 on the Audit Report of the largest Portuguese unlisted companies, namely regarding the type of opinion. This research included the analysis of 114 audit reports, referring to the years 2018 (pre-pandemic), 2020 (during pandemic) and 2022 (post-pandemic) of the largest and best Portuguese non-listed companies, according to Exame Magazine for the year 2022. The data were collected through a content analysis of the Audit Reports of these companies, and then statistically treated through a bivariate analysis using association tests between the variables (dependent and independent). The results obtained proved that Covid-19 did not significantly influence the type of opinions issued. However, we were able to verify that there is a lower probability of the Big four firms issuing modified opinions. This study, in a way, contributed to the literature on this topic, clarifying some impacts of the pandemic on audit work, as well as the impacts of other variables on the Audit Reports.

Keywords: Auditing, Audit reports, Covid-19, Type of opinion

1. Introduction

The Covid-19 pandemic emerged and devastated the entire global economy, forcing many companies to adapt to a new public health reality that affected both people's lives and business operations, requiring the population to readjust.

The Covid-19 pandemic not only impacted individuals and businesses but also influenced audit work, including audit planning, physical inventory counting, and the emergence of new audit and fraud risks. Consequently, auditors had to adapt to the new reality in order to obtain sufficient and appropriate audit evidence.

The purpose of this study is to analyse the impact of Covid-19 on the audit reports of the largest non-listed Portuguese companies, as listed in the *Revista Exame 2022*, published in 2023, considering the type of opinion issued by the auditor. Additionally, the study also aims to examine other variables associated with auditing, such as audit firm rotation, the type of audit firm (Big Four or non-Big Four), and the existence of an audit committee.

To achieve this objective, we analysed 114 audit reports of the largest non-listed Portuguese companies, covering the years 2018 (pre-pandemic), 2020 (pandemic), and 2022 (post-pandemic). The choice to focus on non-listed companies represents an innovative aspect of this study, given that there is already existing research on the impact of Covid-19 on the audit reports of listed companies. A mixed-method approach was adopted for the investigation: a qualitative method was used to extract as much information as possible from the content analysis of the audit reports, while a quantitative method was employed for data processing.

2. Literature Review and Research Hypotheses

2.1 Audit Firm Rotation

The Sarbanes-Oxley Act, introduced following major financial scandals involving U.S. audit firms, mandated auditor rotation every five years to enhance audit quality (Martani et al., 2021). Several authors argue that both auditor and audit firm rotation can improve audit quality (Ball & Tyler, 2015; Hurley et al., 2018; Kim et al., 2019). However, despite its widespread use as an audit quality indicator, the effects of auditor rotation remain subject to debate.

Ghosh and Moon (2005) distinguish two opposing views on auditor tenure: the regulatory view and the auditor-expertise view. The regulatory perspective argues that long-term engagements may reduce auditor independence, with prolonged relationships increasing auditor leniency. From this angle, audit quality tends to decline over time. Conversely, the auditor-expertise view suggests that extended tenure enhances auditors' familiarity with the client's operations, improving their ability to detect misstatements. Nevertheless, the same

authors highlight that audit failures are more likely during the initial years of an engagement due to insufficient client knowledge.

DeFond and Francis (2005), and Carey and Simnett (2006), also caution that long-term auditor–client relationships may compromise audit quality. Brito (2021) reinforces this concern, pointing to the widespread belief that extended audit engagements reduce independence and impair audit reliability.

According to Teh et al. (2016), auditor rotation is vital for ensuring regulatory compliance and bringing innovation to audit procedures. Similarly, Costa et al. (2013) argue that audit quality is linked to the likelihood of issuing modified audit opinions, suggesting that rotating audit firms may increase such outcomes.

In light of the findings of the aforementioned studies, the following research hypothesis was formulated:

H1: Audit firm rotation influences the type of opinion issued by the auditor in the audit report.

2.2 Type of Audit Firm: Big Four or Non-Big Four

Several studies show that the type of audit firm affects audit quality, with Big Four firms generally seen as providing higher-quality services due to their presumed superior technical expertise (DeAngelo, 1981; Serra & Lemos, 2020). This perception is supported by literature claiming that Big Four firms offer better quality audits compared to non-Big Four firms (Martani et al., 2021), largely because of their scale, structure, and capacity to implement standardized methodologies, robust training programs, and quality control procedures (Lawrence et al., 2011).

DeAngelo (1981) defines audit quality as the likelihood of detecting and reporting material misstatements. Detection is tied to technical skill, while reporting reflects auditor independence. Both dimensions are shaped by competence, procedures, and audit scope.

Empirical research, such as that by Wuttichindanon and Issarawornrawanich (2020) and Ferreira and Morais (2020), suggests a relationship between audit firm type and the issuance of modified audit opinions and inclusion of Key Audit Matters (KAM), with some studies indicating Big Four firms are more likely to issue KAMs. However, findings are mixed.

Contrary evidence comes from Simão et al. (2017), who found that non-Big Four (national) firms issue more modified audit reports. Costa et al. (2013) reached similar conclusions, reinforcing that national firms are more inclined to issue modified opinions.

In the Brazilian context, Marques et al. (2018) analysed audit reports between 2002 and 2012 and concluded that Big Four firms were less likely to issue modified opinions. Their study also revealed that factors such as emphasis paragraphs, company size, losses, and partial IFRS adoption increase the probability of modified opinions. Similarly, Castro et al. (2017) reported a greater incidence of modified reports from non-Big Four firms.

Given this context, it is expected that the type of audit firm influences the auditor's opinion, leading to the formulation of the following research hypothesis:

H2: The type of audit firm (Big Four or non-Big Four) influences the type of opinion issued by the auditor in the audit report.

2.3 Audit Committee

The emergence of financial scandals has increased stakeholder demand for transparent and reliable financial reporting. In Portugal, audit committees were introduced in 1999 through Portuguese Securities and Exchange Commission Corporate Governance Recommendations for listed companies (Serra & Lemos, 2020).

Under Article 423-B of the Portuguese Commercial Companies Code (CSC), audit committees must be composed of at least three board members. For listed companies, members must be independent, and at least one must hold a relevant degree and demonstrate knowledge in auditing and accounting.

Moeller (2015) describes audit committees as independent bodies composed of qualified individuals who oversee internal control and organizational processes. According to López et al. (2011), companies that aim to ensure financial information reliability benefit from both external independent auditors and independent audit committees. DeZoort et al. (2002) similarly argue that committee independence correlates with higher-quality auditors.

However, the empirical evidence remains inconclusive. Medeiros et al. (2015) found no support for the hypothesis that companies with audit committees are more likely to receive unmodified audit opinions without emphasis paragraphs, though this contradicted expectations. Costa et al. (2013) also found no strong association between audit committees and the auditor's opinion and noted a tendency for unmodified opinions when such committees were absent.

In light of the studies presented, the following research hypothesis was formulated:

H3: The existence of an audit committee influences the type of opinion issued by the auditor in the audit report.

2.4 Presence of Covid-19

In 2020, the Covid-19 pandemic disrupted global life and business, forcing companies to rapidly adapt to an unfamiliar reality. Albitar et al. (2020) describe it as the most disruptive event to audit practices since the 2007–2008 financial crisis.

Bob Moritz, Chairman of PwC, noted that auditing during the pandemic became more complex than ever (Financial Times, 2020), as auditors struggled to assess going concern assumptions and the reliability of financial statements. The IESBA (2020) highlighted increased societal expectations and pressure on auditors, urging them to reassess risks and refine procedures to maintain independence. Auditors were thus required to adopt clear planning, strict timelines, and rely on qualified professionals to ensure smooth information flow (Silva & Almeida, 2022).

Kaka (2021) identified several audit challenges during this period: restricted access to inventory counts, lack of evidence, going concern uncertainty, and a rise in KAM, all frequently addressed through emphasis paragraphs in audit reports.

However, empirical results vary. Hay et al. (2021) concluded that the pandemic had no significant impact on audit reports or financial statements, although it accelerated the shift from traditional audit methods to digital tools and artificial intelligence. Hazaea et al. (2022) noted that this transformation improved auditor–client communication.

In Portugal, Rebocho (2022) analysed listed companies and found that while many audit reports included emphasis paragraphs referencing Covid-19, the pandemic was not cited as a reason for issuing modified opinions. This suggests that although the pandemic altered audit processes, its effect on the final audit opinion may have been limited.

Based on the evidence presented, the following research hypothesis was formulated:

H4: The presence of Covid-19 influences the type of opinion issued by the auditor in the audit report.

3. Research Methodology

This study investigates the impact of Covid-19 on the audit reports of the largest non-listed Portuguese companies. The pandemic raised critical concerns not only about corporate performance but also about audit practices—such as audit planning, inventory verification, and emerging risks of fraud—prompting auditors to adapt and ensure sufficient audit evidence.

The research focuses on three key years: 2018 (pre-pandemic), 2020 (during the pandemic), and 2022 (post-pandemic), aiming to evaluate how Covid-19 influenced the type of audit opinion issued.

In addition to the pandemic, the study examines the potential influence of auditor-related variables: audit firm rotation, the type of firm (Big Four or non-Big Four), and the presence of an audit committee.

A mixed-method approach was used: qualitative document analysis of audit reports and quantitative data processing. The reports were sourced from the websites of companies listed in *Revista Exame's* 2022 ranking of Portugal's 500 largest firms.

Reports were reviewed to identify the type of opinion and other relevant information. Data were then statistically analysed using SPSS (Statistical Package for the Social Sciences), through bivariate analysis. Association tests were applied between the dependent variable (audit opinion) and the independent variables.

All variables were treated as binary: 0 for absence and 1 for presence. This classification helped assess whether the proposed hypotheses explain variations in the audit opinions issued.

Table 1: Variables under study

Dependent variable		
Variable		Measure
Type of auditor opinion		0: Unmodified; 1: Modified
Independent variables		
Hypothesis	Variable	Measure
H1	Audit firm rotation	0: No; 1: Yes
H2	Type of audit firm	0: Non-Big four; 1: Big four
H3	Audit Committee	0: No; 1: Yes
H4	Presence of Covid-19	0: No; 1: Yes

For this study, audit reports were collected from the websites of the 500 largest non-listed Portuguese companies, as listed in *Revista Exame* 2022 (published in 2023). Reports from the years 2018 to 2022 were extracted in descending order.

Exclusion criteria included listed companies, firms that did not publish audit reports for any of the target years, and those that only disclosed consolidated reports, as individual analysis was not possible.

After applying these criteria, data were obtained from 38 companies. A total of 190 reports were initially gathered for the years 2018, 2020, and 2022. From this, a final sample of 114 individual audit reports was selected—corresponding to the pre-pandemic (2018), pandemic (2020), and post-pandemic (2022) periods.

4. Presentation and Discussion of Results

4.1 Descriptive Analysis

In Table 2, we observe the type of opinion issued by auditors, noting that 75 (66%) of the audit reports were unmodified opinions, while 39 (34%) were modified opinions. It is evident that the year 2020, compared to the other years, recorded a lower number of audit reports with modified opinions.

Table 2: Dependent variable analysis

		Frequency (%)	2018 (%)	2020 (%)	2022 (%)
Type of opinion	Unmodified	75 (66%)	24 (21%)	26 (23%)	25 (22%)
	Modified	39 (34%)	14 (12%)	12 (11%)	13 (11%)

4.2 Bivariate Analysis

At this stage, we present the results of the bivariate analysis.

Initially, by analysing the relationship between the type of opinion and audit firm rotation, we observe that the impact of the latter is not very significant, corresponding to 13 (11%) of the audit reports analysed. However, only 5 (4%) of these reports showed a modified opinion when there was a change in audit firm, as shown in Table 3. Additionally, the same table reveals that the number of modified opinions issued is higher when there is no audit firm rotation.

Table 3: Relationship between the type of opinion and the rotation of the audit firm

		Type of opinion		Total (%)
		Unmodified (%)	Modified (%)	
Audit firm rotation	No	67 (59%)	34 (30%)	101 (89%)
	Yes	8 (7%)	5 (4%)	13 (11%)
Total (%)		75 (66%)	39 (34%)	114 (100%)

Given that, regarding the type of opinion, the expected number of observations does not meet the minimum requirement of 5 observations per cell in the cross-tabulation for applying the Chi-square test, the results of Fisher's Exact Test should be considered. According to Table 4, the p-value is greater than 0.05, confirming that there is no association between the two variables under study.

Table 4: Chi-square and Fisher's exact tests - type of opinion vs. rotation of the audit firm

	Value	Df	Asymptotic significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.118 ^a	1	.731		
Continuity correction	.001	1	.974		
Likelihood ratio	.116	1	.733		
Fisher's exact test				.762	.477
Valid cases (N)	114				
1 cell (25%) had an expected count less than 5. The minimum expected count was 4.45.					

The results of the association measures between these two variables also show a p-value greater than 0.05, as presented in Table 5. Thus, it is confirmed that there is no association between the variables, since both significance values are above 0.05.

As a result, this outcome does not support Hypothesis 1, which proposed that audit firm rotation influences the type of opinion issued by the auditor in the audit report. This finding contradicts the study by Costa et al. (2013), which suggested that audit firm rotation increases the likelihood of modified opinions. Therefore, it is concluded that the existence of audit firm rotation does not influence the type of opinion issued by the auditor.

Table 5: Measures of association - type of opinion vs. rotation of the audit firm

		Value	Approximate significance
Nominal by Nominal	Fi	.032	.731
	Cramer's V	.032	.731
Valid cases (N)		114	

Next, by analysing the relationship between the type of opinion and the audit firm, we observe that a total of 39 (34%) audit reports were issued with a modified opinion. Among these, the majority were issued by non-Big Four firms, specifically national audit firms, which accounted for 26 (23%) of the modified opinions, as shown in Table 6.

Table 6: Relationship between type of opinion by audit firm

		Type of opinion		Total (%)
		Unmodified (%)	Unmodified (%)	
Type of audit firm	Não-Big four	27 (24%)	26 (23%)	53 (46%)
	Big four	48 (42%)	13 (11%)	61 (54%)
Total		75 (66%)	39 (34%)	114 (100%)

The results in Table 7 show an association between the type of opinion and the type of audit firm, as both the Chi-square test and Fisher's Exact Test returned a p-value < 0.05. This result is further supported by the association measures presented in Table 8.

Table 7: Chi-square and Fisher's exact tests - type of opinion vs. type of audit firm

	Value	Df	Asymptotic significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	9.700 ^a	1	.002		
Continuity correction	8.506	1	.004		
Likelihood ratio	9.815	1	.002		
Fisher's exact test				.003	.002
Valid cases (N)	114				
0 cells (0.0%) expected a count less than 5. The minimum expected count is 18.13.					

Considering the association tests—Cramér's V and the Phi coefficient—the association is negative, as shown in Table 8, indicating that the relationship is not strong. In other words, it can be concluded that companies audited by Big Four firms are less likely to receive a report with a modified opinion.

Therefore, these results support the validation of Hypothesis H2, which proposed that the type of audit firm (Big Four or non-Big Four) influences the type of opinion issued by the auditor in the audit report. In this case, it was the non-Big Four firms that were responsible for issuing most of the audit reports with modified opinions, confirming the findings of Costa et al. (2013), Castro et al. (2017), and Ponte et al. (2020), who also concluded that non-Big Four firms are more likely to issue a modified opinion.

Table 8: Measures of association - type of opinion vs. type of audit firm

		Value	Approximate significance
Nominal by Nominal	Fi	-.292	.002
	Cramer's V	.292	.002
Valid cases (N)		114	

From Table 6, we observe that companies showed a preference for the audit services of Big Four firms, possibly because these firms provide higher-quality audits due to their structure and scale (Lawrence et al., 2011). For this same reason, they deliver high-standard audit services to maintain their reputation and brand image (Dopuch & Simunic, 1980).

In the study by Costa et al. (2013), it is noted that the existence of an audit committee does not show a strong association with the opinion issued by the auditor. Moreover, when no audit committee is present, there is a tendency for the issuance of unmodified audit reports. Similarly, in the present study, the number of unmodified audit reports is higher among companies without an audit committee. Table 9 shows that 75 (66%) unmodified audit reports were issued, of which 26 (23%) were from companies with an audit committee, while the remaining 49 (43%) had no such body.

Table 9: Relationship between type of opinion and audit committee

		Type of opinion		Total (%)
		Unmodified (%)	Modified (%)	
Audit committee	No	49 (43%)	26 (23%)	75 (66%)
	Yes	26 (23%)	13 (11%)	39 (34%)
Total (%)		75 (66%)	39 (34%)	114 (100%)

The analysis of Table 10 confirms that there is no association between the type of opinion and the existence of an audit committee, since both the Chi-square test and Fisher's Exact Test returned a p-value greater than 0.05.

Table 10: Chi-square and Fisher's exact tests - type of opinion vs audit committee

	Value	Df	Asymptotic significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	0.020 ^a	1	.887		
Continuity correction	.000	1	1.000		
Likelihood ratio	0.020	1	.887		
Fisher's exact test				1.000	.529
Valid cases (N)	114				
0 cells (0.0%) expected a count lower than 5. The minimum expected count is 13.34.					

The results of the association measures between these two variables also show a p-value greater than 0.05, as indicated in Table 11. Thus, it is confirmed that there is no association between the variables, since both significance values are above 0.05. This outcome does not support Hypothesis 3, which proposed that the presence of an audit committee influences the type of opinion issued by the auditor in the audit report. Therefore, it is concluded that the presence of an audit committee did not lead to a higher number of modified audit opinions. This finding is consistent with the study by Medeiros et al. (2015), who found no evidence to support the hypothesis that companies with an audit committee are more likely to receive an unmodified opinion without emphasis paragraphs. It was expected that the existence of an audit committee would reduce the likelihood of modified opinions being issued.

Table 11: Measures of association - type of opinion vs audit committee

		Value	Approximate significance
Nominal by Nominal	Fi	-.013	.887
	Cramer's V	.013	.887
Valid cases (N)		114	

Finally, regarding the relationship between the type of auditor opinion and the influence of Covid-19— a key focus of our research— we find that the presence of the pandemic did not significantly impact auditors' opinions. This is evidenced by the fact that more modified opinions were issued in periods when Covid-19 was not present, as shown in Table 12. As observed, 39 (34%) audit reports were issued with a modified opinion, of which only 12 (11%) were influenced by Covid-19.

Table 12: Relationship between the presence of Covid-19 and the type of opinion issued

		Type of opinion		
		Unmodified (%)	Unmodified (%)	Total (%)
Presence of Covid-19	Yes	26 (23%)	12 (11%)	38 (33%)
	No	49 (43%)	27 (24%)	76 (67%)
Total (%)		75 (66%)	39 (34%)	114 (100%)

The analysis of Table 13 confirms that there is no association between the type of opinion and the presence of Covid-19, since both the Chi-square test and Fisher's Exact Test yielded a p-value greater than 0.05.

Table 13: Chi-square and Fisher's exact tests - type of opinion vs. presence of Covid-19

	Value	Df	Asymptotic significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.175 ^a	1	.675		
Continuity correction	.044	1	.834		
Likelihood ratio	.177	1	.674		
Fisher's exact test				.834	.420
Valid cases (N)	114				
0 cells (0.0%) expected a count lower than 5. The minimum expected count is 13.00.					

The results of the association measures between these two variables also show a p-value greater than 0.05, as presented in Table 14. Therefore, it is confirmed that there is no association between the variables, since both significance values are above 0.05.

This finding does not support Hypothesis 4, which proposed that the presence of Covid-19 would influence the type of opinion issued by the auditor in the audit report. It is thus concluded that more modified opinions were not issued due to the impact of the Covid-19 pandemic.

These results are in line with the study by Hay et al. (2021), which showed that the Covid-19 crisis did not significantly affect audit reports.

Table 14: Measures of association - type of opinion vs. presence of Covid-19

		Value	Approximate significance
Nominal by Nominal	Fi	-.039	.675
	Cramer's V	.039	.675
Valid cases (N)		114	

5. Conclusions, Limitations and Suggestions for Future Research

This study aimed to analyse the impact of Covid-19 on the audit reports of the largest non-listed Portuguese companies listed in *Revista Exame* for the years 2018 (pre-pandemic), 2020 (pandemic), and 2022 (post-pandemic).

A bivariate analysis model was used, applying association tests between the dependent and independent variables to assess whether the formulated hypotheses explained the type of opinion issued. This method was selected because the variables were nominal and dichotomous (0 = absent; 1 = present).

The results validated Hypothesis H2, confirming that the type of audit firm influences the opinion issued: non-Big Four firms were more likely to issue modified opinions, in line with Costa et al. (2013), Castro et al. (2017), and Ponte et al. (2020). However, Hypothesis H4, regarding the influence of Covid-19, was not validated. The pandemic did not significantly affect the type of opinion issued in the audit reports analysed.

One limitation encountered was the restricted availability of audit reports from non-listed companies, which are not required to publicly disclose financial information, unlike listed entities. Furthermore, much of the existing literature focuses on listed companies.

For future research, we suggest including all companies from *Revista Exame* and covering each year from 2018 to 2022. Conducting interviews or surveys with auditors could offer further insight into how Covid-19 affected audit processes.

Despite validating only one hypothesis, we believe this study contributes to the literature on the effects of Covid-19 and other auditor-related factors in audit reporting.

Acknowledgement

This work is financed by national funds through the FCT - Foundation for Science and Technology, I.P., under project UIDB/04043:CICF and UIDP/04043:CICF.

Ethics declaration: This investigation did not require an ethical clearance.

AI declaration: Artificial intelligence tools were used only for translation, grammar checking, and text verification.

References

- Albitar, K., Gerged, A. M., Kikhia, H., & Hussainey, & K. (agosto de 2020). Auditing in times of social distancing: The effect of COVID-19 on auditing quality. *International Journal of Accounting and Information Management*. doi:10.1108/IJAIM-08-2020-0128
- Ball, F., & Tyler, J. (agosto de 2015). Is audit quality impacted by auditor relationships? *Journal of Contemporary Accounting and Economics*, 11(2), 166-181. doi:<https://doi.org/10.1016/j.jcae.2015.05.002>
- Brito, R. M. (2021). (I. (Dissertação de Mestrado em Contabilidade e Finanças, Ed.) *Matérias Relevantes de Auditoria - Análise dos seus determinantes no contexto português*. Obtido em abril de 2024, de Repositório Científico IPVC http://repositorio.ipvc.pt/bitstream/20.500.11960/2649/1/Ruben_Brito.pdf

- Carey, P., & Simnett, R. (2006). Audit Partner Tenure and Audit Quality. *The Accounting Review*, 81(3), 653-676. doi:10.2308/accr.2006.81.3.653
- Castro, R., Vasconcelos, J., & Dantas, J. (2017). Impactos das Normas Internacionais de Auditoria nos relatórios dos auditores sobre as demonstrações financeiras dos bancos brasileiros. *Revista Ambiental Contábil*, 9(1), 1-20.
- Costa, R., Serra, S., & Gomes, P. (2013). Fatores determinantes da opinião do auditor: estudo empírico das empresas portuguesas. *Ordem dos Contabilistas Certificados*, 1-23. Obtido de <https://www.occ.pt/news/comcontabaudit/pdf/124.pdf>
- DeAngelo, L. E. (1981). Auditor Size and Audit Quality. *Journal of Accounting and Economics*, 3(3), 183-199.
- DeFond, M., & Francis, J. (2005). AUDITING: A Journal of Practice & Theory, 24(1 Supplement), 5-30. doi:10.2308
- DeZoort, F. T., Hermanson, D. R., Archambeault, D. S., & Reed, S. A. (2002). Audit Committee Effectiveness: A Synthesis of the Empirical Audit Committee Literature. *Journal of Accounting Literature*, 21, 38-75. Obtido de <https://digitalcommons.kennesaw.edu/facpubs/1495/>
- Dopuch, N., & Simunic, D. (1980). The Nature of Competition in the Auditing Profession: a descriptive and normative view. *Regulation and the Accounting Profession*, 34(2), 283-289.
- Ferreira, C., & Morais, A. I. (2020). Análise da relação entre características das empresas e os key audit matters divulgados. *Revista Contabilidade & Finanças*, 31(83), 262-274. doi:<https://doi.org/10.1590/1808-057x201909040>
- Financial Times. (2020). PwC boss warns auditing is harder than ever during. Obtido em maio de 2024, de <https://www.ft.com/content/ea2d92f5-655b-4f04->
- Ghosh, A., & Moon, D. (2005). Auditor Tenure and Perceptions of Audit Quality. *The Accounting Review*, 80(2), 585-612. Obtido de <https://www.jstor.org/stable/4093070>
- Hay, D., Shires, K., & Van Dyk, D. (2021). Auditing in the time of COVID. *Pacific Accounting Review*. doi:10.1108/PAR-09-2020-0155
- Hazaea, S. A., Tabash, M. I., Rahman, A. A., Khatib, S. F., Zhu, J., & Chong, H. G. (2022). Impact of the COVID-19 Pandemic on Audit Quality: Lessons and Opportunities. *Emerging Science Journal*, 6(Special Issue), 71-86. doi:<http://dx.doi.org/10.28991/esj-2022-SPER-06>
- Hurley, P., Mayhew, B., & Obermire, K. (julho de 2018). Realigning Auditors' Accountability: Experimental Evidence. *The Accounting Review*, 94(3), 233-250. doi:10.2308/accr-52224
- IESBA, I. E. (2020). COVID-19: Ethics and Independence Considerations. (IESBA, Ed.) Obtido em maio de 2024, de <https://www.ethicsboard.org/publications/covid-19-ethics-and-independence-considerations>
- Kaka, E. J. (2021). Covid-19 and Auditing. *Journal of Applied Accounting and Taxation*, 6(1), 1-10. doi:<https://doi.org/10.30871/jaat.v6i1.2311>
- Kim, S., Kim, S., Lee, D., & Yoo, S. (fevereiro de 2019). How Investors Perceive Mandatory Audit Firm Rotation in Korea. *Sustainability*, 11(4). doi:https://www.researchgate.net/publication/331228555_How_Investors_Perceive_Mandatory_Audit_Firm_Rotation_in_Korea
- Lawrence, A., Minutti-Meza, M., & Zhang, P. (2011). Can Big 4 versus Non-Big 4 Differences in Audit-Quality Proxies Be Attributed to Client Characteristics? *The Accounting Review*, 86(1), 259-286. Obtido de <https://www.jstor.org/stable/29780232>
- López, E. B., Barbadillo, E. R., & Aguilar, N. G. (2011). ¿Cómo actúan las empresas frente a la dependencia económica del auditor?: el papel del comité de auditoría. *How do firms manage the auditor's economic dependence? the role of the audit committee*. *Revista de Contabilidad*, 12(1), 87-119. doi:[https://doi.org/10.1016/S1138-4891\(11\)70023-1](https://doi.org/10.1016/S1138-4891(11)70023-1)
- Marques, V., Louzada, L., Hudson, A., & Souza, A. (2018). O poder da reputação: evidências do efeito big four sobre a opinião do auditor. *Revista Contemporânea de Contabilidade*, 15(35), 03-31. doi:<http://dx.doi.org/10.5007/2175-8069.2018v15n35p3>
- Martani, D., Rahmah, N. A., Fitriany, F., & Anggraita, V. (21 de março de 2021). *Financial Economics | Research Article*. Impact of audit tenure and audit rotation on the audit quality: Big 4 vs non big 4, pp. 1-19. doi:9: 1901395
- Medeiros, M. S., Coelho, H. I., & Vieira, E. F. (2015). Governo das sociedades e a opinião do auditor: Evidência portuguesa (2008-2011). *Revista Universo Contábil*, 11(3), 150-168. doi:10.4270/ruc.2015326
- Moeller, R. R. (2015). *Brink's Modern Internal Auditing: A Common Body of Knowledge* (8ª ed.). Hoboken, New Jersey: y John Wiley & Sons, Inc.
- Ponte, D., Dantas, J., & Nunes, D. (2020). Modificação de Opinião dos Auditores por Risco de Continuidade Operacional no Brasil. (N. T. Musial, Ed.) *RC&C - Revista Contabilidade e Controladoria*, 12(1), 28-47. doi:<http://dx.doi.org/10.5380/rcc.v12i1.71085>
- Rebocho, M. R. (2022). Efeitos da pandemia Covid-19 na qualidade da auditoria. Dissertação para obtenção do grau de mestre em Auditoria e Fiscalidade. (C. P. School, Ed.) Obtido em Maio de 2024, de <https://repositorio.ucp.pt/bitstream/10400.14/38835/1/203043006.pdf>
- Serra, S., & Lemos, K. (2020). A influência da governança corporativa e do auditor na divulgação sobre os riscos. *Revista Evidenciação Contábil & Finanças*, 8(3), 106-124. doi:10.22478/ufpb.2318-1001.2020v8n3.47009
- Silva, T., & Almeida, B. (2022). Auditoria Contábil em Face da Pandemia de Covid 19: O Uso da Tecnologia como Ferramenta de Otimização do Trabalho. Obtido em Maio de 2024, de <http://repositorio.laboro.edu.br:8080/xmlui/handle/123456789/377>

- Simão, B. C., Pinheiro, R. B., Cavalcante, P. R., & Machado, M. R. (2017). A Qualidade das Firmas de Auditoria Big Four em Função do Value Relevance dos Lucros e Património Líquido. Obtido em 29 de abril de 2024, de <https://congressosp.fipecafi.org/anais/17UspInternational/ArtigosDownload/467.pdf>
- Teh, B., Ong, T., Adedeji, B., & Ng, S. (Setembro de 2016). An Empirical Study of Auditors Switching, Corporate Governance and Financial Performances of Malaysia Public Listed Companies (PLCs). *Jurnal Pengurusan*, 47(1), 43-53. doi:10.17576/pengurusan-2016-47-04
- Wuttichindanon, S., & Issarawornrawanich, P. (2020). Determining factors of key audit matter disclosure in Thailand. *Pacific Accounting Review*, 32(4), 563-584. doi:<https://doi.org/10.1108/PAR-01-2020-0004>

Barriers and Benefits to the Practice of Volunteering by People With Disabilities: A Study of the Perceptions of Organisations Working With Disabilities

Ana Luisa Martinho¹, Susana Bernardino², Paula Pereira³ and Ana Luísa Azevedo^{1,4}

¹Centre for Organisational and Social Studies of the Polytechnic Institute of Porto (CEOS.PP), Portugal

²ISCAP, Polytechnic of Porto, Portugal

³Pista Mágica, Association, Porto-Portugal

⁴University of Vigo, Spain

analuisa.martinho@gmail.com

Abstract: The practice of volunteering has been associated with several benefits for the population as a whole, as well as for specific population groups. In the case of people with disabilities (PwD), there is an unsolved paradox. On the one hand, volunteering is a powerful tool for capabilities development and social integration. On the other hand, few PwD are volunteers. Based on this paradox, the paper has three main objectives. Firstly to analyse the position of organisations that work directly with PwD towards inclusive volunteering. Secondly, to assess the benefits that organisations on the field ascribe to the practice of volunteering by PwD and thirdly to examine the factors perceived by organisations as obstacles to the practice of volunteering by PwD, and secondly to. Primary data was collected through a questionnaire sent to organisations that work directly with people with disabilities in Portugal as part of their mission. The data was collected between 28 June and 6 October 2024. A total of 104 valid responses were received and analysed. The results show that organisations recognise that volunteering is under-utilised and that there are still several barriers. The main ones are the lack of opportunities for inclusive volunteering, the lack of support staff and the lack of encouragement from family members. Nevertheless, the organisations recognise the high benefits associated with volunteering by people with disabilities, with particular emphasis on access to new experiences for people with disabilities, the fact that it allows people with disabilities to feel more fulfilled and useful, and the potential in terms of exercising citizenship. Other benefits include the ability of volunteering to reduce stigma towards people with disabilities, promote socialisation, develop skills and contribute to building inclusive communities.

Keywords: People with disabilities, Inclusive volunteering, Perceived benefits, Barriers

1. Introduction

Inclusive volunteering remains a relatively underexplored and under-researched field, especially in Portugal. Despite its growing importance, few empirical studies have addressed this critical area. At a time when organisations seek greater resilience and sustainability, inclusive volunteering offers a transformative tool that promotes diversity, engagement, and stronger community ties, thereby enhancing the social impact of these organisations.

The theoretical framework of this paper conceptualizes inclusive volunteering as a multifaceted and strategic pathway to civic engagement, particularly for marginalized groups such as PwD. Drawing on contemporary literature and policy frameworks, the paper focuses on three dimensions: the role of volunteering in fostering civic participation among historically excluded populations; the specific benefits and barriers experienced by PwD in volunteer contexts; and the critical function of social economy organisations in enabling inclusive, transformative volunteering experiences. Emphasizing a shift from deficit-based to rights-based models of disability, this framework highlights how inclusive volunteering not only addresses structural inequalities but also redefines social roles and collective responsibilities. Despite persistent institutional and attitudinal challenges, inclusive volunteering emerges as a promising avenue for enhancing agency, promoting social justice, and building more equitable and participatory civic spaces. Although the potential to inclusive volunteer can offer, it is still observed a very reduced participation and that volunteering rates considerably lower than the observed in the general population (Li et al., 2018; Marková, 2020). Inclusive volunteering represents a valuable tool that organizations working with persons with disabilities (PwD) can leverage as part of their intervention strategies with this target group. However, studies on the use of volunteering by such organisations are scarce, particularly in Portugal. Based on this gap, our research question is what are the current perception of organisations regarding the use of inclusive volunteering?

Taking these research questions into consideration, three research objectives are defined, namely to study: (i) the position of organisations towards inclusive volunteering; and (ii) the benefits and barriers they associate with this type of volunteering.

To investigate these dynamics, this study employed a quantitative methodology targeting organisations that work directly with PwD. Data were collected via an online questionnaire distributed among relevant Portuguese organizations, yielding 104 valid responses that were subsequently analysed using IBM SPSS software.

The paper is organised as follows: Section 1 provides an overview of the theoretical background to inclusive volunteering. Section 2 focuses on the legal framework and practice of inclusive volunteering. Section 3 presents the methodology. Section 4 presents the results obtained in the research. Finally, the main conclusions are outlined.

2. Inclusive Volunteering in Theory and Practice

2.1 Volunteering as a Catalyst for Civic Participation among Minority Groups

Volunteering is commonly understood as a voluntary act carried out without financial gain, often for the benefit of individuals or the broader community (Scheier, 1980; Andronic, 2014). It has evolved beyond charitable connotations and is now recognized as a strategic tool for fostering community participation, personal development, and active citizenship (GHK, 2010; Council of the EU, 2011). Although legal definitions vary across countries, the underlying principles highlight volunteering as an act of free will, oriented towards public good, and often characterized by mutual benefit for both volunteers and recipients (Licandro et al., 2021).

Volunteering is increasingly acknowledged in the literature as a powerful mechanism to support social inclusion, especially for individuals and groups with historically low levels of civic engagement. Participation in volunteer activities has been associated with numerous psychological and social benefits, including enhanced self-esteem, improved mental and physical health, greater social integration, and the development of new skills and identities (Smith, 1997; Finn & Checkoway, 1998; Thoits & Hewitt, 2001; Marková, 2019).

Particularly for groups such as older adults, unemployed individuals, and people with mental health conditions or disabilities, volunteering has been shown to offer a route back into community engagement and to mitigate the effects of social exclusion (Binder, 2015; Rebeiro & Allen, 1998; Wang et al., 2022). According to Musick and Wilson (2003), the psychological and social benefits derived from volunteering can vary across age and demographic groups but consistently indicate its potential to support life satisfaction and social (re)integration.

From a policy perspective, volunteering is increasingly seen as a mechanism to democratize civic participation and promote occupational and social justice (Townsend & Whiteford, 2005). This is particularly salient in the context of social economy organisations, which often adopt volunteering not only as a form of service delivery but also as a transformative process that empowers marginalized individuals to participate actively in society.

2.2 Volunteering and Disability: Inclusion, Benefits, and Barriers

Inclusive volunteering refers to the engagement of all individuals in volunteer activities, recognizing and valuing the unique contributions of each person, including those with disabilities (Miller et al., 2010). The concept aligns with the social and human rights models of disability, which emphasize participation, agency, and the dismantling of structural barriers (Fontes & Martins, 2023; Lawson & Beckett, 2021).

Research indicates that PwD derive numerous personal and social benefits from volunteering. These include exposure to new experiences, improved social connections, skill acquisition, greater autonomy, enhanced self-confidence, and the development of a positive social identity (Marková, 2019; Kulik, 2018; Rebeiro & Allen, 1998). Volunteering also facilitates access to broader opportunities, such as employment, education, and community engagement, contributing to behavioural change and increased societal participation (Miller et al., 2010; Marková, 2019).

Organisations implementing inclusive volunteering programs also report organisational benefits, including increased operational efficiency and the reduction of stigma and prejudice toward people with disabilities (Choma & Ochocka, 2006; Miller et al., 2010). These findings highlight the mutual value of inclusive volunteering and advocate for its wider adoption.

Despite its benefits, PwD remain underrepresented in volunteer roles. A wide range of barriers contributes to this exclusion, including physical inaccessibility, lack of adaptive volunteer roles, limited transportation options, and ableist attitudes within organisations (Miller et al., 2003; Choma & Ochocka, 2006). Institutional structures

often lack the flexibility and resources necessary to support volunteers with functional diversity, and exclusionary practices remain prevalent.

Moreover, the language and conceptual framing of disability within public discourse can itself serve as a barrier to inclusion. Historically rooted in medical and administrative models (Stone, 1984; Marks, 1997), disability has been framed in ways that emphasize deficit rather than potential. The persistence of these paradigms contributes to the marginalization of people with disabilities in civic life, including volunteering.

Portuguese public policy, while increasingly aligned with the human rights model of disability, still reflects this tension. Although the National Strategy for the Inclusion of People with Disabilities (ENIPD 2021-2025) promotes inclusive volunteering, the absence of a clear definition and actionable framework limits its effectiveness. Furthermore, existing legislation often frames people with disabilities primarily as recipients of volunteer work rather than as active agents.

2.3 Volunteering as a Tool for Organisational Social Intervention

Social economy organisations have long recognized the value of volunteering as a means of social intervention. In this context, volunteering is not only a support mechanism for beneficiaries but also a tool for empowerment and transformation for the volunteers themselves (Townsend & Whiteford, 2005). This is particularly evident in programs that engage PwD or histories of institutionalization, where volunteering facilitates social reintegration and contributes to broader goals of inclusion and justice.

These organisations often act as mediators between volunteers with functional diversity and the broader community, developing partnerships with advocacy groups, adapting volunteer roles, and training staff to support diverse needs (Miller et al., 2010). Successful programs emphasize the importance of support networks, including families, friends, and peers, as well as the active involvement of PwD in the design and implementation of volunteer activities.

Inclusive volunteering thus emerges as both a symbol and a mechanism of societal transformation. It challenges traditional paradigms of dependency and positions people with disabilities as contributors and agents of change. By creating accessible, flexible, and meaningful opportunities for participation, organisations play a critical role in restructuring civic life and promoting social equity.

3. Inclusive Volunteering in Portugal: Legal Framework, Practice, and Gaps

3.1 Legal Framework for Volunteering in Portugal

Law No. 71/98 of 3 November establishes the legal framework for volunteering in Portugal. It defines volunteering as a set of organized, unpaid activities carried out for the benefit of individuals, communities, or society at large, grounded in values of solidarity and civic participation. These activities must be undertaken within public or private nonprofit organisations and align with their mission and objectives.

The law outlines several core components:

- Scope of application: the law applies exclusively to formal volunteering, explicitly excluding informal acts of solidarity among family members, friends, or neighbours.
- Volunteer Rights and Duties: Volunteers are entitled to be informed, trained, and supported in their roles. They are also obligated to act responsibly, respect organisational values, and maintain confidentiality where applicable.
- Host organisations: eligible host entities must be legally constituted, nonprofit in nature, and capable of supporting, supervising, and integrating volunteers within their operational structures.
- Strategic planning: a central requirement is the creation of a Volunteer Plan, a document that systematizes the integration of volunteers within the organisation.
- Principles and values: the law emphasizes adherence to fundamental principles such as human dignity, solidarity, non-discrimination, and active citizenship.

Despite its comprehensive structure, the law remains silent on critical aspects related to inclusion, accessibility, and equity. Specifically, it contains no reference to disability or to mechanisms for accommodating individuals with functional diversity. Nor does it provide guidance on how host organisations might identify and address barriers to participation or implement inclusive practices.

This absence reflects a significant gap in the legal framework, particularly considering evolving national and international commitments to social inclusion, diversity, and equal opportunity. Without explicit provisions for

inclusive volunteering, the law may inadvertently contribute to the marginalization of underrepresented groups within the national volunteering ecosystem.

3.2 Volunteering Trends and Organisational Practices in Portugal

According to a 2022 Eurobarometer report, Portugal continues to trail behind other EU member states in terms of volunteering participation. This low engagement occurs within a context where volunteering is legally framed in narrow terms. Law No. 71/98 of 3 November applies exclusively to formal/institutional volunteering, explicitly excluding informal acts of solidarity carried out among family members, friends, or neighbours. Formal volunteering is defined as unpaid participation within legally constituted organisations, guided by the mission and values of the host entity and distinct from spontaneous or informal forms of civic engagement (Choi et al., 2007).

So, in Portugal formal volunteering remains the most prevalent form of civic engagement. According to the most recent Voluntary Work Survey (INE) in 2018, approximately 7.8% of the resident population aged 15 or older participated in at least one formal or informal volunteering activity. Of this group, 6.4% were involved in formal volunteering, while only 1.5% engaged in informal volunteering.

This distribution contrasts with global patterns, where informal volunteering tends to be more prevalent. According to data from United Nations Volunteers (UNV, 2022), 14.3% of working-age individuals globally engage in informal volunteering, compared to 6.5% in formal volunteering. These figures suggest that, in Portugal, the institutionalized nature of volunteering - as established in the legal framework - may influence the relatively lower prevalence of informal civic contributions.

The profile of formal volunteers in Portugal is relatively specific. The majority are younger, unemployed individuals with higher levels of education, and they are more frequently women and single (INE, 2018). The tasks performed tend to align with those of technicians and mid-level professionals, reflecting a relatively high level of responsibility and specialization within formal volunteering settings.

Notably absent from the national volunteering survey are references to inclusion or disability. This omission represents a significant data gap and prevents a comprehensive understanding of the extent to which PwD participate in volunteering, under what conditions, and with what experiences. Without this information, it is difficult to evaluate the inclusivity of the current volunteering ecosystem or to identify areas for improvement in promoting more equitable access.

Volunteer-promoting organisations in Portugal play a crucial role in mobilizing civic engagement and responding to social needs. These organisations encompass a diverse range of actors, including social economy organisations, religious bodies, and public sector entities such as municipalities. Research two central roles within the volunteering ecosystem: i) promoters - organisations that recruit, train, and integrate volunteers; ii) and facilitators - intermediary bodies, such as the Local Volunteer Banks, that connect volunteers with relevant opportunities (IPDJ, 2021; ISCTE, 2020).

While many organizations offer structured volunteer programs with training, insurance, and certification, smaller local associations often rely on informal approaches due to limited resources. A 2021 Volunteering Observatory study found that over 70% of Portuguese organizations lack dedicated volunteer coordination, undermining effective management across recruitment, onboarding, supervision, and retention.

Age-related trends in volunteering highlight sustainability concerns. Most organized programs in Portugal attract individuals aged 55 and above, while youth participation remains low (ISCTE, 2020). To address this, the National Youth Council (CNJ, 2023) recommends adapting volunteering to younger generations through flexible, short-term, and digital formats like micro-volunteering and online engagement.

Despite the positive impact of volunteering initiatives, organisations across the country face persistent and multifaceted challenges. A lack of sustainable funding continues to be a critical issue, with many organisations dependent on short-term grants or irregular public financing. This financial instability limits their ability to maintain consistent infrastructure, training programs, and volunteer oversight. Additionally, the professionalization of volunteer management remains underdeveloped; few organisations have staff trained specifically in coordinating volunteer efforts, leading to inefficiencies and limited capacity for systematic evaluation of program impact.

Legal and bureaucratic complexities further constrain organisational effectiveness. Although Law no. 71/98 provides a foundational legal framework for volunteering, many organisations report difficulties in interpreting

and applying certain provisions, particularly those related to insurance, reimbursement of expenses, and the nature of volunteer contracts. These uncertainties can hinder the development of robust volunteer programs and discourage participation.

Overall, while the Portuguese volunteering landscape is supported by a broad and diverse network of organisations, it operates in a context marked by financial constraints, low professionalization, regulatory ambiguity, and shifting societal expectations. These structural limitations must be addressed through coordinated public policies, institutional innovation, and greater collaboration between civil society, educational institutions, and government agencies.

3.3 The Absence and Potential of Inclusive Volunteering in Portugal

The lack of a robust Portuguese legal framework and the absence of data that considers the experiences of traditionally excluded groups - particularly PwD - highlight a critical gap in the development of inclusive volunteering in Portugal. The concept of inclusive volunteering responds to this gap by recognizing the potential of individuals who are often not perceived as active agents within their communities. It challenges normative assumptions about who can contribute through volunteer work and calls attention to systemic exclusions within formal volunteering structures.

PwD remain underrepresented in volunteering due to structural and attitudinal barriers—such as limited organizational acceptance, inaccessible infrastructure, and a lack of individualized support (Choma & Ochocka, 2006; Graff & Vedell, 2003). This exclusion denies PwD the social, psychological, and practical benefits of volunteering, including skill development, community integration, and access to broader participation opportunities (Miller et al., 2003; Marková, 2019).

Recent scholarship calls for a shift from viewing marginalized groups as passive recipients to recognizing them as active contributors in volunteering. While early studies focused on intellectual and developmental disabilities, later research—including participant-centred work by Marková (2019)—has highlighted the diverse benefits PwD gain from volunteering, such as autonomy, well-being, and strengthened identity.

Inclusive initiatives like the RGSV Supported Volunteering Program demonstrate these benefits, showing improved confidence, self-esteem (Kulik, 2018), and responsibility among PwD (Choma & Ochocka, 2006). Host organizations also benefit through increased efficiency and reduced stigma (Miller & Schleen, 2010).

Despite growing international evidence, inclusive volunteering remains underexplored in Portugal. This study addresses that gap by examining how professionals working with PwD perceive inclusive volunteering, aiming to inform local practices and broader policy development.

4. Methodology

This study has three main objectives. Firstly, to examine the position that organisations that accompany PwD have towards inclusive volunteering, secondly to analyse the factors perceived as obstacles to the practice of volunteering and, thirdly, to assess the benefits that organisations on the field ascribe to the practice of volunteering by PwD.

Given the nature of the research objectives, quantitative methodology was used, with organisations working directly with people with functional diversity as units of analysis. Primary data was collected through an online questionnaire.

The questionnaire included three groups of questions. The first group was aimed at assessing respondents' general position regarding volunteering. The second group comprised questions designed to analyse the perceived benefits of volunteering. The third group of questions aimed to evaluate the extent to which various factors were considered barriers to volunteering by people with disabilities.

The questionnaire was built by researchers, based on research objectives and existing literature, and with a particular focus on the report 'Recommendations for Public Policies: More Inclusive Volunteering', which was prepared as part of the VolunTalento project.

The data collection process took place between 28 June and 6 October 2023. The questionnaires were distributed through the networks and email contacts of the organisations involved in the topic in Portugal. During this period a total of 104 valid responses were received. After that, the quantitative data collected was analysed using the IBM SPSS Software.

4.1 Sample

The surveyed organisations are distributed across the country, with the highest concentration in the north (35.6%), followed by the Setúbal Peninsula (19.2%) and the central region (18.3%). Most organisations are based in urban areas (69.2%) and primarily operate at the local (43.3%) or regional (26.9%) level.

Regarding size, most organisations have fewer than 100 employees, with notable proportions having teams of 10 to 49 employees (22.1%) and 50 to 99 employees (20.2%). Only a small fraction (5.8%) employs more than 250 staff. In terms of the number of users served by the organisations, there are organisations with more than 250 users (33.7%) and smaller organisations with 10 to 49 users (19.2%).

5. Findings

5.1 Positioning Towards Inclusive Volunteering

The results obtained show that most of the organisations surveyed (74%) involve PwD in the development of volunteering activities. However, a large proportion of these organisations (35.6%) only involve between 1 and 3 people with functional diversity in volunteering, while the percentage of organisations with more than 15 users with functional diversity in volunteering is only 11.5%. In addition, 26% of the respondents said that they did not have any users who were involved in volunteering.

Table 1: Organisation's overall perception of the practice of inclusive volunteering

Question	n	%
PwD who are supported by the organisation and who have already been involved in volunteering		
None	27	26,0
Between 1 and 3	37	35,6
Between 4 and 7	19	18,3
Between 8 and 15	9	8,7
More than 15	12	11,5
Occurrence of volunteering in the lives of people with functional diversity whom the organisation supports		
The opportunity to volunteer has been made available by the organisation	62	59,6
Volunteering is a result of the individual's own initiative	30	28,8
Volunteering was recommended by family members	10	9,6
Volunteering was recommended by friends	3	2,9
The organisation offers volunteer activities to the PwD it supports		
Not usually	28	26,9
Very occasionally	45	43,3
Very regularly	14	13,5
It is part of the accompaniment strategy of the organisation	17	16,3
Typical PwD reaction when presented with a volunteer proposal		
They usually reject the proposal immediately	1	1,0
They usually listen, are not very open to the proposal and reject it	10	9,6
They usually listen, are not very open to the proposal but accept it	24	23,1
They enthusiastically accept the offer to volunteer	40	38,5
Reasons for not proposing volunteering activities to PwD		
Lack of synergy with local organisations	6	5,8
Lack of human resources that can be allocated to this specific task.	16	15,4
Lack of knowledge about how to do it in an organised way	6	5,8
Poor adherence to PwD support networks	6	5,8
Have contact with organisations that can provide inclusive volunteering opportunities		

Question	n	%
No	40	38,5
Yes, but not enough	54	51,9
Yes, several contacts	10	9,6

Source: Own elaboration

For the individuals who do volunteer work, the volunteering activity is in most of the cases the result of opportunities provided by the organisations that support PwD (59.6%), followed by the own initiative of the PwD (28.8%). Recommendations from family members (9.6%) and friends (2.9%) were less common.

Most organisations (73.1%) indicate that they suggest some form of volunteering to the PwD they work with. However, this suggestion is usually made on an occasional basis (43.3%), while it is less common for it to be made on a regular basis (13.5%) or as part of a strategy to support the users (16.3%).

When the organisation suggests a volunteering proposal to their beneficiaries with functional diversity, they typically accept the offer with enthusiasm (38.5%). In addition, 23.1% say that despite initial reluctance, users accept the proposal. In contrast, 10.6% say that proposals are generally rejected, after a short analysis (9.6%) or immediately after receiving the proposal (1%).

The main reason why organisations do not offer voluntary activities to people with disabilities is the lack of human resources (15.4%). Other reasons given by some organisations (only 5.8%) are the lack of synergies with local organisations, the lack of knowledge of how to proceed or the poor adherence of the network that supports PwDF

It should be noted that the responding organisations consider their contacts with institutions that host inclusive volunteering as quite limited. Indeed, 38.5% of the organisations said that they had no contacts and 51.9% said that they had contacts but that they were insufficient. Only 9.6% of the organisations said that they had many contacts with entities offering opportunities for inclusive volunteering.

After that, we have analysed the propensity of organisations to develop inclusive volunteering in the future.

The results obtained show that most organisations are very likely to engage in volunteering in the future, whether in the short, medium or long term. However, the longer the time horizon, the more likely organisations are to engage in volunteering.

In the short term (up to one year), 32.7% of organisations say that they are unlikely or very unlikely to offer volunteering opportunities to the PwD they support. This percentage drops to 19.2% if the period analysed is between 1 and 3 years and to only 14.4% if the horizon is between 3 and 5 years.

5.2 Perceived Benefits From Volunteering

Organisations recognise several benefits associated with volunteering by PwD (Table 2). Firstly, respondents highlight the access to new experiences for PwD, a benefit which 92.3% of organisations agreed or strongly agreed. In addition, volunteering is seen as a way for PwD to feel more fulfilled and useful, with an average score of 4.6 on a 5-point scale, as well to enhance the exercise of citizenship, also with an average score of 4.6.

Other benefits strongly valued by organisations include the ability of volunteering to reduce stigma towards PwD, to promote socialisation, to develop skills and to contribute to building inclusive communities, all with an average score of 4.5.

On the other hand, organisations rate the benefits of volunteering in terms of access to new job opportunities more moderately. While 68.3% of organisations agree or strongly agree with the potential it offers in this area, 14.4% disagree or strongly disagree. In addition, 9.6% of organisations disagreed with the benefits of inclusive volunteering in terms of overcoming barriers and inspiring other PwD.

Table 2: Benefits related to volunteering

Benefits	1	2	3	4	5	Mean
Promote the socialisation of PwD	1	1	7,7	26,9	63,5	4,51
Develop competences for PwD	1	0	9,6	28,8	60,6	4,48
Access to new experiences for PwD	1	0	6,7	23,1	69,2	4,6

Benefits	1	2	3	4	5	Mean
Access to new job opportunities for PwD	1,9	12,5	17,3	25	43,3	3,95
Increase self-confidence of PwD	1	0	6,7	31,7	60,6	4,51
Make PwD feel more fulfilled and useful	1	1	6,7	24	67,3	4,56
Reduce PwD' feelings of loneliness or exclusion	1	2,9	9,6	26	60,6	4,42
Provide an example of overcoming obstacles and an inspiration to other PwD	3,8	5,8	10,6	27,9	51,9	4,18
Increase the respect that PwD volunteers can gain from their peers	1	1,9	10,6	30,8	55,8	4,38
Encourage the exercise of citizenship	1	0	6,7	27,9	64,4	4,55
Empower people in vulnerable situations	1	1,9	10,6	26,9	59,6	4,42
Build resilience and social cohesion in the community	1	1	15,4	27,9	54,8	4,35
Reduce the stigma towards PwD	1	1	8,7	24	65,4	4,52
Build inclusive communities	1	0	9,6	27,9	61,5	4,49
Access to a greater number of volunteers/collaborators (PwD and non-PwD)	1	1	15,4	26	56,7	4,37

Note: 1 corresponds to totally disagree and 5 to totally agree.

Source: Own elaboration

5.3 Barriers to the Practice of Volunteering

When analysing the barriers identified by organisations to the practice of volunteering by PwD (Table 3). The most widely recognised barrier is the perception that there are few opportunities for inclusive volunteering, with 73.7% of organisations agreeing or strongly agreeing (mean score of 4 out of 5). This was followed by a lack of support staff (mean score 3.7) and a lack of encouragement from family members (mean score 3).

On the other hand, organisations do not consider the fear of PwD about their ability to perform or the discomfort of people around them to be significant barriers, with mean scores of 3 and 2.7 respectively.

Table 3: Barriers to the practice of inclusive volunteering by organisations

Barriers	1	2	3	4	5	Mean
It is difficult for PwD to volunteer because of the lack of support staff.	3	7,1	32,3	36,4	21,2	3,7
People with disabilities don't have the opportunity to volunteer because it takes a lot of time and other resources that they don't have.	9,1	21,2	34,3	26,6	9,1	3,1
The people who are responsible for managing and accompanying the volunteers are not aware of the needs of people with disabilities.	5,1	24,2	23,2	36,4	11,1	3,2
A lack of accessibility to the places where the volunteer work is carried out.	6,1	16,2	42,4	24,2	11,1	3,2
More PwD don't volunteer because they are afraid that they won't be able to.	5,1	26,3	36,4	27,3	5,1	3,0
More PwD don't volunteer because they are afraid of making other people feel uncomfortable.	8,1	36,4	35,4	17,2	3	2,7
More PwD don't volunteer because family members don't encourage it.	4	9,1	31,3	43,4	12,1	3,5
There aren't more PwD volunteering because there are not many opportunities.	2	5,1	19,2	41,4	32,3	4,0

Note: 1 corresponds to totally disagree and 5 to totally agree.

Source: Own elaboration

6. Final Remarks

Building on both international and national studies, this paper advocates for a paradigm shift toward inclusive volunteering. It explores barriers and benefits associated with the involvement of individuals with functional diversity as active contributors rather than passive beneficiaries. Inclusive volunteering offers significant personal, organisational, and societal benefits, including greater autonomy, skill development, and reduced stigma. The findings underscore an urgent need for policy reform, inclusive program design, and stronger intersectoral collaboration to cultivate a more equitable and impactful volunteering landscape in Portugal.

This study sheds light on the complex landscape of inclusive volunteering in Portugal, revealing both significant progress and persistent challenges. While most organisations engage people with functional diversity in volunteering activities, participation remains limited in scale and scope. The findings underscore the crucial role of organisations in creating opportunities and fostering enthusiasm among volunteers with disabilities. However, structural barriers such as limited inclusive opportunities, insufficient support staff, and weak family encouragement continue to constrain broader participation.

The findings present a nuanced portrait of inclusive volunteering in Portugal. While most organisations (74%) involve PwD in volunteering activities, participation is generally limited in scale, with many engaging only a small number of volunteers with disabilities. These volunteering opportunities are primarily provided through the organisations supporting PwD, with participants showing enthusiasm and willingness to engage. Nonetheless, many organisations report limited or insufficient connections with entities offering inclusive volunteering, highlighting structural gaps within the ecosystem. Encouragingly, most organisations express intent to expand inclusive volunteering in the future, especially over longer timeframes. Recognized benefits include access to new experiences, enhanced personal fulfilment, skill development, socialization, and community inclusion. However, the role of volunteering as a pathway to employment is viewed more cautiously. The main barriers identified are the scarcity of inclusive opportunities, insufficient support staff, and limited encouragement from family members, while concerns about volunteers' capacity or social discomfort appear less significant. These findings emphasize the need for targeted strategies to foster more accessible, supported, and sustainable inclusive volunteering practices. Despite these challenges, the clear recognition of numerous personal and social benefits - ranging from skill development and social inclusion to reduced stigma - affirms the transformative potential of inclusive volunteering. The expressed willingness of organisations to expand these opportunities over time is an encouraging sign for the future.

The results could have important practical implications. A more holistic approach should be adopted by those responsible for these organisations, in cooperation with a range of stakeholders performing different roles in the process. Of particular note here is interaction with individuals close to PwD in the context of volunteering, namely family members, where involvement and awareness-raising initiatives would be especially valuable. Furthermore, close cooperation with other institutions capable of fostering and offering inclusive volunteering opportunities in which their target audience can participate would maximise the benefits of inclusive volunteering.

To realize the full promise of inclusive volunteering, strategic efforts are needed at multiple levels. Policymakers must address legal and regulatory gaps that exclude or marginalize PwD from formal volunteering frameworks. Organisations should invest in capacity-building, intersectoral collaboration, and proactive outreach to both potential volunteers and their support networks. Moreover, ongoing research is essential to deepen understanding of best practices, monitor progress, and amplify the voices of volunteers with functional diversity themselves.

Ultimately, fostering an inclusive volunteering ecosystem is not only a matter of social justice but also a pathway to more resilient, dynamic, and equitable communities. By embracing the contributions of people with functional diversity as active agents of change, society can move closer to realizing the ideals of citizenship, participation, and belonging for all.

Ethics declaration: Participation in the study was entirely voluntary. Data were collected anonymously, and no identifying information was collected or stored, and data were used exclusively for research purposes. All data were securely stored in compliance with the General Data Protection Regulation (GDPR) and institutional data protection policies.

AI declaration: AI tools were used exclusively for language revision and editing purposes during the preparation of this manuscript. No AI tools were employed in the design, execution, or analysis of the quantitative data, including the content analysis of the questionnaires.

References

- Andronic, R. (2014). *Volunteering and its motivations*. Social Research Reports, 26, 5–15.
- Binder, M. (2015). Volunteering and life satisfaction: A closer look at the hypothesis that volunteering more strongly benefits the unhappy. *Applied Economics Letters*, 22(11), 874–885. <https://doi.org/10.1080/13504851.2014.985364>
- Choi, N. G., Burr, J. A., Mutchler, J. E., & Caro, F. G. (2007). Formal and informal volunteer activity and spousal caregiving among older adults. *Research on Aging*, 29, 99–127. doi: 10.1177/0164027506296759

- Choma, B., & Ochocka, J. (2006). Supported volunteering: A community approach for people with disabilities. *Journal on Developmental Disabilities*, 13(1), 25–34.
- Conselho Nacional de Juventude (CNJ). (2023). Contributos para a revisão da Lei do Voluntariado. CNJ. <https://www.cnj.pt/contributos-revisao-lei-do-voluntariado>
- Council of the European Union. (2011). *Council conclusions on the role and impact of voluntary activities in social policy* (14552/11).
- European Commission. (2022). Flash Eurobarometer 509: Youth and Democracy in the European Year of Youth 2022. Publications Office of the European Union. <https://data.europa.eu/doi/10.2766/707487>
- Finn, J. L., & Checkoway, B. (1998). Young people as competent community builders: A challenge to social work. *Social Work*, 43(4), 335–345.
- Fontes, F., & Martins, M. (2023). A diversidade funcional em Portugal: Direitos, políticas e práticas. *Revista de Ciências Sociais*, 41(1), 13–28.
- GHK. (2010). *Study on volunteering in the European Union*. Brussels: European Commission.
- Graff, L. L., & Vedell, P. (2003). *Designing inclusive volunteer roles: Practical strategies*. Canadian Volunteerism Initiative.
- Instituto Nacional de Estatística (INE). (2018). Inquérito ao Trabalho Voluntário. INE.
- Instituto Português do Desporto e Juventude (IPDJ). (2021). Relatório do Observatório do Voluntariado: Caracterização das organizações e práticas de voluntariado em Portugal. IPDJ. <https://ipdj.gov.pt/voluntariado>
- ISCTE – Instituto Universitário de Lisboa. (2020). Estudo sobre o perfil do voluntariado e das organizações promotoras em Portugal. Centro de Investigação e Intervenção Social (CIS). <https://www.iscte-iul.pt>
- Lin, Y., Niu, R., & Yu, Z. (2023). Roles of ambiguity tolerance and learning effectiveness: Structural equation modeling evidence from EFL students' perceptions of factors influencing peer collaboration. *Language Teaching Research*, 0(0). <https://doi.org/10.1177/13621688231216201>
- Kulik, L. (2018). Psychological benefits of volunteering among the young-old: A comparison between volunteer and non-volunteer retirees. *Aging & Mental Health*, 22(6), 745–753.
- Lawson, A., & Beckett, A. E. (2021). The social and human rights models of disability: Toward a complementarity thesis. *The International Journal of Human Rights*, 25(2), 348–379. <https://doi.org/10.1080/13642987.2020.1783533>
- Licandro, O., Garcia-Lopera, F., & Palacios, C. (2021). Corporate volunteering and social impact. *Journal of Business Ethics*, 174(3), 607–625.
- Marková, A. (2020). Volunteering of people with disability. *Kontakt*. 22. 10.32725/kont.2020.013.
- Marková, E. (2019). Inclusive volunteering of people with disabilities: Barriers and facilitators. *Journal of Social Inclusion*, 10(1), 45–63.
- Marks, D. (1997). Models of disability. *Disability & Rehabilitation*, 19(3), 85–91.
- Miller, K. D., Schleien, S. J., & Bedini, L. A. (2003). Barriers to inclusion in volunteer programs: A survey of volunteers with and without disabilities. *Journal of Volunteer Administration*, 21(3), 23–29.
- Miller, K. D., Schleien, S. J., & Bedini, L. A. (2010). Inclusive volunteering: Benefits to participants and organizations. *Journal of Volunteer Administration*, 28(2), 32–44.
- Musick, M. A., & Wilson, J. (2003). Volunteering and depression: The role of psychological and social resources in different age groups. *Social Science & Medicine*, 56(2), 259–269. [https://doi.org/10.1016/S0277-9536\(02\)00025-4](https://doi.org/10.1016/S0277-9536(02)00025-4)
- Rebeiro, K. L., & Allen, J. (1998). Volunteering: Improving the quality of life for Canadians with mental illness. *Psychiatric Rehabilitation Journal*, 22(1), 25–33. <https://doi.org/10.1037/h0095280>
- Scheier, I. H. (1980). Exploring volunteering: Why do people do it? *Journal of Voluntary Action Research*, 9(1), 21–36.
- Shandra, C. L. (2019). Disability and social participation: The case of volunteering. *Sociological Perspectives*, 62(6), 923–939.
- Smith, D. H. (1997). The rest of the nonprofit sector: Grassroots associations as the dark matter ignored in prevailing “flat earth” maps of the sector. *Nonprofit and Voluntary Sector Quarterly*, 26(2), 114–131.
- Stone, D. A. (1984). *The disabled state*. Temple University Press.
- Thoits, P. A., & Hewitt, L. N. (2001). Volunteer work and well-being. *Journal of Health and Social Behavior*, 42(2), 115–131.
- Townsend, E., & Whiteford, G. (2005). A participatory occupational justice framework: Population-based processes of practice. *Canadian Journal of Occupational Therapy*, 72(2), 73–84. <https://doi.org/10.1177/000841740507200203>
- United Nations Volunteers (UNV). (2022). State of the World's Volunteerism Report (SWVR). <https://swvr2022.unv.org/>
- UNV – United Nations Volunteers. (2010). *Volunteering for social change*. Retrieved from <https://www.unv.org/>
- Wang, S., Ling, W., Lu, Z., Wei, Y., Li, M., & Gao, L. (2022). Can volunteering buffer the negative impacts of unemployment and economic inactivity on mental health? Longitudinal evidence from the United Kingdom. *International Journal of Environmental Research and Public Health*, 19(11), 6809. <https://doi.org/10.3390/ijerph19116809>

Ignorant Certainty: Leadership in a Dogmatic Haystack

Richard McNeill¹ and Hester Nienaber²

¹School of Hotel and Restaurant Management, The W.A. Franke College of Business, Northern Arizona University, Flagstaff, AZ, USA

²hesternienaber.com, Flagstaff, AZ, USA

Richard.McNeill@nau.edu

hester@hesternienaber.com

Abstract: Background: *There is no absolute certainty of truth in the social sciences*, but some try. On one hand, several researchers argue that we still search for a robust *leadership theory* – a heuristic Bayesian probabilistic explanation of reality. This view is based on the numerous leadership definitions which suggest the absence of an integrative framework thus producing confusion. On the other hand, many researchers seemingly imply leadership theory is finalised and based on a contemporary broadly agreed upon but limited definition emphasising relationships. Our stance is continuously updating possibilities with new and, in this paper, *old* but unfashionable research evidence that may clarify. **Purpose, design/method/approach:** Because concepts make a crucial contribution to theory, we assessed the concept leadership by conducting *concept analysis*. **Findings:** The purported consensus leadership definition states *relationships* or *'cooperation'* as the fundamental quality of leadership. Research demonstrates that relationships/cooperation are necessary, but an insufficient condition to encapsulate the complete concept of leadership. Many researchers agree that leadership is a solution to the problem of collective effort (cooperation), bringing people together (coordination), and combining their efforts (integration) to promote organisational success – the crux of competitive advantage. This description signifies leadership solves the *organising problem*, namely, *division of labour* and *integration of effort*. Hence, leadership entails more than relationships/cooperation. Coordination galvanises cooperation. Nonetheless, coordination is missing in the purported consensus leadership definition and is often evident in observed poor organisational results. **Contribution:** We propose an alternative leadership definition from the earliest ('old') management literature. Our definition clarifies and remedies the shortcomings of the ignorant certainty asserted in the consensus definition. We believe that we provide an alternative way of thinking about, understanding, explaining, practising, and developing leadership. Consequently, laying the foundation for a unified leadership framework, if not theory, that can guide further refinement and expansion. **Limitations:** We carefully followed one recognised approach to concept analysis. This approach is useful in advancing debate and stimulating insights in the spirit of ongoing efforts to refine leadership theory. We **recommend** further calibration studies.

Keywords: Leadership theory, Coordination and cooperation, Solving the organising problem, Competitive advantage, Conceptual paper

1. Introduction

Despite years of study, *leadership* seemingly remains an enigma. This puzzle is conspicuous in the numerous and varied definitions and conceptualisations (Guterman, 2023; Haslam, Alvesson and Reicher, 2024). Some scholars argue that leadership suffers from overlapping but disconnected theory proliferation. The disconnection points to the lack of an overarching integrative theoretical framework. These theories are imprecise and, therefore, remain insignificant (Antonakis et al, 2024; Deng et al, 2023). This account is typical of applied disciplines, including leadership as an aspect of general management (hereafter 'management'). Applied disciplines struggle to connect sound theory and practice by balancing concepts and practice in lieu of integrative frameworks (Parker-Follett, 1933b; Stewart, 1997; Swanson and Chermack, 2013). Some researchers portray leadership as independent from and exalted over management (Alvesson, 2022; Stewart, 1997), which intensify the problem.

This enigma is problematic because leadership is imperative for (a) successful organisations which (b) permeate the wealth-creating capacity of societies, and (c) touch the wellbeing of societal members and, thus, significant for the positive impact on people and societies (Hogan and Sherman, 2020). Nonetheless, theory is never final or complete; there is always room for refinement (Popper, 1963; Shoemaker, Tankard and Lasorsa, 2004; Stewart, 1997; Swanson and Chermack, 2013). Abundant attention to leadership is understandable. The lack of progress with theory development is perplexing but consistent with theory development in management sciences (Suddaby, 2010; Whetten, 1989).

We attribute the lack of progress in leadership theory development to several regretful scholarly practices. On one hand, the leadership enigma is perpetuated by the *publish or perish* imperative, resulting in mountains of trivial additions asserting their distinctness from similar works (Deng et al, 2023). On the other hand, progress is impeded by detrimental publishing orthodoxy favouring the recent new while simultaneously discounting the foundational old, preferencing certain methodologies, and advantaging so-called scholarly *elite(s)* (Hannah,

2024; Merrill, 1970). Scholars have noted the lack of progress in theory on leadership and provided guidelines to address this shortcoming. Nonetheless, progress seems elusive (Antonakis et al, 2024; Haslam, Alvesson and Reicher, 2024).

The current status of leadership theory offers an opportunity to advance debate and stimulate insights. We conducted concept analysis to uncover understanding of leadership, enhancing its precision and calibrating theory (cf. Gunawan, Aungsueroch and Marzilli, 2023; Honkavuo et al, 2018; Nuopponen, 2010; Suddaby, 2010; Whetten, 1989). Our concept analysis demonstrates (a) an alternative leadership definition, encapsulating what is necessary and sufficient, based on pioneering general management scholars who stood the test of time, (b) contextualised in an organisation, (c) accomplishing *coordination* and *cooperation* that *align key actions with strategic intent*, thus solving the *organising problem*, (d) that is consequential for *effective strategy execution* ensuring *organisational success*, and (e) offers a precise theoretical framework. This concept analysis provides an alternative way of thinking about, understanding, explaining, practicing, and developing leadership which can benefit society.

We start by creating common ground by reminding readers what theory in applied social science disciplines is. Then, we contextualise leadership, necessitating a brief revisiting of what an organisation is and what leadership's role in successful organisations is. Thereafter, we explicate the purported consensus leadership definition indicating shortcomings and culminating in an alternative leadership definition from the mute – the old – body of management knowledge. The alternative definition clarifies and remedies the shortcomings of the (purported) consensus leadership definition without adding complexity or assailing it. Thus, we lay the foundation for a precise leadership framework, if not theory, which lends itself to further refinement and expansion. Finally, we close with conclusions, limitations, contributions, and recommendations for further research.

2. Theory in Applied Social Science

Leadership, an aspect of management, forms part of the field of economics in *social science* – a *socially constructed* and, thus, *subjective phenomenon* – showing how the parts cohere (Shoemaker, Tankard and Lasorsa, 2004). Social science deals with *human behaviour*, specifically *motivation*, *wellbeing*, and *morality* within its context (Shoemaker, Tankard and Lasorsa, 2004; Swanson and Chermack, 2013). Science is about *theory*, a falsifiable explanation (approximation) of reality, such as a phenomenon, behaviour, or event, and how reality works (Antonakis et al, 2024; Parker-Follett, 1925; Popper, 1963; Whetten, 1989).

A complete theory comprises four key elements, namely: (a) *What* – the essential factors that reasonably should be considered as part of the explanation of the phenomena of interest and meeting the criteria of *comprehensive* (accurate) and *parsimonious* (simplicity in adding value to understanding), (b) *How* – are these factors (causally) related, (c) *Why* – specifying the underlying dynamics justifying the selected factors and the proposed (causal) relationships, and (d) The temporal and contextual boundary factors (*who, where, when*) limiting the theory's application (Whetten, 1989). What and how elements describe and comprise the domain of the theory. Why explains characteristics and comprises the assumptions of the theory that holds it together (Whetten, 1989).

The purpose of theory is to inform our understanding, i.e., the meaning, nature, and functioning (process knowledge) of reality as well as to explain and predict (outcome knowledge) how reality works to allow us to improve our future behaviour (Shoemaker, Tankard and Lasorsa, 2004; Swanson and Chermak, 2013). Theory building is the continuous process of studying, confirming or refuting, adapting, applying, and calibrating theory (Swanson and Chermack, 2013; Whetten, 1989). In theory building logic substitutes data as the basis for evaluation (Whetten, 1989).

Sound theory and theory building are *precise* and comprise two essential qualities, viz. *rigor* (valid) and *relevance* (useful). Rigor consists of three key aspects, namely, (i) a clear and accurate theoretical or conceptual framework, which provides a solid basis for (ii) an appropriate methodology, contributing to (iii) robust empirical findings facilitating the development of cumulative knowledge that can be used with confidence to guide better action and practice (Antonakis et al, 2024; Honkavuo et al, 2018; Nuopponen, 2010; Suddaby, 2010; Swanson and Chermack, 2013; Whetten, 1989). Relevance means the theory is useful for improved action in practice, and through its application theory can be further developed and refined/improved from experience and learning as vital sources of knowledge (Suddaby, 2010; Swanson and Chermack, 2013).

Applied disciplines are domains of study that are fully understood through their use in the functioning world, necessitating an examination from a comprehensive perspective (Johns, 2024; Swanson and Chermack, 2013) – in this instance running a successful organisation. Applied theories are complete representations of system activities and may incorporate models derived from methodological approaches applying specific techniques, but models are not theories (Shoemaker, Tankard and Lasorsa, 2004; Swanson and Chermack, 2013). Philosophical orientations impact theory (building), as do paradigms, whether grand (generalisable), midrange or local (minimally transferable) theories (Swanson and Chermack, 2013).

3. Contextualising Leadership from a General Management Perspective

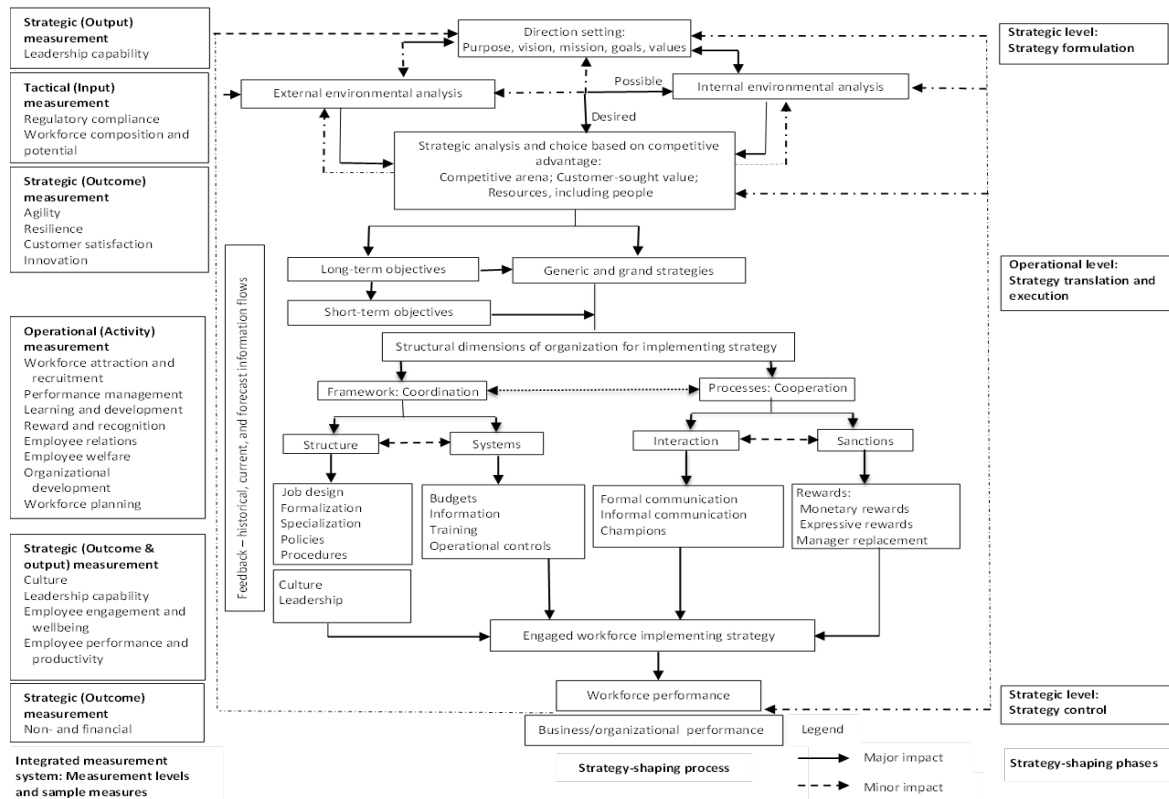
Because theory in applied disciplines (a) is understood through its use in the functioning world and (b) takes a comprehensive perspective, we contextualise leadership from a management perspective as practiced in formal organisations. Management means to (a) foresee the future and plan action to realise the future, (b) organise the human and material structure of the organisation, (c) command – analogous to cooperate – ensure the smooth running of the organisation by guaranteeing people perform at their best (flourish), benefitting the total organisation, (d) coordinate – harmonise and unify all activities and effort throughout the organisation by rendering them their rightful proportions to facilitate the organisation's functioning and success, and (e) control, i.e., ensure everything happens according to planning, 'a' above (Fayol, 1916[2013]:6). Although each of these essential factors ('a-e') comprises its own features, management retains coherence. Furthermore, management permeates the total organisation with higher hierarchical levels of management playing a larger part than lower hierarchical level management in ensuring organisational success. Leadership, an aspect of management, is central to running a successful organisation, necessitating a brief revisiting of organisations (Johns, 2024; Kaiser, LeBretton and J. Hogan, 2015; Parker-Follett, 1933a; Stewart, 1997; Yukl and Gardner, 2020).

Organisations are (a) open systems of (b) coordinated action (c) among individuals inhabiting specific roles, and groups with diverse competences, needs, wants, and aspirations, (d) in conjunction with other resources, notably information, (e) collectively working (cooperating) at (f) attaining a mutual goal, viz., the long-term joint survival of the organisation and its members, (g) by fulfilling a specific purpose in society and therefore, are important social institutions (Hogan and Sherman, 2020; March and Simon, 1993; Puranam, Alexy and Reitzig, 2014). Leadership, specifically the head of the organisation, is ultimately charged with organisational success namely, fulfilling the organisational purpose enduringly in society. Implying workers desire (a) competent leaders generating a solid reputation, (b) who treat all stakeholders morally (just, proper, respectful), that is, having their interest at heart and act for the good of the diverse group – the most important quality of leadership, (c) make sound decisions using relevant and timeous information embracing integrity, and (d) having a clear and compelling vision, that inspires employee engagement that delivers successful organisations (Hogan and Warrenfeltz, 2003; Kahn, 1990; Kouzes and Posner, 2021). Figure 1 captures the organisational description in a simplified illustration.

Figure 1 shows the coherent and interacting components of an organisation that can guide management/leadership to attain organisational success. The Figure 1 organisational components can be classified into three *interrelated* parts, namely, planning, implementation, and control which manifest at the organisational strategic and operational levels. Planning, at the organisational strategic level, corresponds to Fayol's (1916[2013]) management function to foresee the future. Implementation, at the organisational operational level, corresponds to Fayol's (1916[2013]) management functions of organising, command, and coordination which flow from planning. Implementation represents action to realise the planned future by translating planning into action. The mechanism structural dimension of organisation for implementing strategy is pivotal in actioning the planned future. Control ensures that the planned future materialises. Figure 1's feedback loop provides information from the integrated measurement system and ensures success.

A few salient points from Figure 1 need emphasis. Organisational direction guides and unifies all activities throughout the organisation (Fayol, 1916[2013]; Parker-Follett, 1933b). This means coordination originates from organisational direction. Organisational direction is attained by strategy, encompassing multidimensional decisions that manifest at the different organisational levels, based on competitive advantage (Hautz, Seidl and Whittington, 2017; Porter, 1985; Thompson et al, 2024). Competitive advantage anchors strategy by (a) offering innovative customer-sought-value expressed in customer satisfaction, (b) in a chosen competitive arena through (c) competent workers doing their daily jobs, viz., transforming value-creating resources into innovative customer-sought-value, (d) in a coordinated system of cooperation, and (e) that align key actions with strategic intent to attain the organisation's purpose. Workers' daily jobs, specified in job design, are categorised according to Fayol's (1916[2013]) six interdependent functional groups. These are (a) production, (b) exchange, (c) finance,

(d) security, (e) accounting, and (f) managerial, i.e., planning, organising, coordinating, commanding (analogous to cooperating), and controlling, which are congruent with Porter's (1985) value-chain. These interdependent functions require corresponding and proportionate competence to execute in congruence with the worker's hierarchical position (Fayol, 1916[2013]; George, 2021; Parker-Follett, 1933a; Stewart, 1997; Young, 2024). Therefore, these interdependent functions should not be separated according to hierarchical position which will impede coordination (Stewart, 1997).



Source: Adapted from Nienaber and McNeill, 2022

Figure 1: Simplified illustration of an organisation

Competitive advantage arises from the mechanism structural dimensions of organisation for implementing strategy which aligns strategy, structure, and processes (Skivington and Daft, 1991; Thompson et al, 2024). The mechanism's *framework dimension* accomplishes coordination, and the *processes dimension* accomplishes cooperation. Coordination and cooperation aim at division of labour (task division and task allocation, i.e. job design) and integration of effort (information and rewards provision) guided by policies and procedures, supported by culture, enabled by leadership, allocation of requisite resources, and reinforced by communication and rewards, monetary or otherwise – functions present at both the organisational strategic and operational levels illustrated in Figure 1.

Thus, coordination and cooperation solve the interlinked problem of division of labour and integration of effort, i.e., the organising problem – the key to successful organisational performance. It minimises intra-organisational competition/conflict while leveraging interorganisational competition to outwit rivals (Hogan and Sherman, 2020; March and Simon, 1993; Puranam, Alexy and Reitzig, 2014; Young, 2024). Consistent with the management pioneers (cf. Merrill, 1970), proper coordination and cooperation inspire employee engagement by actuating individual workers and groups towards collectively realising the organisational purpose. This allows them to express their competence (getting ahead), realise autonomy (find meaning), and experience relatedness (getting along), which are critical for their wellbeing (Hogan and Sherman, 2020; Kahn, 1990; Ryan and Deci, 2017).

Figure 1 aids our understanding of leadership as an aspect of management as conceived by pioneering management scholars in running a successful organisation. This conception will become clearer in the next section analysing leadership definitions. Figure 1 suggests organisational success requires management/leadership down the line to be up to the task (competent) to perform their function, i.e., fulfilling

the purpose of the organisation, through inspiring organisational members to willingly cooperate towards goal achievement by expressing competence, realising autonomy, and experiencing relatedness, in a coordinated fashion. Management/leadership uses the mechanism *organisation structure* to accomplish success through orchestrating coordination and cooperation. As such, effective management/leadership requires both a *functional* and *people orientation* (Kaiser, LeBretton and J. Hogan, 2015; Parker-Follett, 1933a; Yukl and Gardner, 2020). Hence, consideration to management/leadership, specifically (a) who they are as a person, pertinently their reputation produced by expressing their competence, (b) in executing their function, as well as (c) the influence they exert through their behaviour in inspiring people to cooperate, are imperative for organisational success (Parker-Follett, 1933a; Yukl and Gardner, 2020). Therefore, management/leadership as person, function, and style are syncretic (Nienaber and McNeill, 2024; Parker-Follett, 1933a). With the context of leadership covered, we now turn to the definitions of leadership.

4. Leadership Definitions

Concepts, precise definitions capturing what is necessary and sufficient to encapsulate a concept, terms and language form the building block of theory. In this paper we use concept analysis as method to clarify a known concept (in this case leadership) which requires clarification. This uncover the different explanations of the concept examined (i.e., leadership) by searching for foundational features or essential factors that reasonably should be considered as part of the explanation of the phenomena of interest (i.e., leadership) which meet the criteria of *comprehensive* (accurate) and *parsimonious* (simplicity in adding value to understanding) (cf. Whetton, 1989), including the phenomena hidden behind the meanings of the concept being examined (i.e., leadership). This may include the analysis of etymology, semantics, and discrimination between closely related concepts to distinguish the concept examined (i.e., leadership) (Gunawan, Aungsuroch and Marzilli, 2023; Honkavuo et al, 2018; Nuopponen, 2010; Suddaby, 2010; Whetten, 1989). Our focus is on semantics, as the original meaning of the concept 'leadership' did not survive in current language usage.

4.1 Consensus Leadership Definition

Originally, the term *leadership* had been associated with a *person* (Grace, 2003). However, definitions evolve over time. The purported consensus leadership definition is: "The process whereby one or more people motivate one or more other people to contribute to the achievement of collective goals (of any form) by shaping beliefs, values, and understandings in context rather than by exercising stick-and-carrot behavioural control" (Haslam, Alvesson and Reicher, 2024:3). This definition is consistent with studies focusing primarily on leadership as social influence or relatedness, i.e., relationships/cooperation (Deng et al, 2023). Although helpful in some ways (necessary), the purported consensus definition falls short in several important ways. Why?

The consensus definition holds relationships/cooperation as fundamental quality of leadership. Relationships are an important part of leadership but woefully (a) insufficient to motivate people to (joint) action to attain organisational success, i.e., mutual goals, demonstrated by the management pioneers' work (cf. Merrill, 1970) and thus, (b) does not accurately/comprehensively capture leadership as concept (cf. Whetton, 1989).

Motivating people to action, i.e., willingly cooperate to contribute to attaining mutual goals (organisational success), requires them to feel they are doing something good and valuable through (a) expressing their competence, (b) realising autonomy, and (c) experiencing relatedness in doing their jobs, i.e., strategy implementation (Hogan and Sherman, 2020; Ryan and Deci, 2017). Competence, autonomy, and relatedness are inborn human needs experienced as the ability to get ahead, find meaning, and belong and serve as the *motivational levers* ensuring people perform at their best, which nurtures their wellbeing (Hogan and Sherman, 2020; Hogan and Warrenfeltz, 2003; Kahn, 1990; Parker-Follett, 1933a; Ryan and Deci, 2017).

Competence means people need to master their environment through learning and growth by 'training' opportunities they deem indispensable for and meaningful in job performance (Hogan and Sherman, 2020; Ryan and Deci, 2017). Autonomy means to be one's authentic self by experiencing free-willed and self-endorsing behaviour congruent with one's values which provides one with a sense of control over one's decisions, actions, and consequences and requires time to think, experiment, learn, and involves risk-taking and innovative behaviours, enabling one to proactively adapt to change (Hogan and Sherman, 2020; Ryan and Deci, 2017). Relatedness means fostering a few sincere relationships, i.e., personal connections based on peoples' morality leading to trust – a willingness to rely on each other to perform as expected, without monitoring each other or by taking advantage of each other's vulnerabilities. Satisfying/frustrating the need for competence, autonomy, and relatedness produce behaviour, emotion, and thought, culminating in engagement/alienation (Hogan and Sherman, 2020; Kahn, 1990; Kouzes and Posner, 2021).

Research demonstrates that many workers inhabit positions that do not allow them to express competence, realise autonomy, and experience relatedness in doing their jobs (Gallup, 2025; Nienaber and McNeill, 2022). This mismatch results in alienation, strategy implementation breakdowns, and poor organisational performance (cf. Hautz, Seidl and Whittington, 2017; Morkel, Nienaber and McNeill, 2021; Nienaber and McNeill, 2023). The mismatch between worker competence and organisational position represents a failure in division of labour (task division and task allocation, i.e., job design) and integration of effort (provision of information and rewards) as division of labour and integration of effort interact. This mismatch thwarts solving the organising problem and represents a failure of coordination and cooperation – a management/leadership failure. Correcting this mismatch and improving organisational performance requires adjusting the mechanism structural dimensions of organisation for implementing strategy, as illustrated in Figure 1.

Division of labour and integration of effort (solving the organising problem) fall in the scope of hierarchical appointed management accountability. Because workers do not have control over these decisions, they cannot ‘motivate each other,’ suggested by the purported consensus leadership definition. Division of labour and integration of effort relies on *leadership competence*, perceived or real. Leadership competence produces a *reputation*, i.e., consensus of others’ (dis)approval of leadership behaviour, that prompts follower behaviour, either engagement or alienation (George, 2021; Hogan and Warrenfeltz, 2003; Kahn, 1990; Kouzes and Posner, 2021; March and Simon, 1993; Parker-Follett, 1933b; Yukl and Gardner, 2020).

4.1.1 Competence

Competence, a variously defined performance capability, is generally accepted to comprise knowledge, skills, experience, and behaviour necessary to productively do a job and can be learned (George, 2021; Hogan and Warrenfeltz, 2003; Kouzes and Posner, 2021; Parker-Follett, 1925). Different jobs require different kinds and degrees of competence and people have different aptitudes and flourish in different conditions, necessitating a person-job fit (Young, 2024). Information about requisite competence is available from Figure 1’s integrated measurement system (cf. Nienaber and McNeill, 2022, 2023).

Hogan and Warrenfeltz’s (2003) developmental competence taxonomy integrates all competency frameworks and models and is particularly applicable to leadership. Hogan and Warrenfeltz’ (2003) developmental competence taxonomy comprises four domains, viz., (i) intra-personal, which develops first and is the most difficult to master; (ii) interpersonal, (iii) business/technical, and (iv) leadership, which develops last and builds on all three preceding domains. Competence can be classified according to the Five-Factor Model (FFM) of Personality, a useful taxonomy of reputation. The FFM domains are (a) emotional stability, (b) conscientiousness, (c) extraversion, (d) agreeableness, and (e) openness. Table 1 summarises competence reflected in reputation.

Competence, reflected in reputation, indicates who we are as a person and predicts how we will lead or our leadership behavioural style (Kaiser, LeBretton and J. Hogan, 2015).

Table 1: Competence reflected in reputation

Competence	Qualities	Reputation
Intra-personal	Internalised standards of performance reflected in one’s ability to regulate one’s emotions and behaviour comprising self-esteem, attitudes towards authority, and self control	Emotional stability Conscientiousness
Interpersonal	Self-awareness which draws on communication skills and impacts initiating, building, and maintaining positive relations with diverse people to get work done	Extraversion Agreeableness
Business	Knowledge, skills, and experience needed to productively do a job corresponding to Fayol’s (1916 [2013]) interdependent organisational functions, including management. The managerial function aims at (a) direction setting, (b) communicating, (c) identifying, hiring, and deploying suitably competent workers in appropriate positions, (d) delivering innovative customer-sought-value in a (e) coordinated system of cooperation in (f) chosen competitive arenas that (g) deliver planned results, financial and otherwise, (h) congruent with environmental demands	NA
Leadership	Depends on intra-, interpersonal, and business competence and relates to (a) identifying, recruiting, and deploying suitably competent people in appropriate positions, (b) retaining talented people, (c) motivating the team by using the inborn motivational levers of competence, autonomy and relatedness, (d) providing direction, set and communicate a compelling vision, set performance standards, support and care about reportees, develop competence of reportees, challenge reportees, (e) persist and persevere	Openness

Source: Composed from Hogan and Warrenfeltz (2003); Kaiser, LeBretton and J. Hogan (2015)

4.1.2 Leadership behavioural style

Leadership behavioural styles are variously classified. Yukl and Gardner’s (2020) hierarchical behavioural taxonomy is a precise, comprehensive, and parsimonious classification. The meta-categories are (a) *relations-oriented*, (b) *task-oriented*, (c) *change-oriented*, and (d) *external-oriented* leadership behaviour. A relations-

oriented leadership style is interpersonal in nature and can be either forceful or enabling. An operational/task- and strategic/change-oriented leadership are functional in nature and relate to what one leads, i.e., the purpose of the organisation relying on technical competence. An operational/task-oriented leadership style is associated with operational leadership that focuses the organisation on tactical needs to implement short-term plans (Kaiser, LeBretton and J. Hogan, 2015; Yukl and Gardner, 2020). A change-oriented leadership style is associated with strategic leadership at higher organisational levels that positions the organisation in its environment to leverage its competitiveness by setting the organisational direction, enhancing employee competence, and supporting innovation (Kaiser, LeBretton and J. Hogan, 2015; Yukl and Gardner, 2020). External behavioural style is both interpersonal and functional in nature (Yukl and Gardner, 2020). These behavioural styles can be used in a positive or negative way, namely, too little or too much (Kaiser, LeBretton and J. Hogan, 2015). Kaiser, LeBretton and J. Hogan (2015) found that a functional, i.e., task (operational) and change (strategic) leadership style were twice as likely as an interpersonal (forceful and enabling) style to derail organisational performance. This finding is consistent with research indicating that a lack of business/technical competence, specifically accomplishing coordination and cooperation, delivers poor organisational results owing to strategy implementation breakdowns (cf. Nienaber and McNeill, 2022, 2023). Research findings illustrating the predictions between competence and leadership style are summarised in Table 2.

Table 2: Competence reflected in FFM reputation domains and predicted leadership behavioural style

Who we are (personality) predicts		How we lead (associated leadership style)			
Competence domain	Reflected in FFM domain	People focused		Functional focused	
		Forceful	Enabling	Operational/task	Strategic/change
Intra-personal	Emotional stability	Negative	Positive		
	Conscientiousness		Negative	Positive	Negative
Interpersonal	Extraversion	Positive	Negative		
	Agreeableness	Negative	Positive		
Leadership	Openness			Negative	Positive
Business/technical – not empirically tested					

Source: Compiled from Hogan and Warrenfeltz (2003), Kaiser, LeBretton and J. Hogan (2015)

Given the above exposition cooperation/relationships is a necessary but insufficient condition to encapsulate the complete concept of leadership (cf. Whetten, 1989). As pointed out, coordination failures interacting with cooperation derail strategy implementation (what followers do) and, consequently, organisational success as demonstrated by research across contexts and time (cf. Hamilton and Sodeman, 2020; Levenson, 2018; Nienaber and McNeill, 2022). The consensus definition thus does not capture the essential factors to come under the concept leadership (cf. Whetten, 1989). We offer an alternative definition from the mute pioneering management literature, which subsumes and remedies the consensus definition, without adding complexity.

4.2 Our Alternative Definition of Leadership

From the literature, the term ‘management’ appeared later than the term ‘leadership’ (Grace, 2003). Management pioneers generally used the terms leadership and management interchangeably and often simultaneously as person, function, and influence (Parker-Follett, 1933a). We adopt the leadership definition of Morkel, Nienaber and McNeill (2021:26), which they based on pioneering management scholars who stood the test of time. “Leadership is employees’ perception of the capacity of their hierarchical superiors (which stems from the superiors’ behaviour) to direct their subordinates’ activities and behaviours to pursue a desired outcome in an (intended) coordinated system of cooperation in conjunction with other resources, all of which are interlinked.” Why?

This definition captures coherently the essential factors necessary and sufficient, comprehensively and parsimoniously, constituting leadership (cf. Whetten, 1989). Each of these essential factors is based on distinct features. However, the leadership construct retains an overall coherence that is more than the sum of its essential parts. Coordination and cooperation are also essential factors of management. Thus, leadership and management overlap, as suggested by pioneering management scholars (cf. Fayol, 1916[2013]; Parker-Follett, 1933a).

This comprehensive leadership definition indicates its interrelatedness with management and shows how it practically works in organisations, illustrated in Figure 1 and consistent with the organisation definition provided earlier. Coordination and cooperation are central to (a) competitive advantage, (b) the universal problems of organising (division and allocation of tasks, i.e., division of labour; information and rewards provision for efforts towards goal achievement, i.e., integration of effort), and (c) attaining successful organisational performance, the joint responsibility of management/leadership down the line shown in Figure 1. This exposition illustrates that person, function, and influence are amalgamated. Thus, leadership is a multidimensional rather than unidimensional concept. The alternative definition is comprehensive and provides the basis to integratively study leadership to overcome the challenges of studying leadership from a singular perspective, i.e., person, function, or social influence (Nienaber and McNeill, 2024).

5. Conclusions, Limitations, Contribution, and Recommendations for Further Research

Our study was triggered by some researchers who argue that we still search for leadership theory in view of proliferating leadership definitions. This suggests an absence of an integrative theoretical framework. Concepts are the building blocks of theory. To be effective, concepts must be clearly, accurately (comprehensively), and concisely (parsimoniously) defined. Therefore, we assessed the concept leadership by conducting a concept analysis. The aim of the concept analysis was to clarify the concept leadership by calibrating and enhancing its precision.

Our concept analysis revealed: The purported consensus leadership definition states *relationships/cooperation* as the fundamental quality. Research demonstrates that relationships/cooperation is necessary, but an insufficient condition to encapsulate the complete concept of leadership. Our findings further show that leadership is a solution to the problem of collective effort (cooperation), bringing people together (coordination), and combining their efforts (integration) to promote organisational success by solving the organising problem – division of labour and integration of effort. This oversight is corrected in our alternative definition. The organising problem is solved by adjusting the mechanism structural dimensions of organisation for implementing strategy, which arranges coordination and cooperation, while coordination galvanises cooperation. Using this mechanism can permit or obstruct workers to express their competence, realise autonomy, and experience relatedness, satisfying or thwarting their inborn motivational needs, and impacting their and the organisation's performance. Clearly, leadership entails much more than relationships/cooperation.

Coordination, together with cooperation, aligns key actions with strategic intent and accomplishes competitive advantage, the hallmark of an effective strategy producing organisational success. Coordination and cooperation are fundamental management functions that require specific competence (performance capacity) that is vested in a person and proportionate to the hierarchical level occupied in the organisation. Competence in executing a function produces a consequent reputation that results in corresponding worker behaviour, either engagement or alienation, impacting organisational success. These factors are captured in our alternative leadership definition. Furthermore, our leadership definition, in the context of an organisation, addresses the 'what, how, and why' of leadership.

Our limitations: We carefully followed only one recognised approach to concept analysis appropriate to this study. This represents the major limitation of the study. Nevertheless, this approach is useful in advancing debate/understanding and stimulating insights in the spirit of ongoing efforts to refine leadership theory – despite seemingly ignorant certainty of *truth found*.

Our main contribution is the proposed alternative leadership definition revived from the mute and discounted (old) management literature. The alternative definition clarifies and remedies the shortcomings of the purported consensus definition by including coordination that galvanises cooperation. The alternative definition provides a more complete way of thinking about, understanding, explaining, practising, and developing leadership. As a result, laying the foundation for a unified leadership framework, if not theory, which lends itself to further refinement and expansion. This paper attained its primary objective.

We recommend further calibration studies, specifically (re-)examining the works of the management pioneers.

Ethics and AI Declarations: Ethical clearance is not required for conceptual papers. We have not used AI tools to assist in writing the paper.

References

Alvesson, M. (2022) Chapter 9: Leadership—a driving force or empty talk? In M. Alvesson (2022) *The Triumph of Emptiness*, (2nd ed), Oxford University Press. DOI: 10.1093/oso/9780192865274.003.0009.

- Antonakis, J., Dessi, R., Fischer, T., Foss, N., Kvaløy, O., Lonati, S., Haslam, S.A., Muthukrishna, M. and Schöttner, A. (2024) "Theory in leadership and management", *The Leadership Quarterly*, Vol. 35, Article 101736.
- Deng, C., Gulseren, D., Isola, C., Grocutt, K. and Turner, N. (2023) "Transformational leadership effectiveness: An evidence-based primer", *Human Resource Development International*, Vol. 26, No. 5, pp 627–641. DOI: [10.1080/13678868.2022.2135938](https://doi.org/10.1080/13678868.2022.2135938).
- Fayol, H. (1916[2013]) *General and Industrial Management* (C. Storrs, Trans.), Martino Publishing, Mansfield Centre.
- Gallup. (2025) *State of the Global Workplace 2025: Understanding employees, informing leaders*. Retrieved May 2, 2025, from <https://www.gallup.com/workplace/>
- George, S. (2021) *Competence and Competency Frameworks*, Chartered Institute of Personnel and Development, London.
- Grace, M. (2003) "The origins of leadership: The etymology of leadership", in Proceedings of the 2003 Annual Conference of the International Leadership Association, Guadalajara, Jalisco, available at: www.ila-net.org/Publications/Proceedings/2003/mgrace.pdf.
- Gunawan, J., Aunguroch, Y. and Marzilli, C. (2023) "Beyond the classics: A comprehensive look at concept analysis methods in nursing education research", *Belitung Nursing Journal*, Vol. 9, No. 5, pp 406–410.
- Gutterman, A.S. (2023) "Definitions and conceptions of leadership", Retrieved on 9-3-2024 from <https://www.researchgate.net/publication/371169414>.
- Hannah, D. (2024) "A call for greater humility in management research", *Journal of Management Inquiry*, pp. 1–3. DOI: [10.1177/10564926241288799](https://doi.org/10.1177/10564926241288799).
- Haslam, S.A., Alvesson, M. and Reicher, S.D. (2024) "Zombie leadership: Dead ideas that still walk among us", *The Leadership Quarterly*, 35, Article 101770.
- Hautz, J., Seidl, D., and Whittington, R. (2017) "Open strategy: Dimensions, dilemmas, dynamics", *Long Range Planning*, Vol. 50, pp 298–309.
- Hogan, R., and Sherman, R.A. (2020) "Personality theory and the nature of human nature", *Personality and Individual Differences*, Vol. 152, Article 109561.
- Hogan, R. and Warrenfeltz, R. (2003) "Educating the modern manager", *Academy of Management Learning and Education*, Vol. 2, No. 1, pp 74–84.
- Honkavuo, L., Sivonen, K., Eriksson, K. and Naden, D. (2018) "A hermeneutic concept analysis of serving – A challenging concept for nursing administration", *International Journal of Caring Science*, Vol. 11, No. 3, pp 1377–1385.
- Johns, G. (2024) "The context deficit in leadership research", *The Leadership Quarterly*, Vol. 35, Article 101755. DOI: [10.1016/j.leaqua.2023.101755](https://doi.org/10.1016/j.leaqua.2023.101755).
- Kahn, W.A. (1990) "Psychological conditions of personal engagement and disengagement at work", *Academy of Management Journal*, Vol. 33, No. 4, pp 692–724.
- Kaiser, R.B., LeBretton, J.M. and Hogan, J. (2015). The dark side of personality and extreme leader behavior. *Applied Psychology: An International Review*, Vol. 64, No. 1, pp 55–92. DOI: [10.1111/apps.12024](https://doi.org/10.1111/apps.12024).
- Kouzes, J.M. and Posner, B.Z. (2021) *The Leadership Challenge* (7th ed.), Jossey-Bass, San Francisco.
- March, J.G. and Simon, H.A. (1993) *Organizations*, Cambridge, Blackwell.
- Merrill, H.F. (1970) *Classics in Management*, American Management Association, Washington, D.C.
- Morkel, A., Nienaber, H. and McNeill, R.G. (2021) "Time for change: Tools enhancing competitive advantage in wine business", *Journal of Global Business and Technology*, Vol. 17, No. 2, pp 20–40.
- Nienaber, H. and McNeill, R.G. (2022) "Leadership diagnostic: Unlocking human competence for effective strategy execution", In: Matos, F. and Rosa, A. (Eds.). *Proceedings of the 18th European Conference on Management Leadership and Governance (ECMLG)*, Academic Conferences International, Ltd., Reading, UK, (pp 347–356).
- Nienaber, H. and McNeill, R.G. (2023) "Leadership Development Programs Today: A Guide to Effective Strategy Execution or Fads du Jour?", In: Rich, M. (Ed.). *Proceedings of the 19th European Conference on Management Leadership and Governance*, Academic Conferences International, Ltd., Reading, UK (pp 322–331).
- Nienaber, H. and McNeill, R.G. (2024) "Business educators' critical reflection on leadership", In: Patuleia, M. (Ed.), *Proceedings of the 20th European Conference on Management, Leadership, and Governance*, Lisbon, (pp 408–416), Academic Conferences International, Ltd., Reading, UK.
- Nuopponen, A. (2010) "Methods of concept analysis – a comparative study," *LSP Journal - Language for special purposes, professional communication, knowledge management and cognition*, Vol. 1, No. 1, pp 4–12.
- Parker-Follett, M. (1925) Management as profession, in Merrill H.F. (1970) *Classics in Management*, American Management Association, Washington, D.C.
- Parker-Follett, M. (1933a) The essentials of leadership, in Merrill, H.F. (1970) *Classics in Management*, American Management Association, Washington, D.C.
- Parker-Follett, M. (1933b) Coordination, in Merrill, H.F. (1970) *Classics in Management*, American Management Association, Washington, D.C.
- Popper, K. (1963) "Science as falsification", *Conjectures and Refutations*, available at http://www.stephenjagould.org/ctr/popper_falsification.html.
- Porter, M. (1985) *Competitive advantage: Creating and Sustaining Superior Performance*, The Free Press, New York.
- Puranam, P., Alexy, O. and Reitzig, M. (2014) "What's "new" about new forms of organizing?", *Academy of Management Review*, Vol. 29, No. 2, pp 162–180.
- Ryan, R.M. and Deci, E.L. (2017) *Self-determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness*, The Guilford Press, New York.

- Shoemaker, P.J., Tankard, J.W., Jr. and Lasorsa, D.L. (2004) *How to Build Social Science Theories*, Sage, Thousand Oaks, California.
- Skivington, J.E. and Daft, R.L. (1991) "A study of organizational 'framework' and 'process' modalities for the implementation of business-level strategic decision", *Journal of Management Studies*, Vol. 28, No. 1, pp 45–68.
- Stewart, R. (1997) *The Reality of Management* (3rd ed.), Butterworth-Heinemann, Oxford.
- Suddaby, R. (2010) "Editor's comments: Construction clarity in theories of management and organization", *Academy of Management Review*, Vol. 35, No. 3, pp 346–357.
- Swanson, R.A. and Chermack, T.J. (2013) *Theory Building in Applied Disciplines*, Barret-Koehler Publishers, San Francisco.
- Thompson, A.A., Peteraf, M.A., Gamble, J.E., and Strickland, A.J., III. (2024) *Crafting and Executing Strategy: The Quest for Competitive Advantage*, McGraw-Hill, New York.
- Whetten, D.A. (1989) "What constitutes a theoretical contribution", *Academy of Management Review*, Vol. 14, No. 4, pp 490–495.
- Young, J. (2024) *Job Design*, Chartered Institute of Personnel and Development, London.
- Yukl, G. and Gardner, W.L. III (2020) *Leadership in Organizations*, 9th ed Global edition Pearson, New York.

Expanded Value Stream Mapping in Healthcare: From Efficiency to Sustainability

Azemeraw Tadesse Mengistu, Anna Tiso, Roberto Panizzolo and Chiara Verbano

Department of Management and Engineering, University of Padova, Vicenza, Italy

azemerawtadesse.mengistu@unipd.it

anna.tiso@unipd.it

roberto.panizzolo@unipd.it

chiara.verbano@unipd.it

Abstract: Value Stream Mapping (VSM) is a widely used lean tool that improves efficiency by identifying and eliminating wastes across various processes, including those in healthcare. In recent years, stakeholders have increasingly pressured organisations to integrate sustainability into their operations, underscoring the need to expand lean management practices by incorporating environmental and social considerations, such as the implementation of sustainable VSM. Unlike traditional VSM, which primarily focuses on customer (i.e., patient) value, sustainable VSM addresses the needs of a broader range of stakeholders, including patients, employees (healthcare staff), labour/professional unions, insurers, local communities, and regulatory bodies. This study aims to systematically identify the metrics used in VSM within the healthcare sector and propose an expanded metrics-based VSM that integrates economic, environmental, and social dimensions. A systematic literature review on sustainable VSM was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The review indicates that current VSM practices in healthcare focus on metrics related to time, efficiency, capacity, cost, patient safety, and patient satisfaction. However, the healthcare sector also has significant implications for sustainability, including environmental aspects (e.g., resource consumption and healthcare waste management) and social aspects (e.g., occupational health and safety, and stakeholder satisfaction). To address these broader considerations, this study expands the existing application of VSM in healthcare by adapting multidimensional metrics commonly used in sustainable VSM in the manufacturing sector. This approach aims to achieve comprehensive outcomes by enhancing the quality of patient-centred care, while minimising resource consumption (materials, energy, and water), ensuring effective healthcare waste management, promoting health and safety, and improving the satisfaction of patients and other stakeholders. This study establishes a theoretical foundation for future research on integrating lean practices and sustainability. Additionally, it offers actionable insights for healthcare organisations seeking to implement a comprehensive approach to VSM that improves efficiency, care quality, and sustainability.

Keywords: Metrics, Indicators, Lean management, Value stream mapping, Sustainability, Healthcare

1. Introduction

As a key lean management tool, VSM is used to improve efficiency and maximise customer value by identifying and eliminating wastes (Rother and Shook, 1999). In healthcare, VSM is applied to improve processes by identifying non-value-added activities, reducing wastes, and improving the quality of patient care (Marin-Garcia et al., 2021). Due to the growing environmental and social concerns, stakeholders have increasingly pressured organisations, including those in the healthcare sector, to integrate sustainability into their practices (Mengistu et al., 2024). In line with this, sustainable VSM expands traditional VSM by incorporating environmental and social aspects alongside economic considerations, aiming to minimise environmental impact, ensure social responsibility, and meet stakeholder requirements (Faulkner and Badurdeen, 2014). Traditional VSM primarily focuses on improving efficiency and customer value, including patient care, through waste reduction (Rother and Shook, 1999). Sustainable VSM builds on this foundation to promote sustainable operations by balancing economic, environmental, and social considerations to address the needs of various stakeholders (Lee et al., 2021).

The healthcare sector has significant social, economic, and environmental impacts. It consumes substantial resources, including materials, water, and energy, while generating considerable waste, emissions, and pollution that can negatively affect the environment. At the same time, it plays a vital role in society by providing essential care and employing a large workforce whose health and well-being should be safeguarded (Vergunst et al., 2020). The implementation of lean tools plays a crucial role in achieving sustainability in healthcare (Morell-Santandreu et al., 2020). Notably, VSM is the most widely applied lean technique in the healthcare sector, primarily aimed at improving the efficiency of care pathways (Tiso et al., 2021).

Previous studies have identified numerous economic metrics used in VSM in healthcare but have largely overlooked environmental and social metrics. The identified economic metrics focus primarily on time (Reis et al., 2023), cost (Sheehan et al., 2021), and capacity (Costa et al., 2017). In addition, a few metrics related to environmental and social aspects were identified, as shown in Table 1. Although previous studies have provided

numerous metrics, they lack a balanced consideration of the economic, environmental, and social dimensions required to address the needs of diverse stakeholders, including patients, employees, labour/professional unions, insurers, local communities, and regulatory bodies.

Therefore, the purpose of this study is to systematically identify the metrics used in VSM in healthcare, with the aim of expanding its application by incorporating widely used multidimensional metrics, primarily derived from sustainable VSM in manufacturing. This integration provides a comprehensive understanding of key metrics, enabling healthcare organisations to make informed decisions that optimize processes while promoting sustainability. Furthermore, this study can serve as a theoretical foundation for future research by offering a set of multidimensional metrics for the effective implementation of sustainable VSM in healthcare, addressing not only patient value but also the needs of other stakeholders.

The remainder of this paper is organised into four sections. Section 2 describes the methodology of this study. Section 3 presents the results with a concise overview. Section 4 discusses the findings, supplemented by additional metrics used in sustainable VSM. Finally, Section 5 presents conclusions, including directions for future research.

2. Methodology

To achieve the study's objective, a systematic review of the literature on sustainable VSM in healthcare was conducted following the PRISMA guidelines (Moher et al., 2009), as shown in Figure 1. Relevant research papers were systematically identified in Scopus and Web of Science using three keyword sets related to the study topic:

- Sustainability-related: "sustainab*" OR "green" OR "environmental" OR "cleaner production" OR "eco-efficien*" OR "carbon footprint" OR "social" OR "socially responsible" OR "corporate social responsibility" OR "stakeholder value"
- Value stream mapping-related: "value stream mapping" OR "value-stream mapping" OR "value stream map" OR "value-stream map"
- Healthcare-related: "healthcare" OR "health care" OR "health service*" OR "health center*" OR "health centre*" OR "medical service*" OR "medical center*" OR "medical centre*" OR "care service*" OR "care center*" OR "care centre*" OR "hospital*" OR "clinic*" OR "health" OR "medical" OR "care"

The keyword search specifically targeted the "Title, Abstract, Keywords" field in Scopus and the "Topic" field in Web of Science.

A total of 111 papers published up to March 2025 were identified and screened using predefined inclusion and exclusion criteria based on the study's objective. In line with the inclusion criteria, which focused on research articles and reviews written in English, two papers in other languages were excluded. Additionally, 26 book chapters, conference papers, and other types of documents were removed to focus on the most scholarly literature. Following these exclusions, 83 peer-reviewed articles and reviews were retained for further consideration. After removing 31 duplicates, 52 papers underwent title and abstract screening to evaluate their alignment with the inclusion criteria. As a result, 24 papers were excluded for being unrelated to VSM, not addressing VSM in healthcare, or not being published in high-quality journals (i.e., those ranked in quartiles 1, 2, or 3 of the SCImago Journal Rank [SJR]). Subsequently, 28 papers were considered eligible for full-text analysis. In the full-text review process, seven papers that lacked relevant metrics for VSM or primarily focused on implementation model of lean tools were excluded. Finally, 21 papers met the inclusion criteria and were selected for further analysis.

Furthermore, this study enriched the results of the systematic review by adapting widely used multidimensional metrics from sustainable VSM practices in the manufacturing sector to enhance and broaden the application of VSM in healthcare. This approach enables a comprehensive evaluation of healthcare processes, balancing economic, environmental, and social considerations to improve efficiency, care quality, and sustainability.

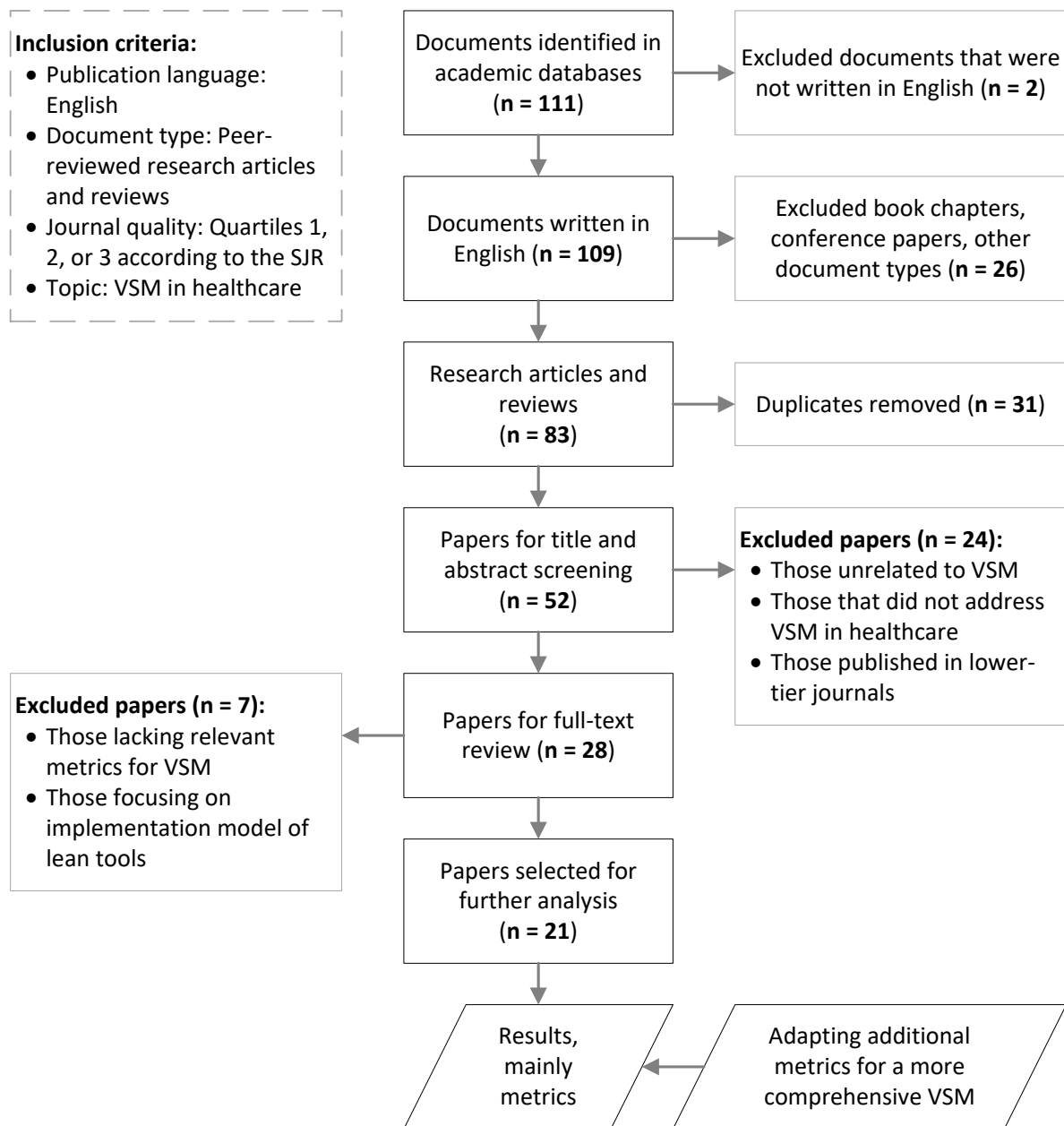


Figure 1: Systematic approach for screening and selecting relevant papers, supported by the incorporation of additional metrics

3. Results

In line with the objective of the study, the metrics used in VSM in healthcare were identified through a content analysis of the selected papers. This process involved systematically recording and coding data, including metrics mentioned in the papers. To determine the frequency of use for each metric (i.e., the number of papers that considered a specific metric), texts (words and phrases) were carefully analyzed (Hsieh and Shannon, 2005). The analysis revealed that most identified metrics were economic in nature, while environmental and social metrics were largely overlooked. Table 1 presents the frequently used metrics in VSM, highlighting the predominance of economic metrics.

Table 1: Frequently used economic metrics in the reviewed literature on VSM in healthcare

Frequently used metrics	Frequency of use
Waiting time	10
Lead time	9

Frequently used metrics	Frequency of use
Value-added time	7
Non-value-added time	6
Cost	5
Process time	4
Length of stay	3
Turnover time	3
Capacity	3
Necessary value-added-time	2
Turnaround time	2

In addition to the frequently used metrics mentioned above, numerous other economic metrics were identified, each appearing only once in the reviewed literature. Personal protective equipment (PPE) use was identified as an environmental metric (Sheehan et al., 2021). The identified social metrics include patient satisfaction (Marin-Garcia et al., 2021), staff satisfaction (Nowak et al., 2017), number of clinical trial participants (Martinez et al., 2016), infection rate (Costa et al., 2017), and patient falls (Gitlow et al., 2013).

The economic metrics focus on enhancing process efficiency, improving capacity, reducing costs, and ensuring economic viability. Among these metrics waiting time, which appeared 10 times in the reviewed literature, was the most frequently used, underscoring its significance in representing delays in the patient flow (e.g., time spent waiting for appointments, tests, or treatment). Reducing waiting time is crucial for improving patient flow and satisfaction. Lead time (9) is another key metric that represents the total duration from the start to the end of a process (e.g., from patient arrival to discharge). In VSM, reducing lead time is a primary objective to enhance the efficiency and quality of patient care delivery. Value-added time (7) and non-value-added time (6) represent the time spent on activities that directly contribute to patient care (e.g., diagnosis, treatment) and those that do not (e.g., waiting, rework), respectively. Cost (5) is a crucial economic metric, reflecting the financial impact of inefficiencies and wastes. It mostly includes labour (healthcare staff) cost, material (such as medical supplies and pharmaceuticals) cost, and stockholding cost. Process time (4) measures the duration of specific tasks within the patient care pathway (e.g., surgery, diagnostic testing). Length of stay (3) represents the total time a patient spends in a healthcare facility. In VSM, reducing length of stay by minimising delays and inefficiencies is essential for improving patient satisfaction. Additional economic metrics included turnover time (3), which is the time spent to prepare a setting (e.g., operating room, diagnostic lab) for the next patient; capacity (3), which represents the ability of resources, such as number of beds, staff, and equipment, to handle patient volume; necessary non-value-added time (2), which refers to the time spent on activities (e.g., sterilization, documentation) that do not directly contribute to patient care but are essential for compliance and continuity; and turnaround time (2), which represents the time required to complete a specific task from start to finish (e.g., time to deliver test results).

Unlike economic metrics, environmental and social metrics were largely overlooked in the reviewed literature. One example of an environmental metric is the use of personal protective equipment (PPE), which reflects the environmental impact of a process. For instance, excessive PPE use can lead to substantial end-of-life waste accumulation, potentially causing negative effects on the environment. The identified social metrics primarily focus on patients and staff. These include patient satisfaction, which reflects patients' perceptions of care quality and overall experience; staff satisfaction, an important metric for assessing well-being and engagement, helping to reduce staff turnover; the number of clinical trial participants, which indicates community engagement in research-oriented healthcare processes; infection rate, a critical metric in healthcare VSM for identifying the causes of infections, thereby improving patient safety and minimising rework; and patient falls, another essential metric aimed at enhancing safety by addressing fall-related risks.

4. Discussion

The results of the systematic review indicate that VSM practices in healthcare have primarily focused on economic metrics, largely overlooking environmental and social metrics. The identified economic metrics were retained for further consideration. Additionally, key environmental and social metrics, adapted from sustainable VSM practices in manufacturing, were incorporated to provide a comprehensive approach to VSM in healthcare. Specifically, the research team engaged in a detailed discussion on how the environmental and social metrics,

initially identified through a systematic review of the literature on VSM in the manufacturing sector, could be effectively adapted to the healthcare context. This involved assessing the relevance, applicability, and necessary modifications of the metrics to ensure alignment with the distinct characteristics of healthcare operations. Table 2 presents the recommended multidimensional metrics for expanding and enhancing VSM in healthcare.

Table 2: Economic, environmental, and social metrics for sustainable (expanded) VSM in healthcare

Economic metrics	A concise description from a healthcare perspective
Waiting time	Time lapse between when patients are referred or request a health service and when they receive it
Lead time	Time interval from the initiation of a patient care process to its completion
Value-added time	Duration of activities that directly contribute to patient health, such as direct care, tests, treatments, or consultations
Non-value-added time	Duration of activities that do not directly contribute to patient care or improve health outcomes, such as waiting, rework, and unnecessary administrative procedures
Process time	Duration for completing specific activities in the healthcare pathways
Length of stay	Time interval between a patient's admission to a healthcare facility and their discharge
Turnover time	Time lapse between a patient exiting the operating room and the next patient entering
Necessary non-value-added time	Duration of activities that do not directly contribute to patient care or outcomes, but are essential for the functioning of healthcare services
Turnaround time	Duration from the initiation of a specific task to its completion
Capacity	Best possible performance in terms of productivity, number of beds, or number of patients treated
Labour cost	Expenses incurred by healthcare organisations for compensating their workforce
Material cost	Expenses associated with acquiring and using physical items and supplies necessary for patient care and hospital operations
Stockholding cost	Expenses incurred by healthcare organisations for storing, managing and maintaining inventory of medical supplies, medications, and equipment
Environmental metrics	A concise description from a healthcare perspective
Energy consumption	Amount of energy used by healthcare facilities to support their operations, patient care, and infrastructure needs
Water consumption	Volume of water used by healthcare facilities for all operational, clinical, and support activities (patient care, facility maintenance, food preparation, heating and cooling systems, and sanitation)
Material consumption	Amount of physical goods used (i.e., medical devices, single-use items, pharmaceuticals, personal protective equipment, and administrative supplies) to deliver medical services and maintain healthcare facilities
Chemical consumption	Amount of chemical substances (i.e., cleaning agents, disinfectants, sterilants, laboratory reagents, pharmaceuticals, and anesthetic gases) used within medical facilities to support patient care, sanitation, diagnostics, and treatment processes
Waste recycling	Amount of collected, sorted, disinfected, and reprocessed materials by medical facilities so they can be reused or transformed into new products
Carbon footprint	Amount of emissions produced directly and indirectly by healthcare activities, facilities, and supply chains
Social metrics	A concise description from a healthcare perspective
Occupational hazards	Impact and frequency of risks faced by healthcare workers in their work environment, which can negatively affect their health, safety, and well-being (i.e., biological, chemical, physical, ergonomic, and psychosocial hazards)
Physical load index	Evaluation of the risk level of musculoskeletal strain or injury and physical demands placed on healthcare workers during their tasks, particularly those involving patient handling and transfers (e.g., measured using rapid entire body assessment method)
Mental load index	Evaluation of the cognitive and emotional effort required for healthcare professionals to perform their duties effectively, encompassing the mental

Economic metrics	A concise description from a healthcare perspective
	demands related to their work tasks, patient care, and interactions with colleagues and families (e.g., measured using NASA task load index)
Patient accident rate	Frequency of unintended injuries or harmful incidents affecting patients' safety within a specific healthcare setting
Staff accident rate	Frequency of unintended injuries or harmful incidents affecting healthcare staff's safety within a specific healthcare setting
Patient safety	Extent to which a healthcare service or practice minimises the risk of harm to patients
Safety level	Extent to which a healthcare service or practice minimises the risk of harm to staff and visitors
Absenteeism	Failure to attend to work due to personal issues or illness for one or more expected workdays
Salary level	Amount of monetary compensation paid to healthcare staff for their professional services
Patient satisfaction	Degree to which patients feel their expectations and needs have been met by the healthcare services they receive
Staff satisfaction	Degree to which healthcare workers are content and fulfilled with their jobs, encompassing their overall happiness, motivation, and sense of well-being at work
Employee/Staff turnover	Proportion of staff who leave a healthcare organisation within a certain period

*References available upon request

The use of the multidimensional metrics in VSM enables healthcare organisations to deliver stakeholder-driven outcomes. This aligns with the core principle of stakeholder theory, which emphasises the importance of addressing the interests of all stakeholders (Freeman, 1984). In the context of healthcare, this includes not only patients as a primary stakeholder group but also other stakeholders such as employees, suppliers, labour/professional unions, insurers, local communities, and regulatory bodies (Hirsch, 2019).

Applying the economic metrics in VSM plays a crucial role in identifying, analysing, and minimising inefficiencies and wastes across healthcare processes. Specifically, these metrics are used to reduce time such as waiting time and lead time, enhance capacity planning, and lower operational costs. In doing so, they help improve the quality of care through time reduction, capacity optimisation, and cost efficiency. Previous studies, such as Costa et al. (2017) and Lummus et al. (2006), demonstrated the effectiveness of VSM in healthcare to reduce time (including waiting time) and costs, thereby promoting more efficient and timely patient care delivery. Effectiveness in healthcare is achieved by delivering high-quality care that meets patients' needs. In this context, each step in the value stream should meaningfully contribute to the overall effectiveness of healthcare processes by identifying and eliminating non-value-added activities (wastes). For example, visualising and eliminating such activities can reduce the time required to initiate life-saving treatment, thereby improving effectiveness (Costa et al., 2017). Similarly, reducing the resources allocated to non-value-added activities enhances cost-effectiveness (Ersson et al., 2018). Additionally, by identifying and eliminating inefficiencies, VSM can streamline the process to provide faster access to prevention services and early diagnosis. This enables healthcare organisations to utilise their capacity more effectively by increasing number of prevention activities and new diagnosis.

Traditional VSM practices in healthcare focus on economic metrics to improve operational efficiency. However, the sector's significant sustainability impacts necessitate an expanded approach that incorporates environmental and social metrics. Integrating environmental metrics enables healthcare organisations to identify opportunities to optimise use of resources (energy, water, and materials), prevent unsafe chemical use, support effective resource recycling, and minimise the carbon footprint of healthcare activities. Aligned with this perspective, (Zhu et al., 2020) emphasised the importance of assessing energy consumption, material consumption, and carbon emissions through their green-modified VSM framework, originally proposed for manufacturing but adaptable to the healthcare sector. Similarly, Cruz et al. (2024) underscored the need to reduce the ecological impact of healthcare activities through effective waste management, efficient resource utilisation, and minimising emissions and pollution, thereby enhancing patient and public safety. Social metrics also play a critical role in sustainable healthcare, as their integration helps healthcare organisations promote the health and safety of both staff and patients, thereby improving their overall satisfaction. In this regard, Nowak

et al. (2017) highlighted the importance of using VSM to assess staff and patient satisfaction as part of healthcare quality improvement efforts, while Morell-Santandreu et al. (2020) underscored the role of lean tools in promoting sustainability in healthcare, including the social dimension.

5. Conclusions

The multidimensional metrics presented in this study provide a balanced approach that goes beyond the focus on efficiency, enabling healthcare organisations to align their processes with social and environmental sustainability goals. Specifically, the study enhances traditional VSM approach by (1) integrating environmental and social considerations alongside economic performance and (2) emphasising the importance of addressing the needs of patients and other stakeholders. This expanded VSM approach can support the achievement of healthcare sustainability goals while meeting the requirements of patients and other stakeholders. These include reducing time, increasing capacity, and reducing costs within the economic dimension; reducing resource consumption, promoting resource recycling, and minimising emissions and pollution within the environmental dimension; and enhancing health and safety and improving stakeholder satisfaction within the social dimension. Collectively, these efforts enable healthcare organisations to achieve effectiveness by delivering high-quality care that meets patients' needs.

The findings of this study impact both academic and practical domains. Academically, the study provides valuable insights for future research on integrating lean tools and sustainability principles in healthcare. It provides a conceptual foundation for empirical studies by presenting multidimensional metrics for implementing sustainable VSM in healthcare settings. From a practical perspective, the study advances the existing traditional VSM practices of healthcare by integrating economic, environmental, and social dimensions. This integration allows healthcare organisations to align their lean practices not only with the needs of patients but also with those of other stakeholders. Furthermore, it supports reputation building by enabling healthcare organisations to improve their processes through sustainable operations and effective stakeholder engagement.

This study contributes to healthcare lean management practices by expanding the existing traditional VSM approach from a primary focus on efficiency to a broader emphasis on sustainability. However, the proposed expanded approach remains at the conceptual stage and has not yet been empirically tested in healthcare settings. Future research should therefore focus on empirically testing and validating the multidimensional metrics presented in this study through real-world case studies in the healthcare sector. Specifically, these metrics could be applied in selected healthcare organisations with lean management programs to assess their effectiveness in achieving economic, environmental, and social sustainability. Additionally, integrating digital technologies with sustainable VSM to enhance data collection, sharing, utilisation, and other capabilities represents a promising research avenue for advancing both lean management and sustainability in healthcare.

Acknowledgements

Azemeraw Tadesse Mengistu, Anna Tiso, Roberto Panizzolo, and Chiara Verbano gratefully acknowledge funding from Next Generation EU, in the context of the National Recovery and Resilience Plan, Investment PE8 – Project Age-It: "Ageing Well in an Ageing Society" [DM 1557 11.10.2022]. The views and opinions expressed are only those of the authors and do not necessarily reflect those of the European Union or the European Commission. Neither the European Union nor the European Commission can be held responsible for them.

Ethics declaration: Ethical approval was not required for this study, as it relied on a literature review and did not involve primary data.

AI declaration: In writing this paper, the authors used generative AI to improve grammar and sentence structure. The generated content carefully reviewed and edited to ensure its accuracy, relevance, and alignment with the objectives of the study. The authors take full responsibility for the final content of the paper.

References

- Costa, L.B.M., Filho, M.G., Rentes, A.F., Bertani, T.M. and Mardegan, R. (2017) "Lean healthcare in developing countries: evidence from Brazilian hospitals", *The International Journal of Health Planning and Management*, Vol. 32, No. 1, pp. e99-e120. <https://doi.org/10.1002/hpm.2331>
- Cruz, J.P., Balay-Odao, E.M., Almazan, J.U., Manabat, A., Smagulova, M., Kavashev, Z., Gusmanov, A., Syzdykova, A., Dauletkaliyeva, Z., Seidakhmetova, A. and Colet, P.C. (2024) "Perspectives of healthcare practitioners on environmental sustainability in healthcare: A qualitative study", *Journal of Advanced Nursing*, in press. <https://doi.org/10.1111/jan.16327>

- Ersson, A., Beckman, A., Jarl, J. and Borell, J. (2018) "Effects of a multifaceted intervention QI program to improve ICU performance", *BMC Health Services Research*, Vol. 18, No. 1, pp. 838. <https://doi.org/10.1186/s12913-018-3648-y>
- Faulkner, W. and Badurdeen, F. (2014) "Sustainable Value Stream Mapping (Sus-VSM): Methodology to visualize and assess manufacturing sustainability performance", *Journal of Cleaner Production*, Vol. 85, pp. 8-18. <https://doi.org/10.1016/j.jclepro.2014.05.042>
- Freeman, R.E. (1984) *Strategic Management: A Stakeholder Approach*, Pitman, London.
- Gitlow, H., "Amy" Zuo, Q., Ullmann, S.G., Zambrana, D., Campo, R.E., Lubarsky, D. and Birnbach, D.J. (2013) "The causes of never events in hospitals", *International Journal of Lean Six Sigma*, Vol. 4, No. 3, pp. 338-344. <https://doi.org/10.1108/IJLSS-03-2013-0016>
- Hirsch, G. (2019) "Leaping Together Toward Sustainable, Patient-Centered Innovation: The Value of a Multistakeholder Safe Haven for Accelerating System Change", *Clinical Pharmacology & Therapeutics*, Vol. 105, No. 4, pp. 798-801. <https://doi.org/10.1002/cpt.1237>
- Hsieh, H.-F. and Shannon, S.E. (2005) "Three Approaches to Qualitative Content Analysis", *Qualitative Health Research*, Vol. 15, No. 9, pp. 1277-1288. <https://doi.org/10.1177/1049732305276687>
- Lee, J.K.Y., Gholami, H., Saman, M.Z.M., Ngadiman, N.H.a.B., Zakuan, N., Mahmood, S. and Omain, S.Z. (2021) "Sustainability-Oriented Application of Value Stream Mapping: A Review and Classification", *IEEE Access*, Vol. 9, pp. 68414-68434. <https://doi.org/10.1109/ACCESS.2021.3077570>
- Lummus, R.R., J., V.R. and And Rodeghiero, B. (2006) "Improving Quality through Value Stream Mapping: A Case Study of a Physician's Clinic", *Total Quality Management & Business Excellence*, Vol. 17, No. 8, pp. 1063-1075. <https://doi.org/10.1080/14783360600748091>
- Marin-Garcia, J.A., Vidal-Carreras, P.I. and Garcia-Sabater, J.J. (2021) "The Role of Value Stream Mapping in Healthcare Services: A Scoping Review", *International Journal of Environmental Research and Public Health*, Vol. 18, No. 3, pp. 951. <https://doi.org/10.3390/ijerph18030951>
- Martinez, D.A., Tsalatsanis, A., Yalcin, A., Zayas-Castro, J.L. and Djulbegovic, B. (2016) "Activating clinical trials: a process improvement approach", *Trials*, Vol. 17, No. 1, pp. 106. <https://doi.org/10.1186/s13063-016-1227-2>
- Mengistu, A.T., Dieste, M., Panizzolo, R. and Biazzo, S. (2024) "Sustainable product design factors: A comprehensive analysis", *Journal of Cleaner Production*, Vol. 463, pp. 142260. <https://doi.org/10.1016/j.jclepro.2024.142260>
- Morell-Santandreu, O., Santandreu-Mascarell, C. and García-Sabater, J. (2020) "Sustainability and Kaizen: Business Model Trends in Healthcare", *Sustainability*, Vol. 12, pp. 10622. <https://doi.org/10.3390/su122410622>
- Nowak, M., Pfaff, H. and Karbach, U. (2017) "Does Value Stream Mapping affect the structure, process, and outcome quality in care facilities? A systematic review", *Systematic Reviews*, Vol. 6, No. 1, pp. 170. <https://doi.org/10.1186/s13643-017-0563-y>
- Reis, L.P., Fernandes, J.M., Silva, S.E. and Andreosi, C.a.D.C. (2023) "Managing inpatient bed setup: an action-research approach using lean technical practices and lean social practices", *Journal of Health Organization and Management*, Vol. 37, No. 2, pp. 213-235. <https://doi.org/10.1108/JHOM-09-2021-0365>
- Rother, M. and Shook, J. (1999) *Learning to See: Value Stream Mapping to Add Value and Eliminate Muda*, Lean Enterprise Institute, Brookline.
- Sheehan, J.R., Lyons, B. and Holt, F. (2021) "The use of Lean Methodology to reduce personal protective equipment wastage in children undergoing congenital cardiac surgery, during the COVID-19 pandemic", *Pediatric Anesthesia*, Vol. 31, No. 2, pp. 213-220. <https://doi.org/10.1111/pan.14102>
- Tiso, A., Crema, M. and Verbano, C. (2021) "A framework to guide the implementation of lean management in emergency department", *Journal of Health Organization and Management*, Vol. 35, No. 9, pp. 315-337. <https://doi.org/10.1108/JHOM-01-2021-0035>
- Vergunst, F., Berry, H.L., Rugkåsa, J., Burns, T., Molodynski, A. and Maughan, D.L. (2020) "Applying the triple bottom line of sustainability to healthcare research—a feasibility study", *International Journal for Quality in Health Care*, Vol. 32, No. 1, pp. 48-53. <https://doi.org/10.1093/intqhc/mzz049>
- Zhu, X.Y., Zhang, H. and Jiang, Z.G. (2020) "Application of green-modified value stream mapping to integrate and implement lean and green practices: A case study", *International Journal of Computer Integrated Manufacturing*, Vol. 33, No. 7, pp. 716-731. <https://doi.org/10.1080/0951192X.2019.1667028>

Corporate Governance and Risk Management: Cash Flow Indicators in Credit Risk Prediction

Suzi Mikulić¹ and Nikola Škobić²

¹Profin Consulting Ltd, Široki Brijeg, Bosnia and Herzegovina

²Faculty of Economics, University of Mostar, Bosnia and Herzegovina

suzi.mikulic@gmail.com

nikola.skobic@ef.sum.ba

Abstract: Credit risk management and its prediction are critical to the success of any organisation, as bad debts—a major source of credit risk—can lead to significant financial difficulties. While the issue of credit risk is prevalent in banks and the financial sector, it is also relevant for companies in non-financial sectors. Nevertheless, the prediction of credit risk in non-financial companies remains an under-researched area in the literature. The mandatory application of the international accounting standard IFRS 9 in 2018, which requires the estimation of expected credit losses in non-financial companies as well, highlights the need for reliable predictive indicators for both financial reporting and internal risk management, which is a key principle of effective corporate governance. This study examines the role of cash flow-based indicators in complementing traditional accrual-based measures in assessing and predicting credit risk from the perspective of companies managing their receivables. Using a sample of large non-financial companies over a five-year period, statistical analysis was performed with logistic regression in SAS Enterprise Miner. The results indicate that several cash flow indicators have explanatory value for fluctuations in credit risk, but are insufficient on their own for predictive modelling. The findings suggest that cash flow indicators should be integrated with other financial and non-financial measures to enhance credit risk assessment models, supporting better decision-making and overall corporate governance practices.

Keywords: Corporate governance, Credit risk management, Cash flow indicators, Credit risk prediction, Non-Financial companies

1. Introduction

Analysing corporate performance using financial indicators is an integral part of decision-making and risk management in companies (Iswahyudi et al, 2023). According to the OECD Guidelines on Corporate Governance (2023), timely and accurate financial information is necessary not only for transparency and accountability to stakeholders, but also for effective risk management, which protects a company's long-term stability. Among these risks, credit risk—defined as the probability that a company will not collect its receivables within the agreed terms, potentially leading to financial losses (Wojcicka-Wojtowicz, 2018; Oyetola et al, 2023) plays a particularly important role in non-financial companies, where sales on deferred payment terms are common. In practice, a common measure used by non-financial companies to monitor trade receivables is days sales outstanding (DSO), which reflects the average time taken to collect receivables. As a static, backward-looking indicator, DSO alone cannot capture the full spectrum of credit risk exposure and is most effective when complemented by additional financial indicators (Siekelova et al, 2017).

Most previous research on credit risk determinants has focused on banks, due to their long-standing development and use of credit risk models under Basel regulations. In recent years, reporting requirements for non-financial companies have also evolved. With the mandatory application of IFRS 9 in 2018, the accounting treatment of receivables in non-financial companies adopted a forward-looking approach, recognising expected credit losses (ECL) that may arise from credit risk or the non-collection of receivables. This treatment has become more closely aligned with Basel banking risk practices. Baesens and Smedts (2025) highlight that lessons from bank risk management provide a valuable basis for informative and proactive reporting, bridging risk management and financial management functions.

A review of the existing literature reveals a significant gap regarding the determinants of credit risk in business-to-business transactions among non-financial companies. Interest in this area has increased following IFRS 9, which defines two approaches for estimating ECL: the simplified approach, based on historical loss rates and does not take changes in credit risk into account, and the general approach, based on the probability of default (PD). In this study the general approach (PD approach) is particularly relevant, as it assesses the level of credit risk. According to Hladika et al (2017) PD measures a customer's risk exposure and estimates potential losses over a year in case of default.

Following the above and taking into account the limited availability of studies on cash flow indicators in non-financial companies, which are less frequently analysed than accrual-based measures (Bhandari, 2019; Litvinenko & Alver, 2023; Alvi et al, 2024; Litvinenko, 2024), the purpose of this study is to investigate whether,

and to what extent, cash flow-based indicators influence credit risk assessment in non-financial companies. While accrual-based measures dominate credit risk research in banks, recent studies highlight the potential complementary role of cash flow indicators. Findings are mixed: some show that cash flow measures better capture companies' ability to meet obligations (Zeller & Stanko, 1994; Litvinenko & Alver, 2023; Seretidou et al, 2025), while others report limited predictive power unless combined with accrual ratios (Gupta et al, 2013; Piatti, 2014). Despite these insights, there is still certain gap in research. Therefore, the study is guided by the following research questions:

RQ1: Do cash flow indicators have informational value in explaining credit risk in non-financial companies?

RQ2: Do cash flow indicators have predictive power in the evaluation of credit risk models in non-financial companies?

By addressing these questions, the study clarifies the role of cash flow indicators in both explaining and predicting credit risk in non-financial companies, contributing to the limited literature in this area. Although the primary purpose of this study is to analyse credit risk from the perspective of companies managing their receivables in business to business transactions, the findings are also relevant for financial reporting, as IFRS 9 explicitly links accounting standards to proactive risk management.

2. Literature Review

Traditionally, credit risk research has focused on banks, where standard credit risk models have been developed based on accrual accounting indicators derived from financial statement analysis (Benos & Papanastasopoulos, 2007; Nehrebecka, 2015; Wali, 2018). In recent years, these models have been extended to incorporate qualitative information about debtors, alongside traditional financial ratios (Grebenar 2018; Ganbat et al, 2021; Cetin et al, 2023; Nayak 2024). Cash flow indicators, although they are direct monetary financial measures, have been incorporated less frequently in such models compared to accrual-based measures (Karas & Reznakova, 2020; Litvinenko 2023; Litvinenko & Alver, 2023). One of the reasons why cash flow-based indicators are less represented in analyses, models, and academic research compared to accrual-based indicators is that the requirement to prepare cash flow statements was introduced by the Financial Accounting Standards Board (FASB) only in 1987. In contrast the development of accrual-based indicators dates back to the late nineteenth century, when banks began to require financial statements for lending purposes. Even today, many companies, such as micro and small enterprises, are not required to prepare cash flow statements.

The literature offers divergent findings on the role of cash flow indicators in credit risk modelling. Zeller and Stanko (1994), in their study of U.S. non-financial retail companies, conclude that cash flow-based indicators provide a more accurate measure of a firm's capacity to meet obligations than accrual-based ratios. Karas and Reznakova (2020) argue that accrual-based measures are susceptible to manipulation, potentially distorting a company's true performance, whereas insolvency and financial distress more directly arise from insufficient cash flow. They therefore emphasise the predictive reliability of cash-based indicators, particularly operating cash flow. In contrast, Gupta et al (2013), using a UK based non-financial SME sample, find that although operating cash flow indicators have discriminatory power, they do not improve the predictive accuracy of default models beyond accrual-based ratios. Kamal and Quader (2010; 2011) also caution against positioning cash flow ratios as superior to accrual-based indicators, instead suggesting a complementary approach in which both sets of measures provide distinct but valuable information.

Several studies highlight the benefits of integrated approaches. Piatti (2014), in a study of Italian non-financial SMEs, shows that cash flow ratios alone lack predictive strength in assessing creditworthiness but become more important when used in combination with other financial ratios. Bhandari et al (2019), testing financial failure models based on accrual and cash-based indicators, find that the strongest predictive power comes from a combined model using both accrual-based (current ratio, net return on assets) and cash-based ratios (cash coverage of current and total liabilities).

More recent contributions seek to address this imbalance. Litvinenko (2023) compares accrual-based and cash-based models, noting that the former dominate the literature while the latter remain less common, despite their potential. Building on this, Litvinenko and Alver (2023) develop a modified cash flow-based credit risk model to better assess credit risk, default probability, and pre-insolvency status. Their findings show that the cash-based credit risk model provides sufficient visibility of a company's likelihood of default. Seretidou et al (2025), in a systematic analysis of 21 studies across various industries and regions, found that cash flow ratios generally outperform traditional financial ratios in predicting financial distress and highlight their potential to enhance credit risk assessment, as distressed firms are more likely to default.

3. Research Methodology

The aim of this study is to determine whether cash-based indicators have explanatory and predictive power in assessing the credit risk of non-financial companies, expressed by the probability of default (PD). By performing regression analyses, it is possible to describe and understand the relationships between observed phenomena, but also to predict the value of the dependent variable based on the known values of one or more independent variables (Ault et al, 2025). In this particular case, the influence of several independent variables, cash-based indicators, on the dependent variable, i.e. the probability of default (credit risk), is observed. Accordingly, the analytical model of the study can be represented as follows:

$$PD = f(CFI, CCLib, CCTLib, CCInt, QPro, CInv, CFin, CRoa, CRoe, FCF I, FCF II)$$

Where: PD-Probability of default; CFI-Cash flow indicators (CCLib, CCTLib, CCInt, QPro, CInv, CFin, CRoa, CRoe, FCF I, FCF II).

For the empirical data analysis, logistic regression was used, which has been applied in numerous previous studies related to the banking sector (Streitenberger & Miloš Sprčić 2011; Grebenar 2018; Nehrebecka 2019). Data processing was carried out in SAS Enterprise Miner.

3.1 Data Collection and Sample

The study was conducted on a sample of large companies from three main non-financial sectors in Bosnia and Herzegovina (B&H): manufacturing, trade (wholesale and retail), and construction, covering the period from 2015 to 2019, that is, prior to the emergence of macroeconomic imbalances in 2020, which continue to this day. This period provides a good basis for the type of research to be conducted in this paper because: (1) studies on factors influencing credit risk in non-financial companies are underrepresented and (2) the research was conducted in a stable period that was not affected by macroeconomic fluctuations that could bias the interpretation of the results. The sample includes large companies from the entire territory of B&H and covers all administrative units. The classification of companies by size was based on the criteria prescribed in the applicable accounting laws in B&H during the study period. A company was categorised as large if it met at least two of the following criteria: more than 250 employees, a balance sheet total of more than EUR 2 million and an annual turnover of more than EUR 4 million. The number of large companies included in the sample per year was as follows: 2015 = 939; 2016 = 955; 2017 = 966; 2018 = 979; 2019 = 1,017. The total number of large companies in the entire non-financial sector at B&H level was between 1,198 and 1,294: 2015 = 1,198; 2016 = 1,221; 2017 = 1,234; 2018 = 1,251; 2019 = 1,294. These figures show that the companies included in the sample represent almost 80 % (78.35 %) of all large companies in the non-financial sector, which confirms the representativeness of the sample. The total number of observation units during the study period was 4,828. The financial indicators required for the research, are taken from the L.R.C. Ltd. Sarajevo database.

3.2 Dependent Variable

The probability of default (PD) is the dependent variable in this study. It is a key component in credit risk modelling that is essential for determining the amount of expected credit losses under the general approach of IFRS 9, which is based on risk categories. PD is defined as the estimated probability that a default will occur within a certain period of time. It is expressed as a probability, where 0 means no default risk and 1 means a default (Nordgren & Göransson, 2018).

According to the rules for credit (banking) institutions (Regulation (EU) No 575/2013), a debtor is considered to be in default if they are more than 90 days overdue on a credit obligation. Several previous studies on the determinants of credit risk at banks have categorised debtors based on this criterion (Jović, 2017; Grebenar, 2018; Nordgren & Göransson, 2018; Nehrebecka, 2019). In the non-financial sector in B&H, the statutory payment period for obligations between companies is up to 60 days (Law in the Federation of B&H, 2016; Law in the Republic of Srpska, 2018). The timely settlement of obligations is a key criterion for categorising exposures into risk categories (Streitenberger & Miloš Sprčić, 2011). Accordingly, the companies in the sample are categorised as follows: 0-companies that settle their liabilities within 60 days and 1-companies that settle their liabilities after 60 days. This binary categorisation meets the requirements of logistic regression, in which the dependent variable must be strictly dichotomous, i.e. it can only assume binary values of 0 or 1 (Anderson et al, 2011).

3.3 Independent Variables

This study uses the cash flow indicators systematised and presented by Carslaw & Mills in 1991. They laid the foundation for the wider use of these indicators in academic research and for their application in business analysis in practice. In addition, two free cash flow indicators, as presented in the study by Gulin & Hladika (2018), are analysed. The indicators and their calculation methods are listed in the table below.

Table 1: Overview of cash flow indicators included in the research

Symbol	Indicator Name	Formula
CFI_CCInt	Interest coverage ratio ¹	CFO/Interest
CFI_CCLib	Cash coverage of current liabilities ¹	CFO/Current liabilities
CFI_CCTLib	Cash coverage of total liabilities ¹	CFO/Total liabilities
CFI_QPro	Earnings quality ¹	CFO/Operating profit
CFI_CInv	Investment indicator ¹	CFI/CFF
CFI_CFin	Financing indicator ¹	CFI/CFO+CFF
CFI_CRoA	Cash return on total assets ¹	(CFO + interest + tax) /Total assets
CFI_CRoce	Cash return on capital and liabilities ¹	CFO/(Equity + Liabilities)
CFI_CRoE	Cash return on equity ¹	CFO/Equity
CFI_FCF I	Free cash flow I ²	CFO - CE
CFI_FCF II	Free cash flow II ²	CFO + CFI

Note. Abbreviations used in the table are as follows: CFO-cash flow from operations; CFI-cash flow from investing activities; CFF-cash flow from financing activities; CE-capital expenditures. Source: ¹Žager et al (2017, p. 304-310); ²Gulin & Hladika (2018, p. 110).

4. Research Results and Discussion

4.1 Descriptive Statistics Results

During the study period, almost half of the companies observed (mean of 434.60 or 45.01%) did not settle their obligations within the legally prescribed 60-day period, while an average of 531 companies or 54.99% settled their obligations to other companies within 60 days (Table 2).

Table 2: Descriptive statistics - results for the dependent variable

Variable	Mean	Std Dev	Median	Skewness	Kurtosis
0	531	40.55243	525	0.38709	-1.66425
1	434.6	12.66096	435	-0.45335	-1.10259

Note. Abbreviations used in the table are as follows: Std Dev: standard deviation.

The results of the descriptive statistics for the independent variables are shown in Tables 3 and 4. It can be seen that some indicators have high values for skewness and kurtosis, which indicates the presence of extreme values (outliers). Logistic regression models can be sensitive to such asymmetries and outliers, as these conditions can lead to biased parameter estimates. Winsorisation was therefore used as a suitable transformation technique. The extreme values (outliers) were replaced by the values corresponding to the 1st and 99th percentile of the respective distributions (see Table 4).

Table 3: Descriptive statistics - results for the independent variables

Variable	Mean	Std Dev	Skewness	Kurtosis
CFI_CCInt	13713.99	216811.74	32.9688537	1264.26
CFI_CCLib	0.5100898	2.0401074	9.6818754	393.6876999
CFI_CCTLib	0.4163739	1.6482997	20.9214410	688.9451455
CFI_QPro	0.7900150	48.0763361	3.4428921	522.7399837
CFI_CInv	-2252.65	121844.08	-48.7252756	2729.39
CFI_CFin	-0.5099392	13.1080908	23.8421450	1095.69
CFI_CRo	0.1076756	0.1659395	2.0791854	41.2532194
CFI_CFin	0.0913901	0.1625811	2.0922993	44.1710361
CFI_CRo	925.1415214	22256.34	25.9916463	816.1548371
CFI_CRo	963030.97	7014598.98	-2.6670534	119.9890120
CFI_CRo	3390384.15	12739775.28	7.9934492	139.9631016
CFI_CRo				
CFI_CF_I				
CFI_CF_II				

Note. Abbreviations used in the table are as follows: Std Dev: standard deviation.

Table 4: Descriptive statistics - results for transformed variables

Variable	Mean	Std Dev	Skewness	Kurtosis
REP_CFI_CCLib	0.4659478	0.9325866	3.0543251	12.6430419
REP_CFI_CCTLib	0.3659089	0.7535143	3.8968609	18.8588223
REP_CFI_CCInt	6782.49	37401.20	7.5021036	58.1127406
REP_CFI_CFin	-0.7265959	1.4661230	0.8363093	13.8908859
REP_CFI_CInv	-0.1429381	19.1504173	-2.9174861	29.4957804
REP_CFI_CRo	119.3178172	430.8328858	4.4459347	24.4150680
REP_CFI_CF_II	3148256.83	6922384.27	3.7290742	18.1115113
REP_CFI_CRo	0.1072728	0.1408080	0.6572948	3.0572514
REP_CFI_CRo	0.0910216	0.1382331	0.5806808	3.2295247
REP_CFI_CRo	1.0478567	5.8644243	1.2273275	17.5785580
REP_CFI_QPro	1035613.01	3724255.31	1.9713518	11.3565604
REP_CFI_CF_I				

Note. Abbreviations used in the table are as follows: REP: variables transformed through winsorisation; Std Dev: standard deviation.

From the data presented, it can be seen that the skewness and kurtosis coefficients are significantly lower after the variable transformation and approach a normal distribution.

4.2 Logistic Regression Results

Table 5 shows the results of the logistic analyses, sorted by descending Gini coefficient (Somers' D). The Gini coefficient is a measure of the inequality of distribution and is used as an indicator in various contexts, including for the assessment of model suitability in predictive analytics. In practice, an acceptable level of model discriminatory power implies Gini coefficient values greater than 0.4 (Grebenar, 2018, cited in Baesens et al, 2016).

Table 5: Results of logistic analyses ranked by descending Gini coefficient (Somers' D)

Variable	Somers' D	Estimate	Wald Chi-Square	Pr > Chi-Square
REP_CFI_CCLib*	0.228	-0.4965	106.7824	<.0001
REP_CFI_CCTLib*	0.228	-0.6888	101.9547	<.0001
REP_CFI_CCInt*	0.154	-3.25E-6	10.5175	0.0012
REP_CFI_CRoA*	0.102	-1.0177	18.7187	<.0001
REP_CFI_CRoce*	0.094	-0.9487	15.7640	<.0001
REP_CFI_CF I**	0.058	-1.6E-8	3.2946	0.0695
REP_CFI_CFin	0.030	-0.0130	0.3422	0.5585
REP_CFI_CRoE	0.028	-0.00002	0.0801	0.7772
REP_CFI_QPro	0.002	0.00264	0.2277	0.6332
REP_CFI_CF II	-0.022	5.09E-10	0.0118	0.9136
REP_CFI_CInv	-0.076	0.000098	0.0034	0.9538

Note. * - significant at the 5 % level; ** significant at the 10 % level.

Based on the data presented, it can be concluded that five of the eleven observed cash flow indicators are statistically significantly associated with the probability of default in non-financial companies at the 5 % significance level ($p < 0.05$), with several showing very strong significance ($p < 0.0001$). These indicators are: CFI_CCLib; CFI_CCTLib; CFI_CCInt; CFI_CRoA and CFI_CRoce. In addition, one indicator is associated with a significance level of 10 %, namely CFI_CF I.

The findings of this study provide valuable insights into the role of cash flow indicators in credit risk assessment for non-financial companies in Bosnia and Herzegovina. The results show that six of the eleven observed cash flow indicators are significantly associated with credit risk. This suggests that cash flow indicators have information value in explaining fluctuations in credit risk for companies in the non-financial sectors and therefore provide an answer to the first research question.

The second research question in this paper assumes that cash flow indicators have predictive power in assessing the probability of default, i.e. credit risk in non-financial companies. According to the data presented and based on the Gini coefficient, none of the observed cash flow indicators have a satisfactory predictive power for the probability of default when used in stand-alone models. The value is less than 0.4 for all variables. The findings are consistent with those of Gupta et al (2013) and Piatti (2014), who conclude that, although cash flow ratios demonstrate discriminatory ability, do not have satisfactory predictive power in stand-alone models.

Accordingly, the results of this study suggest that, although cash flow indicators on their own lack robust predictive capacity, their explanatory power suggests that they should not be ignored when developing models to predict credit risk when combined with other indicators. This aligns with Bhandari et al (2019), who demonstrated that the strongest predictive power is achieved when accrual-based and cash flow indicators are combined. More broadly, these findings support recent calls in the literature (Litvinenko & Alver, 2023; Seretidou et al, 2025) to integrate cash flow measures into credit risk modelling, not as substitutes but as complements that enhance the comprehensiveness and robustness of default prediction frameworks.

5. Conclusion

Although cash flow indicators are not widely used in academic research, this study demonstrates that they provide valuable informative and explanatory value. The empirical analysis, conducted over a five-year period on a sample of 939 to 1017 large non-financial companies in Bosnia and Herzegovina, showed that indicators such as liquidity coverage of current liabilities, total liabilities and interest as well as liquidity return on total assets and liquidity return on capital and liabilities have informational value in explaining fluctuations in credit risk. On the other hand, their individual predictive power could not be proven. However, this does not mean that these indicators should be completely excluded from further analysis, especially when developing combined models with other variables.

This study contributes to the existing literature and improves the understanding of the impact of cash flow indicators on credit risk in non-financial companies. The number of available studies on the determinants of credit risk in non-financial companies remains limited compared to the extensive research focusing on banks.

Therefore, this study provides a solid basis for future research, especially because the results were obtained in a period of economic stability and using the international accounting standard IAS 39, which was replaced by IFRS 9 in 2018. From a broader perspective, exploring all factors that improve informed decision making is very important for effective corporate governance that is aligned with long-term sustainability goals. Therefore, the development of credit risk assessment models that incorporate all relevant information is essential, as only measurable factors can be properly analysed, monitored and managed.

This study has several limitations. The first limitation is that the analysis covers the pre-crisis period from 2015 to 2019. Future studies should therefore include the period from 2020 onwards to enable a comparative analysis of the findings of this study. The second limitation is that only large companies were included, so the conclusions may not be transferable to small and medium-sized enterprises (SMEs), whose characteristics and financial behaviour may differ significantly. The third limitation is that the method used is a univariate logistic regression analysis, which has limited ability to account for interactions between multiple variables. In future studies, it would be advantageous to expand the sample to include SMEs and to apply multivariate analysis approaches. The inclusion of additional data, such as accrual-based financial indicators and relevant non-financial information, could further improve the understanding of the determinants of credit risk in non-financial companies.

Ethics declaration: Ethical approval was not required for this research as it was based solely on publicly available financial and corporate governance data. The study did not involve human participants, personal data, or experimental procedures.

AI declaration: AI tools were not used in the preparation of this study.

References

- Alvi, J., Arif, I., & Nizam, K. (2024) "Advancing Financial Resilience: A Systematic Review of Default Prediction Models and Future Directions in Credit Risk Management", *Heliyon*, e39770.
- Anderson, D.R., Sweeney, D.J. and Williams, T.A. (2011) *Statistics for Business and Economics*. 11th ed. Mason, USA: South-Western, Cengage Learning.
- Ault, S. V., Nam Liao, S., and Musolino, L. (2025) *Principles of Data Science*. Houston, Texas, USA: OpenStax, Rice University.
- Baesens, B., and Smedts, K. (2025) "Boosting credit risk models", *The British Accounting Review*, 57(4), Article 101241, pp. 1-19.
- Baesens, B., Roesch, D. and Scheule, H. (2016) *Credit Risk Analytics: Measurement Techniques, Applications, and Examples in SAS*. Hoboken, New Jersey, USA: John Wiley & Sons Inc.
- Benos, A., & Papanastasopoulos, G. (2007) "Extending the Merton Model: A hybrid approach to assessing credit quality", *Mathematical and Computer Modelling*, 46(1-2), pp. 47-68.
- Bhandari, S., Showers, V., and Johnson-Snyder, A. (2019) "A comparison: accrual versus cash flow based financial measures' performance in predicting business failure", *Journal of Accounting and Finance*, 19(6), pp. 11-25.
- Carslaw, C. and Mills, J. (1991) "Developing ratios for effective cash flow statement analysis", *Journal of Accountancy*, Vol. 172 No. 5, pp. 63-70.
- Cetin, A. I., Cetin, A. E., and Ahmed, S. E. (2023) "The Impact of Non-Financial and Financial Variables on Credit Decisions for Service Companies in Turkey", *Journal of Risk and Financial Management*, 16(11), 487.
- European Parliament and Council (2013) "Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012", *Official Journal of the European Union*, L 176, pp. 1-337.
- Ganbat, M., Batbaatar, E., Bazarragchaa, G., Ider, T., Gantumur, E., Dashkhorol, L., Altantsatsralt, K., Nemekh, M., Dashdondog, E., and Namsrai, O. E. (2021) "Effect of Psychological Factors on Credit Risk: A Case Study of the Microlending Service in Mongolia", *Behavioral Sciences*, 11(4), 47.
- Grebenar, T. (2018) "Behavioral model for assessing the probability of default events and rating of non-financial companies (Bihevioralni model procjene vjerojatnosti nastanka događaja neispunjavanja obveza i rejting nefinancijskih poduzeća)", *Research I-53, Croatian National Bank*, available at: <https://www.hnb.hr/documents/20182/2259329/i-053.pdf> (accessed 10 March 2025).
- Gulin, D. and Hladika, M. (2018) "Cash flow statement for 2017 (Izvještaj o novčanim tokovima za 2017. godinu)", *Accounting and Finance*, No. 1, pp. 104-113.
- Gupta, J., Wilson, N., Gregoriou, A. and Healy, J. (2013) "The value of operating cash flow in modelling credit risk for SMEs", *Applied Financial Economics*, Vol. 24.
- Hladika, M., Matovina, H. and Perčević, H. (2017) *Accounting for Financial Instruments (Računovodstvo financijskih instrumenata)*, Zagreb, Croatia: HZRIF.
- Iswahyudi, A., Faisol, F., Akbar, A., and Wati, S. M. (2023) "Effectiveness of Risk Management on a Company's Financial Performance: Study of Meta Analysis", *Journal of Business Management and Economic Development*, 1, pp. 366–378.
- Jović, Ž. (2017) "Analysis of the determinants of credit risk under conditions of pronounced information asymmetry: a case study of the banking sector in the Republic of Serbia (Analiza determinanti kreditnog rizika u uslovima izražene

- informacione asimetrije: primer bankarskog sektora Republike Srbije)", PhD thesis, Faculty of Economics, Belgrade, Serbia.
- Kamal, M.M. and Quader, M.S. (2010) "Cash flow ratio versus traditional ratio for financial measure of management: a comparative analysis of three British retail companies", *The Cost and Management*, Vol. 38 No. 6, pp. 39-41.
- Kamal, M.M. and Quader, M.S. (2011) "Cash flow ratio versus traditional ratio for financial measure of management: a comparative analysis of three British retail companies", *The Cost and Management*, Vol. 39 No. 1, pp. 29-34.
- Karas, M. and Reznakova, M. (2020) "Cash flows indicators in the prediction of financial distress", *Engineering Economics*, Vol. 31, pp. 525-535.
- Law on Deadlines for the Execution of Monetary Obligations in Business Transactions in the Republic of Srpska (2018) "Official Gazette of RS", No. 31/18.
- Law on Financial Operations in the Federation of Bosnia and Herzegovina (2016) "Official Gazette of the Federation of BiH", No. 48/16.
- Litvinenko, A. (2023) "A comparative analysis of Altman's Z-score and T. Jury's cash-based credit risk models with the application to the production company and the data for the years 2016–2022", *Accounting and Management Information Systems*, 22(3), pp. 518-553.
- Litvinenko, A. (2024) "Using combined accrual and cash ratio analysis to determine pre-bankruptcy status", *Accounting and Management Information Systems*, 23(4), pp. 826-869.
- Litvinenko, A., and Alver, J. (2023) "Cash-based credit risk model based on Timothy Jury's template: Review and modification with application to manufacturing company (2016-2022)", *Journal of Accounting and Management Information Systems*, 22.
- Nayak, S. (2024) "Developing Predictive Models for Financial Stability: Integrating Behavioral Analytics into Credit Risk Management", *Journal of Artificial Intelligence & Cloud Computing*, 3(5), pp. 2-10.
- Nehrbecka, N. (2015) "Approach to the assessment of credit risk for nonfinancial corporations. Evidence from Poland", in Bank for International Settlements (ed.), *Combining micro and macro data for financial stability analysis*, Vol. 41, IFC Bulletins, pp. 1-21.
- Nehrbecka, N. (2019) "Credit risk measurement: evidence of concentration risk in Polish banks' credit exposures", *Proceedings of the Faculty of Economics in Rijeka*, Vol. 37 No. 2, pp. 681–712.
- Nordgren, E. and Göransson, C. (2018) "Modelling probability of default in the Nordics", Lund University Publications, Sweden, available at: <https://lup.lub.lu.se/luur/download?func=downloadFile&recordId=8947985&fileId=8947997> (accessed 10 March 2025).
- OECD (2023) "G20/OECD principles of corporate governance 2023", OECD Publishing, Paris, <https://doi.org/10.1787/ed750b30-en>.
- Oyetola, O., Madugba, J., Oladipo, A., Omolara, A. and Godwin, A. (2023) "Credit risk and its management in the banks: a conceptual review", *Journal of International Money Banking and Finance*, Vol. 4, pp. 23-32.
- Piatti, D. (2014) "Operating cash flow and creditworthiness assessment", *Academy of Accounting and Financial Studies Journal*, 18(1).
- Seretidou, D., Billios, D. and Stavropoulos, A. (2025) "Integrative analysis of traditional and cash flow financial ratios: insights from a systematic comparative review", *Risks*, Vol. 13 No. 4, Article 62, <https://doi.org/10.3390/risks13040062>.
- Siekelova, A., Klietnik, T., Svabova, L., and Androniceanu, A. (2017) "Receivables management: The importance of financial indicators in assessing the creditworthiness", *Polish Journal of Management Studies*, 15(2), pp. 217-228.
- Streitenberger, M. and Miloš Sprčić, D. (2011) "Predictive ability of financial ratios in forecasting loan repayment delays (Prediktivna sposobnost finansijskih pokazatelja u predviđanju kašnjenja u otplati kredita)", *Economic Review*, Vol. 62 No. 7–8, pp. 383-403.
- Wali, R.M. (2018) "Analysis of Financial Ratios and Credit Risk Ratings in the Banking Industry: Insights and Findings", *Journal of Business and Economic Options*, 1(2), pp. 52-59.
- Wojcicka-Wojtowicz, A. (2018) "Credit risk management in finance – a review of various approaches", *Operations Research and Decisions*, Vol. 28 No. 4, pp. 99-106.
- Žager, K., Mamić Sačer, I., Sever Mališ, S., Ježovita, A. and Žager, L. (2017) *Analysis of Financial Statements: Principles-Procedures-Cases (Analiza finansijskih izvještaja: načela-postupci-slučajevi)*, 3rd revised and expanded ed., Zagreb, Croatia: HZRF.
- Zeller, T.L. and Stanko, B.B. (1994) "Operating cash flow ratios measure a retail firm's ability to pay", *Journal of Applied Business Research*, Vol. 10 No. 4, pp. 51-59.

Transforming Health Service Competencies in Remote Regions: Lessons from Lithuania's Public Health Reform

Birute Mockeviciene, Ilona Mulerenkiene, Romalda Kasiliauskiene and Natalja Istomina

Mykolas Romeris University, Vilnius, Lithuania

birute.mockeviciene@mruni.eu

ilo.mule@mruni.eu

rom.kasi@mruni.eu

natalja.istomina@mruni.eu

Abstract: In Lithuania, the year 2024 has been identified as a pivotal moment for healthcare reform, which encompasses two primary objectives: implementing a proactive public health policy and enhancing the accessibility, quality, and efficiency of healthcare through the restructuring of the service delivery network. This reform is essential for remote regions, where demographic shifts have modified service requirements. Certain services, such as midwifery, have diminished, while others, including elderly nursing care, require reestablishment. Adapting to these reforms has disrupted competencies, underscoring their importance as a critical area for regional development, particularly in enhancing new resources. By analysing the public health reform in Lithuania through the lens of remote regions, it becomes possible to identify specific strategies and practices that can be applied both nationally and internationally. The study aims to highlight shifts in the emerging needs of healthcare personnel's competencies in remote regional areas, particularly during the national healthcare system's structural transformations, and their capacity to achieve the reform goal of delivering top-quality health services based on transformative competencies. The study uses qualitative interviews to identify the competencies health professionals lack following the establishment of new Primary Health Care Centres. The study revealed that while clinical and professional competencies related to legal and clinical responsibilities are easier to adopt from a technical standpoint, competencies like leadership, collaboration, and patient involvement pose greater challenges, leading to community stress. The acquisition of these competencies requires long-term investment in staff development, emotional support, and clear change management. Moreover, the new structure of health centers and newly introduced work processes may increase employees' emotional exhaustion, stress, or even the risk of burnout if adequate support or training is not provided.

Keywords: Health service, Competencies, Remote regions, Lithuania, Reform

1. Introduction

The management of the healthcare system is a crucial aspect of any society, as the most sensitive dimensions of society—namely, the quality of life, well-being, and social welfare—are contingent upon the effectiveness with which the system is administered (Jerdikova et al., 2020). Governments are continually reforming the healthcare system to address the evolving needs of citizens across the globe (Tenbensel, 2023). This ongoing process is a response to emerging challenges, such as the COVID-19 pandemic and demographic changes, and seeks to develop innovative solutions (Norkienė, Petrauskienė & Norkutė-Macijauskė, 2019).

In Lithuania, the year 2024 has been identified as a pivotal moment for healthcare reform, initiated at 2020, which encompasses two primary objectives: implementing a proactive public health policy and enhancing the accessibility, quality, and efficiency of healthcare through the restructuring of the service delivery network. To achieve this objective, these areas of reform are to be addressed (Meeting of the Committee on Health Affairs of the Parliament of the Republic of Lithuania, 6 September 2023). These areas include:

- Determine the location of institutions so that the system is prepared to respond to the challenges and threats that arise as a result.
- Create a basic package of healthcare services in municipalities, integrating primary and secondary outpatient and day healthcare services, and involving public health offices in activities.
- Optimize inpatient active treatment services (secondary and tertiary healthcare) in order to reduce their use and transform them into high-quality and safe outpatient and day healthcare services.
- Centralize the organization of emergency medical services so that residents receive timely and high-quality life-saving and protective services.
- Create a long-term care model and network in municipalities (communities).

This reform is essential for remote regions, where demographic shifts have modified service requirements. Certain services, such as midwifery, have diminished, while others, including elderly nursing care, require reestablishment. Adapting to these reforms has disrupted competencies, underscoring their importance as a critical area for regional development, particularly in enhancing new resources. The competences of the

institution manager, specialists and other staff will undoubtedly play a major role in ensuring the effective implementation of change and the quality of services in healthcare settings (Restivo et al., 2022). The personal qualities and professional competences of the manager are the most frequently highlighted factors in the scientific literature as determinants of the success of change (Errida & Lotfi, 2021). According to these researchers, the personal and professional competences of the manager are most often associated with the barriers to the implementation of organisational changes. Implementing change in an organisation, managing it, and detecting the phenomena of resistance to change is an important task for managers at all levels of an organisation in order to implement change (Dambrauskienė, 2021).

The reform launched in Lithuania involves restructuring healthcare institutions across regions, encompassing a package of healthcare services that integrates primary and secondary outpatient care as well as day care services and public health offices, including private facilities. This initiative will significantly impact the skills of healthcare managers and specialists. The new mechanisms for integrating personal healthcare services are likely to cause tensions among the integrated institutions, specialists, and processes as they seek effective solutions while clarifying roles and responsibilities among staff. Structural change in organizations is not an easy process and is often resisted by a large number of employees. Innovations also require a new approach to work processes. As a result, employees implementing changes or participating in changes have all sorts of internal feelings and attitudinal differences about the benefits of change (Kolbergytė, 2022). When there is a high level of emotional and psychological tension in an organization, the manager becomes a key instrument to help normalize the psychological climate and move towards implementing change and ensuring service quality (De Klerk, 2019). Therefore, in the context of the transformation of the healthcare network and in order to ensure the quality of services, it is essential to highlight the transformation of the competences of the managers and specialists of healthcare institutions (Jerdiakova et al., 2020).

The study aim is to highlight shifts in the emerging needs of the competencies of healthcare personnel in remote regional areas throughout the structural transformations of the national healthcare system and their capacity based on transformative competencies to achieve the reform goal of delivering top-quality health services.

To achieve this aim, it is foreseen to find out what competences health care professionals are lacking in the region as a result of the establishment of new Primary Health Centres and to identify the main problems and challenges in order to provide the highest possible quality of services.

A study on the transformation of competencies in remote areas will provide a deeper understanding of how the roles of healthcare professionals are changing, what new functions and responsibilities they are taking on, and how these changes affect the quality and accessibility of services. Such research will also help to assess how the impact of the reform manifests in different regional contexts.

The structure of the paper is as follows. We will explore the major global trends that influence the health care competencies needed. We will also present our research approach, including the interview method used and the respondents involved, together with a short description of the questionnaire. Afterwards, we will discuss what the interview findings reveal about how health care personnel in the region view their competencies and how these perceptions are shaped by emerging political attitudes. Finally, we will summarise the key findings in the conclusions section.

2. Literature Review

The theoretical background relates to the existing competence-based health care management that forms the foundation for research on transformative competencies in the health care sector. It encompasses clinical, social, and managerial skills necessary for implementing reforms in a health care system and emphasises evidence-based practice in medicine, diagnostic skills, and patient-centred care.

2.1 Transformative Competencies (Leadership)

As Daly & Jackson (2020) pointed out, flexible and empathetic leadership is needed to maintain trust during reforms. Gifford et al. (2018) highlight that transformational leadership, which includes setting a clear vision, motivating and empowering staff, is associated with greater staff engagement and adaptability to policy changes and better service outcomes. Understanding health policy requires strategic thinking, which involves the ability to set a long-term vision, plan for the future, assess potential changes and align the organization's actions with the objectives of health systems (Leggat, 2020). Researchers Seljemo et al. (2020) argue that transformational leadership contributes significantly to the creation of a patient safety culture, helps to strike

a balance between work challenges and resources, and improves employees' perception of safety. The researchers also emphasize that transformational leadership strengthens employee motivation and gives them a sense of authentic control, encouraging innovative behaviour (Bektas et al., 2025). The literature also emphasizes that transformational leadership promotes interdisciplinary collaboration, helps overcome professional barriers, and strengthens a patient-centred approach and team culture (Chivaka, 2024). In a reform environment, health professionals need to learn new skills quickly and have the opportunity to experiment, make mistakes and improve yourself (Berwick, 2020). Weick & Sutcliffe (2015) stress the importance of continuous readiness for change, which requires not only personal adaptability but also organizational support: leadership, training and psychological safety.

2.2 Transformative Competencies (Teamwork, Collaboration)

Interprofessional teamwork is essential for the holistic treatment of the patient; therefore, the interprofessional context of treatment becomes an important factor. Reeves et al. (2018) highlight that effective collaboration between professionals reduces treatment errors, length of hospital stay, burnout among professionals, improves patient outcomes and satisfaction with the healthcare system. However, according to the authors, such practices only work when they are supported at the organisational and cultural level. A culture of teamwork not only promotes professional satisfaction but also requires a clear division of roles, open communication and mutual trust (Reeves et al., 2018). In addition, research shows that involving patients and their families in decision-making enhances collaboration and improves the quality of care (Karam et al., 2021).

2.3 Transformative Competencies (Patient Safety)

In modern medicine, evidence-based practice has become one of the most important standards of clinical care, combining three key elements: high-quality clinical test results, a physician's clinical expertise, as well as a patient's values and expectations (Greenhalgh et al., 2022). Greenhalgh et al. (2022) state that evidence-based medicine should not be understood as the strict application of guidelines without context. At the same time, they present a new approach called 'sensemaking', which requires physicians not only to be aware of the evidence, but also to be able to apply it to each individual patient, taking into account his or her clinical, cultural, and social environment.

2.4 Transformative Competencies (Mental Health Recognition)

In modern medicine, not only the biological treatment of the patient is important, but also the patient's psychological and social context. Patient-centred care is based on empathy, respect for the patient's values and shared decision-making practices. Empathy, according to Lee et al. (2022), is not limited to the doctor-patient interaction. Empathy and compassion are therefore considered to be one of the most important factors in improving clinical outcomes for patients. Through patient-centred care, as recognising and respecting patients' cultural, religious and linguistic differences is an important part of a global society. Cultural competence, as Tervalon & Murray-Garcia (1998) argue, is evolving into cultural humility, and encourages health professionals not to consider themselves as experts in all cultures, but to continuously learn from patients and to reflect on their own biases.

2.5 Transformative Competencies (Nursing)

The reform focuses on reducing inpatient services, improving service accessibility, individualizing patient care, and improving patients' quality of life. According to Carnahan et al. (2017), outpatient care allows patients to receive the services they need after inpatient treatment, ensuring a smooth recovery process and reducing the risk of repeat hospitalizations. Home-based services are particularly important for older people, those with chronic illnesses, or those with mobility difficulties. Nurses often become important sources of psychological support for patients and their families.

2.6 Transformative Competencies (Digital)

It is hard to imagine a modern health system without the use of technology. Researchers emphasize that healthcare leaders can strengthen decision-making, promote team coordination, and improve patient outcomes by implementing measures such as EHR, telemedicine, and AI. Inclusive leadership—characterized by fairness, accessibility, and appreciation—also contributes to better outcomes (Khusheim, 2025).

Researchers Alanazi (2022) emphasize that digital leadership in modern healthcare management encompasses the following key aspects: digital literacy, communication with patients, and time and workload as barriers—these are the core competencies of digital leadership.

Electronic Health Records have become an essential tool in clinical practice. Nguyen et al. (2022) highlight that a properly implemented EHR system speeds up decision-making, improves access to patient data, and reduces the risk of errors. However, Kellermann & Jones (2020) also present new challenges, such as data security threats. According to Intes et.al. (2024), the majority of patients are positive about distant medical consultations, but there are problems with the availability of the technology in remote regions. Ethical challenges in healthcare arise in relation to informed consent, privacy and patient autonomy. Beauchamp & Childress (2019) propose four key principles of bioethics: autonomy, beneficence, non-maleficence and justice. The protection of personal data has become particularly important with digital technologies. In the European Union, the General Data Protection Regulation (2018) obliges healthcare institutions to ensure data security.

In summary, the advancement of the healthcare sector in response to patient requirements for high-quality healthcare services necessitates a complex integration of diverse competencies. Accordingly, any new reform within the sector must aim to preserve existing competencies and enhance them in accordance with global trends WHO (2021), integrating clinical, managerial, and cross-sectoral skills. This approach should address patient safety concerns, cultivate a robust organizational culture, encourage learning from errors, and implement systematic risk management.

3. Methodology

Study Design. The Marijampolė geographical region, located in southwestern Lithuania, was selected for the study. The region comprises five municipalities with a population of 150,000 and 24 healthcare institutions of various sizes. A qualitative research method was chosen – semi-structured interviews. Healthcare professionals, heads of institutions, and local politicians shared their experiences regarding professional competencies, professional challenges, the impact of the reform on the community and the organisation. The questionnaire covers 5 competency areas, which include 6 domains: leadership, teamwork and cooperation, nursing, mental health recognition, digital skills, and patient-centred care.

Sample. The study used a targeted sampling method combined with the snowball sampling principle to select participants from the study population in the Marijampolė region. The 22 interviews were selected primarily to encompass all five municipalities and to ensure the inclusion of at least one participant from each target group—doctor, nurse, local politician, and administrator—resulting in a total of 20 participants. An additional two were included to verify data saturation.

Data collection. Interviews with respondents were conducted from May 20, 2025, to May 29, 2025, on the Microsoft Teams platform at a time convenient for the respondents. During the interviews, with the consent of the participants, the conversations were audio recorded and transcribed using Microsoft software. The average duration of each interview was approximately 60 minutes. All participants were informed that their participation in the study was entirely voluntary and that they could withdraw at any time.

Data analysis. The audio recordings of the interviews conducted during Microsoft Teams meetings were transcribed using Microsoft software. All data obtained during this study were coded, and the names and surnames of the persons mentioned in the interviews were changed to ensure their confidentiality and anonymity. The interview transcripts were coded, and the codes were analysed by categorising them into research themes (transformative competence).

4. Findings

In the process of reforming the healthcare system, it is imperative to consider the evolution of competencies. As patient needs, technologies, and healthcare models undergo transformation, the role of specialists is increasingly becoming interdisciplinary and focused on collaboration. Consequently, traditional professional frameworks must be broadened to encompass new skills, including digital literacy, leadership, and community health management (The Ministry of Health of the Republic of Lithuania, 2023). Only through this approach can sustainable, effective, and patient-centred healthcare be achieved. Therefore, the objective was to identify the skills that healthcare professionals in the region currently lack, following the establishment of new health centres, and to ascertain the primary issues and challenges to ensure the provision of the highest quality and most accessible services.

4.1 The Content of Regional Health System Reform

The Ministry of Health of the Republic of Lithuania (n.d.) notes that the development of a network of health facilities based on a model of centres of excellence and cooperation has been driven by the following health system reasons:

- Poor health and healthcare consumption indicators of the Lithuanian population;
- Insufficient resilience of the healthcare system to threats and crises;
- Fragmentation of services: no integration of personal and public health care in municipalities;
- Insufficient access to and quality assurance of personal health care services and territorial disparities;
- Lack of efficiency and effectiveness of health services, problems of waiting lists for patients.

The network redesign aims to partially replace inpatient services with more efficient outpatient and day personal care services. This can be achieved by municipalities deciding on structural or network transformations to ensure that basic health care services are available to the population everywhere in the same way and in the same way in the territory where they live. Personal health care facilities in the municipality have entered into cooperation agreements with a public primary or secondary health care institution designated by the municipality to coordinate the provision of basic services to the municipality's population, involving private health care facilities.

4.2 Transformative Competencies (Collaboration)

Health centres aim to improve service coordination, but cooperation between institutions often faces challenges. This can cause overlapping services or gaps in coverage. The informant notes, "we have had to listen to the Ministry's position, analyse our situation, and we have probably always heard concerns that our public institutions under the municipality and private medical institutions are not in the same situation." And it is always easier for those municipalities where there are fewer private ones to allocate and share those functions, responsibilities, insights, follow-up, control activities." Another informant believes that there are no queues in private institutions to see doctors, but that the situation is more complicated in public institutions: "what we hear from the private ones is that everything is fine with them. Here we only have queues in big public institutions. Because if you ask them, there are no queues. Patients come to them here and now, so they show you the way you need to be shown. It's just that, as I say, we still have the same problem. <...> the queue is still bigger than the two weeks". There were also concerns that it was not clear how cooperation between agencies would work in a crisis situation, when specialists would have to be shared, "<...> what does it mean for our agency, what are we afraid of, that someone will ask for a loan of staff, and who will work for us in our agency then".

4.3 Transformative Competencies (Teamwork, Coordination)

The reform process of setting up health centres in municipalities has highlighted not only the lack of staff but also the lack of competences. These changes require a new approach to teamwork, *prevention, patient motivation and service coordination*. There is a lack of communication within the professional team itself (doctor + nurse + social worker + psychologist, etc.). Staff often lack the skills to effectively share responsibilities and cooperate with other professionals. In particular, communication between doctors and nurses needs to be addressed. According to the informant "the nurse is not so appreciated by doctors <...> we are doctors, you are just nurses and you have to have your place". As one informant noted, today managers need "<...> collaboration skills, management skills" because they constantly need to participate in meetings with other managers and find joint solutions".

The transformation has led to an increasing number of services focusing on mental health, but general practitioners often lack the knowledge to recognise or react appropriately to mental health disorders. As one informant put it, "<...> Patients come in all sorts of angry and aggressive. Other times it's just difficult to control the situation".

4.4 Transformative Competencies (Mental Health Recognition)

It should be noted that there are many older doctors and nurses working in healthcare institutions. As a result, some staff still have difficulties in using electronic systems. In addition, senior doctors, according to the informant, are "very slow to adopt and implement these innovations". Another informant confirms that older doctors today find it difficult "to change their attitude, to adopt new ways of working".

4.5 Transformative Competencies (Leadership)

The vast majority of respondents identified "leadership and crisis management competences, the ability to work in a team, and the ability to adapt to change" as today's priority competences. Other informants highlighted "communication with the patient, computer skills, quick orientation, the ability to distribute, to guide the patient in the right direction".

Today, informants identified "independent decision-making skills, critical thinking, competences in digital skills" as the most lacking skills for healthcare professionals.

4.6 Transformative Competencies (Digital)

Most health professionals have learnt to use eHealth, remote consultations (telephone, platforms). However, the vast majority of interviewees say that eHealth is often slow and stagnant. According to one informant, there is not yet successful integration between the registry centre system and the health facility system "it's like they are talking, but there are some places where they are not talking yet and <...> what we have in our system, we can't yet bring it into the eSystem". This undermines trust in digital technology and adds to the stress. Another informant expressed the view that "we hear from doctors really, really strongly, especially older doctors, concerns that, you know, we come as these administrators or secretaries, first they have to fill in the form and then they just have to see the patient". So "<...> we have, we have problems with the systems, and we think it's really safe to say that they're not perfect".

4.7 Transformative Competencies (Nursing)

Healthcare reform emphasises the importance of nursing, particularly outpatient home care as a key component of long-term care. Consequently, the national team of nurses, nursing assistants, and physical therapists delivering home services has been enlarged. Informants agreed this is significant for the region, but attracting specialists remains a major challenge.

4.8 Transformative Competencies (Patient Safety)

Health reform, including the creation of health centres, is not just about structural or financial changes, but also about better, safer and more humane healthcare. Health centres provide a range of services according to defined standards (e.g. preventive programmes, emergency care, coordinated treatment), monitor the progress of treatment, avoid errors (e.g. prescribing inappropriate medicines), and improve access to data among professionals. Informant expressed the opinion that "<...> safe and evidence-based supervision stems from the cornerstones of knowledge, the application of training in practice, and monitoring and reflection on control." By involving a wide range of professionals in the care of patients, this model avoids errors in one person's decisions. This was confirmed by the vast majority of informants.

5. Conclusions

Reform in the health sector not only changes the structures of institutions, but also requires new, transformational competencies. The study recorded the existing competencies of healthcare institution specialists and focused on new, transformational competencies. To effectively adapt to evolving patient needs, technological innovations, and the demand for interdisciplinary collaboration, the healthcare system must evolve the competencies of its specialists. Skills in digital technology, leadership, awareness of mental health issues, and the capability to work collaboratively in teams across various professional domains are becoming increasingly vital. A lack of collaboration and coordination impedes the progress of the reform. Although the establishment of health centres was aimed at enhancing coordination among institutions, frequent obstacles related to the sharing of information, responsibilities, and functions result in either duplication or a deficit of services. The inadequate involvement of municipalities in the decision-making process, along with ineffective communication with the Ministry of Health, erodes confidence in the reform and obstructs its seamless execution.

Acknowledgements

The study was conducted as part of the project "Reorganization of Marijampolė College to Ensure a High-Quality Study Process" (project No. 10-019-P-0002), which is **funded under** the 2021–2027 European Union investment program action measure.

Ethics declaration: Ethical clearance was deemed unnecessary for the research.

AI declaration: Artificial intelligence tools were not employed in any other aspect of the paper's creation; only Grammarly was utilised for editing the English language.

References

- Alanazi, A., T. (2022). Digital Leadership: Attributes of Modern Healthcare Leaders. DOI:10.7759/cureus.21969
- Beauchamp, T. L. & Childress, J. F. (2019). Principles of biomedical ethics (8th ed.). Oxford University Press.
- Bektas, G., Özcan, B., U. & Nal, M. (2025). The effect of transformational leadership on nurses' innovative behaviors: the mediating effect of psychological empowerment. *Bektaş et al. BMC Nursing* (2025) 24:684. <https://doi.org/10.1186/s12912-025-03467-1>
- Berwick, D. M. (2020). Choices for the "New Normal. *JAMA*, 323(21), 2125–2126. <https://doi.org/10.1001/jama.2020.6949>
- Carnahan, J. L., Slaven, J. E., Callahan, C. M., Tu, W., & Torke, A. M. (2017). Transitions From Skilled Nursing Facility to Home: The Relationship of Early Outpatient Care to Hospital Readmission. *Journal of the American Medical Directors Association*, 18(10), 853–859. <https://doi.org/10.1016/j.jamda.2017.04.010>
- Chivaka, R. (2024). From a Group of People to a Well-Functioning Team: A Transformative Leadership Model in Healthcare. Multidisciplinary Teamwork in Healthcare. Doi: 10.5772/intechopen.1005512
- Clarke, N. (2018). Relational leadership: Theory, practice and development. Routledge.
- Daly, J., Jackson, D., Anders, R., & Davidson, P. M. (2020). Who speaks for nursing? COVID-19 highlighting gaps in leadership. *Journal of Clinical Nursing*, 29(15–16), 2751–2752. <https://doi.org/10.1111/jocn.15305>
- Dambrauskienė, D. (2021). Pasidalytosios lyderystės kaip organizacinio pokyčio įgyvendinimas švietimo įstaigose: Daktaro disertacija. Šiauliai.
- De Klerk, J. J. (2019). Leading transitions in traumatically experienced change – a question of doing or being? *Journal of Organizational Change Management*, 32(3), 340–355. <https://doi.org/10.1108/JOCM-04-2017-0099>
- Errida, A. & Lotfi, B. (2021). The determinants of organizational change management success: Literature review and case study. *International Journal of Engineering Business Management*, 13, 1–15.
- Gifford, W. A., Squires, J. E., Angus, D. E., et al. (2018). Managerial leadership for research use in nursing and allied health care professions: A systematic review. *Implementation Science*, 13, 127. <https://doi.org/10.1186/s13012-018-0817-7>
- Greenhalgh, T., Fisman, D., Cane, D. J., et al. (2022). Adapt or die: How the pandemic made the shift from EBM to EBM+ more urgent. *BMJ Evidence-Based Medicine*, 27, 253–260.
- Greenhalgh, T., Thorne, S., & Malterud, K. (2018). Time to challenge the spurious hierarchy of systematic over narrative reviews? *European Journal of Clinical Investigation*, 48, e12931. <https://doi.org/10.1111/eci.12931>
- Intes, A., Susanti, R., Guilin, X., Nuraini, R., & Anurogo, D. (2024). Analysis of the use of telemedicine technology in emergency services. *Journal of World Future Medicine, Health and Nursing*, 2(3), 377–388. <https://doi.org/10.70177/health.v2i3.891>
- Jerdiakova, J., Mikaliūkštienė, A., Rabkovskaja, J., Žilinskienė, R., Kutkauskienė, J., & Davydenko, E. (2020). Dažniausiai pirminės asmens sveikatos priežiūros paslaugų kokybę lemiantys veiksniai. *Sveikatos mokslai / Health Sciences in Eastern Europe*, 30(1), 56–64. <https://doi.org/10.35988/sm-hs.2020.008>
- Karam, M., et al. (2021). Nursing care coordination for patients with complex needs in primary healthcare: A scoping review. *International Journal of Integrated Care*, 21(1), 16.
- Kellermann, A. L. & Jones, S. S. (2020). What it will take to achieve the as-yet-unfulfilled promises of health information technology. *Health Affairs*, 39(11), 1894–1901. <https://doi.org/10.1377/hlthaff.2020.00396>
- Kolbergytė, A. (2022). Vidurinės grandies vadovų saviugda organizacinių pokyčių kontekste: Monografija. Mykolo Romerio universitetas.
- Khusheim, L., H. (2025). Leveraging Digital Platforms and Leadership Inclusivity to Enhance Leadership Effectiveness and Patient Outcomes in Healthcare Organizations. *Healthcare* **2025**, 13(15), 1833; <https://doi.org/10.3390/healthcare13151833>
- Lee, M. H., & Jeon, M. K. (2022). Effects of compassion competence, role conflict, and job demands on nurses' geriatric nursing practice in long-term care hospitals. *The Korean Journal of Health Service Management*, 16(3), 39–50. <https://doi.org/10.12811/kshsm.2022.16.3.039>
- Leggat, S. G., Liang, Z., & Howard, P. F. (2020). Differentiating between average and high-performing public healthcare managers: Implications for public sector talent management. *Australian Health Review*, 44(3), 434–442. <https://doi.org/10.1071/AH19087>
- Lietuvos sveikatos apsaugos ministerija, Higienos instituto Sveikatos informacijos centras. (2023). Lietuvos sveikatos statistika. Vilnius.
- Lietuvos Respublikos sveikatos apsaugos ministerija. (n.d.). Kompetencijų centrų ir regioninio bendradarbiavimo modelių pagrįsto asmens sveikatos priežiūros įstaigų tinklo vystymas. <https://sam.lrv.lt/lt/veiklos-sritys/asmens-sveikatos-prieziura/kompetenciju-centru-ir-regioninio-bendradarbiavimo-modeliu-pagristos-asmens-sveikatos-prieziuros-istaigu-tinklo-vystymas/>
- Nguyen, D. C., et al. (2022). 6G Internet of Things: A comprehensive survey. *IEEE Internet of Things Journal*, 9, 359–383. <https://doi.org/10.1109/JIOT.2021.3103320>

- Norkienė, S., Petrauskienė, D., & Norkutė-Macijauskė, U. (2019). Pirminės asmens sveikatos priežiūros įstaigos veiklos gerinimas taikant atvejo vadybos modelį. *Sveikatos mokslai / Health Sciences in Eastern Europe*, 29(5), 81–89. <https://doi.org/10.35988/sm-hs.2019.086>
- Reeves, S., Xyrichis, A., & Zwarenstein, M. (2018). Teamwork, collaboration, coordination, and networking: Why we need to distinguish between different types of interprofessional practice. *Journal of Interprofessional Care*, 32(1), 1–3.
- Regulation (EU) 2018/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) (Text with EEA relevance). *Official Journal of the European Union*, L 119(1), 1–88. <https://eur-lex.europa.eu/eli/reg/2016/679/oj>
- Restivo, V., Minutolo, G., Battaglini, A., et al. (2022). Leadership effectiveness in healthcare settings: A systematic review and meta-analysis of cross-sectional and before–after studies. *International Journal of Environmental Research and Public Health*, 19(17), 10995. <https://doi.org/10.3390/ijerph191710995>
- Seljemo, C., Viksveen, P. & Ree, E. (2020). The role of transformational leadership, job demands and job resources for patient safety culture in Norwegian nursing homes: a cross-sectional study. Seljemo et al. *BMC Health Services Research* (2020) 20:799. <https://doi.org/10.1186/s12913-020-05671-y>
- Sveikatos apsaugos ministerija. (2023). Sveikatos priežiūros įstaigų reforma: didės paslaugų apimtys, prieinamumas ir kokybė. https://sam.lrv.lt/lt/news/sveikatos-prieziuros-istaigu-reforma-dides-paslaugu-apimtys-prieinamumas-ir-kokybe/?utm_source=chatgpt.com
- Tenbenschel, T. (2023). Health reforms across the world: are they heading in the same direction, and how much change can we expect? *Research in Health Services & Regions* (2023) 2:10 <https://doi.org/10.1007/s43999-023-00024-8>
- Tervalon, M., & Murray-García, J. (1998). Cultural humility versus cultural competence: A critical distinction in defining physician training outcomes in multicultural education. *Journal of Health Care for the Poor and Underserved*, 9(2), 117–125. <https://doi.org/10.1353/hpu.2010.0233>
- Weick, K. E., & Sutcliffe, K. M. (2015). *Managing the unexpected* (3rd ed.). John Wiley & Sons.
- World Health Organization. (2017). *Leading health system transformation to the next level*: Durham, United Kingdom, 12–13 July 2017. <https://iris.who.int/bitstream/handle/10665/345604/who-euro-2018-3040-42798-59722-eng.pdf>
- World Health Organization. (2021). *Global Patient Safety Action Plan 2021–2030*. <https://www.who.int/publications/i/item/9789240032705>

An Information System for a Small Agricultural Company Built on the Google Maps Platform

Marek Musil and František Smrčka

Department of Technical Studies, College of Polytechnics Jihlava, Czech Republic

marek.musil@vspj.cz (corresponding author)

smrcka@vspj.cz

Abstract: Planning crop production is a key factor in small agricultural companies or cooperatives. The company's arable land usually consists of a number of partial plots. It is essential that agronomists keep track of what is being grown in each plot and of the state of the plot. In addition, agronomists also need to be aware of the ongoing work activities of agricultural employees. Keeping a record of what has been and is being grown in plots and across the company's land is a complex problem. Existing software solutions are not suitable for small companies and the cost of the software and associated fees is also an important factor. Information systems have received considerable attention in recent years, and Google Maps Platform appears to be a suitable tool to solve the problem of crop production planning. Google Maps Platform is often discussed in scientific articles and has already been used in many areas to solve problems related to soil, land, maps, routing, to name a few. Although there are other solutions such as geographic information systems or cadastral maps, for example, Google Maps Platform can provide crucial information and it can be used also in mobile applications. We analysed the market for information systems designed for agricultural enterprises and contacted selected agricultural enterprises. The problem domain was identified by evaluating responses in a survey. In this article, Google Maps Platform and its current use is first introduced. The article draws on a set of scientific publications referring to Google Maps Platform. Considering the results of our survey in small agricultural companies, we solve the problem using Google Maps Platform and present a proposal for an information system. The design is illustrated by several diagrams. Finally, we discuss and show how Google Maps Platform can help solve the identified problem of crop production planning in small agricultural companies. Our information system provides managerial reports and it can be easily extended with a mobile application.

Keywords: Agriculture, Google Maps Platform, ICT, Information system, MANAGEMENT, CROP production, Planning

1. Introduction

Planning crop production has a major impact on the operation of an agricultural company. Small businesses, in particular, are struggling to remain profitable and are looking for a way to effectively manage their crop production planning agenda. Typically, the company's arable land usually consists of a number of partial plots. For effective management, it is essential that agronomists keep track of what is currently being grown in each plot and of the state of the plot. In addition, agronomists also need to be aware of the ongoing work activities of agricultural employees. Keeping track of what has been and is being grown in each plot - and across the entire agricultural area (the company's land) - represents a complex challenge. Existing software solutions are not suitable for small companies and the costs of purchasing the software and any associated fees represent a significant barrier.

Agricultural companies need to have an effective and affordable tool for planning crop production. It is important for management to be aware of what is sown in each field and what state the field is in. In addition to crop tracking, managers and agronomists need to know the history of the field, what chemicals were used in the field, be informed of the condition of agricultural machinery and its use, and keep track of the ongoing work activities of employees. To address these challenges, an information system using Google Maps Platform could help agricultural companies in planning crop production. Although there are other solutions such as geographic information systems or cadastral maps, for example, Google Maps Platform can provide crucial information and it can be used also in mobile applications.

We deal with the problem of planning crop production in a small agricultural company. We conducted an analysis of the market for information systems designed for agricultural enterprises and contacted selected agricultural enterprises. The problem domain was identified by evaluating responses in a survey. In this article, we first introduce Google Maps Platform and its current use. The article draws on a set of scientific publications referring to Google Maps Platform. Considering the results of our survey in small agricultural companies, we solve the problem using Google Maps Platform and propose a simple information system using Google Maps Platform for planning crop production. This information system will be primarily used for agricultural companies or small farmers.

2. Problem Statement

We cooperate with a small agricultural company (Druzstvo Vysocina in the Vysocina Region, the Czech Republic) and we identified key problems in planning crop production in this small company. The effective production planning has a major impact on the company's operation and profit. Considering the company's profitability, the company cannot afford to purchase expensive software and operate this robust, complex system, i.e. to pay regular license fees. This company actually uses the software Excel and records the planning crop production on the company's arable land consisting of a number of smaller plots in Excel documents, tables etc. The current solution appears completely unsatisfactory.

2.1 Questionnaire

This paper focuses on crop production planning, with particular emphasis on small agricultural enterprises. The work was inspired by the practical experience of Tomas Hubeny, who subsequently addressed this topic in his bachelor's thesis (Hubeny, 2022). The main objective is to understand how crop production planning is organized within companies and how this activity is documented. To investigate this issue, we contacted five selected small agricultural enterprises in the region to inquire about their crop production planning processes.

The data were collected through face-to-face interviews, or by phone where necessary. Respondents were asked the following questions.

The questionnaire:

- How do you plan crop production?
- How do you record field history (e.g., sowing, chemical treatments, etc.)?
- Do you use any information system (software) to simplify your work?
- How do you evaluate crop production and employee work activities?
- How are employees informed about their tasks, and how do they know on which field the task should be carried out? Can mistakes occur?

In one company, we obtained several valuable practical insights. In the remaining enterprises, however, the inquiry was not successful—respondents were either unsure or unable to answer the questions. Based on the collected information, we note that crop production planning is typically carried out either in paper form or using simple digital tools such as Excel or Word. Specialized IT systems are not used, primarily due to their high cost, excessive complexity, and lack of user-friendliness for small-scale agricultural operations.

Despite the limited success of the inquiry, we were still able to gather valuable insights that were subsequently used in the design of the information system. It should be noted that the survey itself is not the focus of this article. Rather, the aim is to present the developed information system and highlight its key functionalities for crop production planning.

2.2 Existing Solutions

In order to solve this problem, we conducted an analysis of the market for information systems designed for agricultural enterprises. We contacted selected agricultural enterprises in the area (the Vysocina Region) and asked whether they use any information system to facilitate their work. We found that e.g. the WinFAS information system from WinFAS software s.r.o. is used in the region. Several other systems, namely from BM servis, s.r.o., Softbit Software, s.r.o., and Asseco Solutions, were found on the Internet. Although the systems mentioned have positive reviews, they are not suitable for small agricultural companies. These applications (software) are also very robust and many functions (provided by these applications) will not be used by agronomists. Costs of the software and other license fees are also an important factor. These applications are not free and therefore are not affordable for small companies.

The problem domain has been identified. The agronomists need to be aware of what is sown in each field and what state the field is in. The existing solution using Excel spreadsheets is no longer satisfactory. We have verified that agricultural enterprises require an information system tailored to their specific needs, rather than one overloaded with unused features.

3. Materials and Methods

Our proposal: The solution is to create an information system with a web/mobile application and to use the technology of Google Maps Platform. Other additional information related to the company's arable land

(consisting of partial plots) could be received by using Geographic Information Systems (GIS) and cadastral map data.

The importance of information systems: In today's era of information technology development, an information system is becoming a given in almost every company. It makes a lot of work easier with administration and work organization, it is clearer and can be viewed by anyone who gets access and given permissions. In the past, it was mostly accessible only from computers that were connected to a given network.

Various ICT technologies have been used for solving production problems. In recent years, we presented several innovative ICT solutions, e.g. for integration of the disabled on the labour market (Smrčka et al., 2022), improving the task administration in a production company (Musil and Smrčka, 2023), and the Dobrometr application as a tool for quantifying the economic value of volunteering (Smrčka et al., 2024).

Google Maps Platform: Google Maps are available at <https://www.google.com/maps>. To present Google Maps Platform, we use a bachelor thesis (Dohnal, 2025).

3.1 Google Maps Platform

"Google Maps Platform is a Google product that allows developers to integrate Google Maps into their pages, retrieve data from Google Maps, simple use or extensive customization. Previously known as Google Maps, it has now been updated to Google Maps Platform." (Basarsoft, @1997–2024)

Dohnal (2025) summarizes that the Google Maps Platform is a set of APIs and SDKs developed by Google that allows developers to implement Google Maps (known as Google Maps) and its components into their mobile and web applications. The platform functions are available via the Google Maps API (Application Programming Interface). Google Maps Platform functions are used through Google Maps Platform API.

Currently, the Google Maps Platform offers a wide range of various API and SDK, which are divided into four basic categories. Each category provides API and SDK that facilitate the development of applications in a given area. For the presentation, the mentioned APIs are described in detail.

- *Maps* – provide functions for displaying and drawing on maps, various geographical data on area, altitude, etc. They include the Aerial View API, Maps Elevation API, and Maps SDK for Android.
- *Routes* – allow the use of Google navigation services to calculate the fastest or shortest routes, routes between two points with a stop at another point, etc. It contains only one API, the Routes API.
- *Places* – facilitate development when working with specific places on maps. They include the Address Validation API, Places API, and Time Zone API.
- *Environment* – is a relatively new category. It contains one API, the Pollen API.

3.2 Usage of Google Maps Platform

Google Maps Platform has been widely used for several years in a number of areas and in solving particular problems. Google Maps Platform has been used for geometric delimitation of the area, especially in many areas where problems related to soil, land, maps, routing, to name a few, are solved. In this paper, we focus on agriculture, Google maps, and spatial search. Some examples of the platform's current use and its importance include, among others, the following: Map data has been used, for digital soil mapping (Padarian et al., 2015). Google Maps API is used for spatial search (Ganor, 2017), development of online map services (Hu and Dai, 2013), integration of city GIS data (Akanbi and Agunbiade, 2013), publication of land use information (Zhang et al., 2010), online mapping (Yousif and Ibrahim, 2023), (Hu, 2012), and in spatial analysis (Wang and Xu, 2011). Zhang et al. (2016) implement an API to manipulate agricultural data on mobile devices, Yousif and Ibrahim (2023) combine a map API and a database in an online mapping application. A significant area is geographic information systems (Li, 2011). Ozan Ozturk and Seker (2022) uses an API for road segmentation using deep learning. Google Maps API is also deployed in the field of artificial intelligence (Faridawaty et al., 2024), (Parvathi et al., 2025). Finally, a mobile application in connection with the Google Maps API is considered in (Hu et al., 2014; Rahmi et al., 2017; Nurwarsito and Savitri, 2018; Dores et al., 2020).

4. Proposed Solution

In our work, we need geometric delimitation areas, for which we use Google Maps Platform. We propose an information system with a web application. This paper does not focus on presenting the system architecture, but on illustrating the functions that address the identified issues and demonstrate the application of IT

technologies. The information system and its key functions are described and illustrated by the diagrams (use case diagram and data model) below. Functional requirements are as follows.

Functional requirements

- To select a partial plot from the company's arable land.
- To view history of seeding and spraying in the plot.
- To make entries in work logs and to evaluate the work activities of employees (farmers).
- To record a task in the plot, i.e. seeding, spraying and usage of farm fleet vehicles in the plot.
- To view chemistry used in the plot and to record usage of chemistry (spraying).

The system functions are visible in the use case diagram, see Figure 1. The relevant actors are the employee and the crop production manager. The use cases are detailed (discussed) below.

Detailed description of the use cases

- In case of a problem, the employee can send a request to the administrator using the helpdesk; if he is looking for details about a given field, he searches for the plot in the map section and displays the information using a clickable image map. He has the option to search for his assigned equipment and its details. He is also able to view information about the allotted work for a certain day and, after the work is completed, writes an entry in the work log.
- The crop production manager also has the option to manage the records of fields, warehouses, assigns work to his subordinate employees and views their work log.
- The workshop manager role differs in having the option of recording equipment, but does not have the ability to manage fields and warehouses.
- The administrator has several additional functions compared to the previous roles. The main function is user management, he also generates a new economic year before the start of the upcoming season and takes care of handling user requests in the helpdesk.

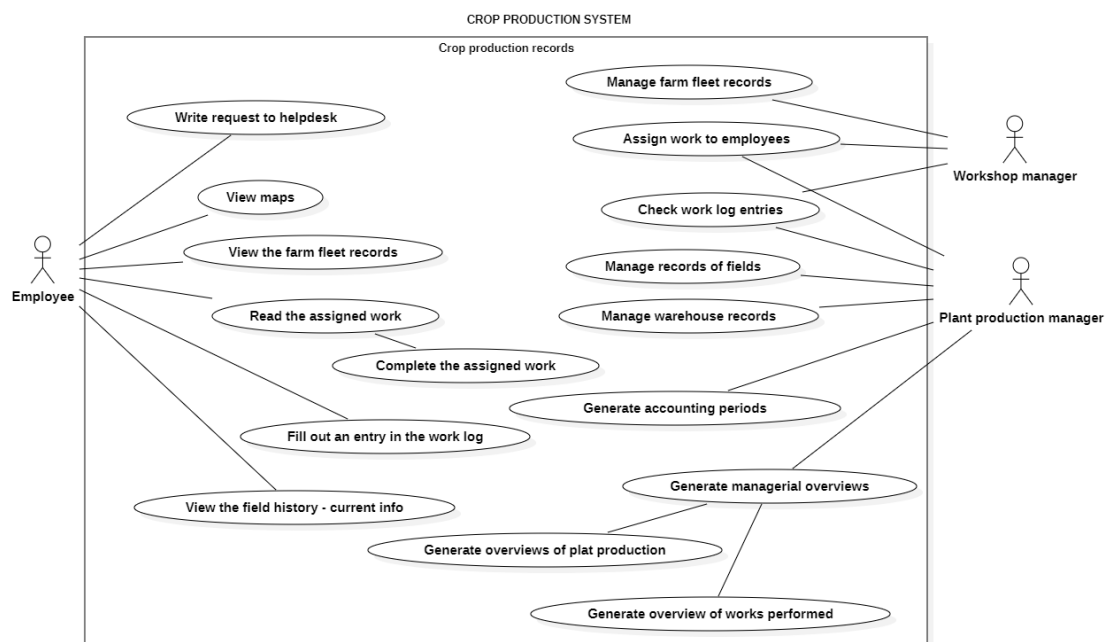


Figure 1: The use case diagram shows functional requirements

The simplified data model is shown in Figure 2. The model distinguishes types of operations linked to tasks and fields, representing a many-to-many (M:N) relationship. A task related to a plot is the main entity. It includes both *Seeding* and *Spraying*, or other agricultural activities related to the plot. The attribute *Date* is essential. A plot of the company's fields (the entity *Plot*) is determined by the unique identifier and the geographical delimitation (received from GIS and used in connection with Google Maps Platform) is essential for mapping. *Employee* is a farmer or an agronomist. Farmers perform the assigned tasks (i.e. seeding or spraying especially) and they also edit the assigned task. They enter/input particular (agricultural) activities related to the task and finally, they complete the task. Chemicals or fertilizers are taken from the company's warehouse and their using is recorded for the purpose of (crop production) managerial evaluation. Agronomists view the task and

they find out the history of seeding, spraying, using of chemicals and fertilizers of the plot. Our model also enables the use of agricultural machinery (*Farm fleet*).

Crop production planning is a major problem. Our model extends existing functionalities and it enables managerial effectiveness evaluations. It enables viewing the history, generating managerial overviews, evaluating of crop production, farmer performance evaluation and also the effectiveness of the usage of farmer fleet evaluation.

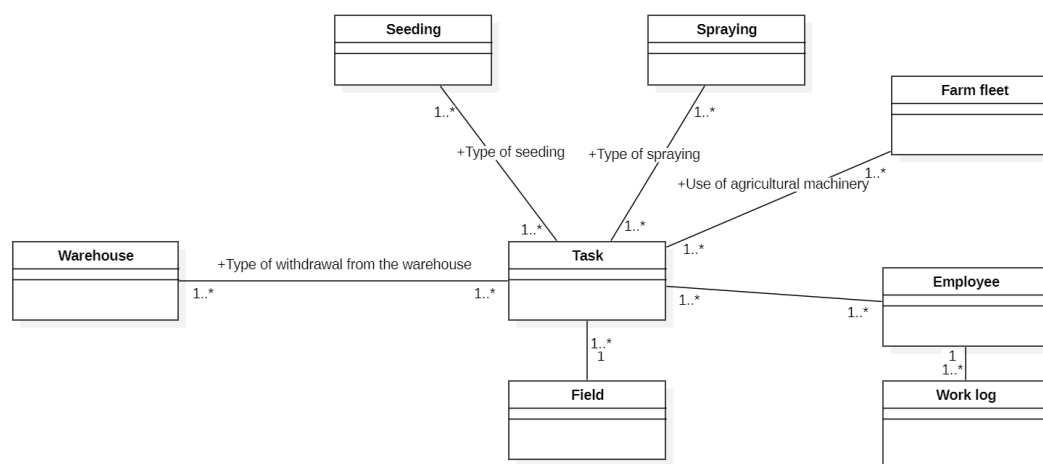


Figure 2: The high-level data model

User processes module: A login page with a functional design is displayed after logging into the system. The password is encrypted and the connection to the database is secured. The key function of the entire system is to display information about the field. After clicking on a field on the map, all information related to the given field is displayed, see Figure 3. A map module is created by downloading the current cadastral map of the selected municipality from the LPIS system. Geographic Information System is used for the geometric delineation of the plot.

Cadastral area Arnolec

Basic information:							
Cadastral number	2603/8	Field name	Suchý	The area	15:20	Sown crop	peas
Processing status:							
Date				Type			
14.10.2024				cultivation			
15.10.2024				sowing			
15.10.2024				chemical treatment			

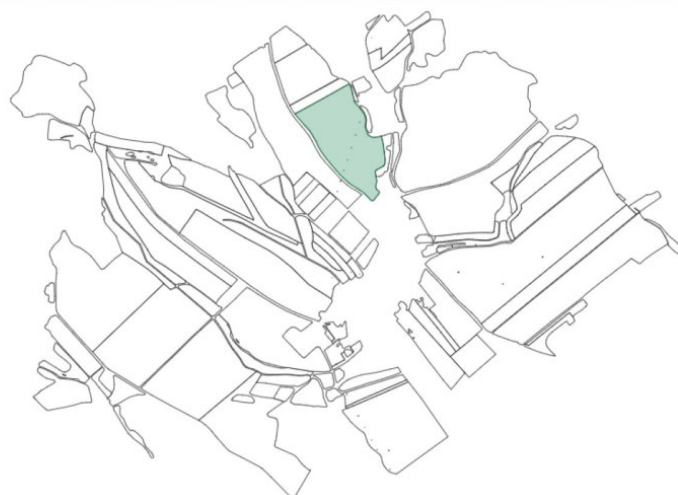


Figure 3: The maps module

5. Results

Available software solutions addressing the activities of agricultural enterprises were analyzed, and a survey conducted in selected companies helped identify the practical requirements of small agricultural businesses. An information system (web application) designed for smaller agricultural enterprises has been proposed. Its basis is field management, where information from the real estate cadastre will be available. The main function of the system is crop production management, where the agronomist records work in the fields. He records various tasks that have taken place in the field, as well as what items were used for this work. As an extension, the system offers several secondary functions: management of equipment, warehouses, employees, and a helpdesk. The system is implemented universally so that it can be used in other enterprises and perhaps it can be customized (to the needs of a specific agricultural enterprise). Our information system with web / mobile application uses Google Maps Platform.

Benefits provided by the system

- Simple and user-friendly interface.
- Offers only the necessary functions; it is not overly complex or bloated.
- Provides quick access to essential information about individual fields.
- Clear overview of each field — what is currently growing there, minimizing the risk of errors. Also shows the current status (e.g., ploughing, sowing, chemical treatments, etc.).
- Overview of employee work activities. By tracking the duration of task execution, it is possible to evaluate work efficiency.
- Helps with orientation — employees can easily identify the field assigned to them, reducing the risk of errors or field confusion.

The system's user-friendliness, its method of information delivery, and the selection of provided features all support improved efficiency in crop production planning.

The proposed information system enables management to quickly obtain an overview of the current status of individual fields and the activities being performed on them. By recording input usage and interventions, the system facilitates planning for future seasons and helps optimize operational costs. Monitoring employee activities allows for the evaluation of labour efficiency and more effective workforce organization. Precise tracking of inputs minimizes waste and enhances return on investment. Integration with Google Maps improves spatial orientation and reduces the risk of field-related confusion. The equipment and warehouse management module provides better control over assets and inventory. Digital records of activities simplify preparation for inspections and ensure compliance with regulatory requirements.

The system is designed to be universal and can be customized to meet the specific needs of individual enterprises. Web and mobile applications ensure access to information from any location, supporting flexibility and enabling faster, data-driven decision-making.

6. Discussion

Information systems for agricultural enterprises are relatively common these days. The research carried out showed that the functions of the individual systems are almost identical. They offer many functions for crop and livestock production, as well as for the administrative part of the enterprise. These functions will certainly be used by large companies with many employees and branches. These systems simplify their work and alleviate their concerns. The main disadvantage of the existing systems is the high purchase cost and the need to pay licenses. Smaller enterprises can also, of course, use advanced information systems, but they must consider the costs of licenses and possible labour costs. After consulting small enterprises, we concluded that these large systems are not a viable option for them, as many of the small enterprises do not even have livestock production and work only in the fields. The reality that a number of individuals in the enterprises are not familiar with modern trends in the sphere of ICT may also be an important factor. Moreover, information systems are often connected to mobile applications and this may not be feasible for many field workers. The proposal we are presenting has not been implemented. Our system has the potential to help small companies in crop production planning. It is easy to control and offers only basic necessary function related to the crop production planning.

Ethics and AI Declaration: Ethical clearance was not required for the research. No AI tools were used the creation of the paper.

References

- Akanbi, A.K., Agunbiade, O.Y. (2013) Integration of a city gis data with google map api and google earth api for a web based 3d geospatial application. URL: <https://arxiv.org/abs/1312.0130>, arXiv:1312.0130.
- Basarsoft, ©1997–2024. Google maps platform - what is google maps platform? <https://www.basarsoft.com.tr/en/google-maps-platform-api/>. [Online; accessed 10-January-2025].
- Dohnal, P. (2025) Využití google maps platform při tvorbě mobilních aplikací. Bachelor's thesis. Jihlava: College of Polytechnics Jihlava, Czech Republic. URL: <https://knihovna.vspj.cz/cs/bakalarske-prace/obhajene>.
- Dores, A., Irnawati, N., Meilina, P. (2020) Android based application using google maps api for tourism travel guide. International Review on Computers and Software (IRECOS) 15, 32. doi:10.15866/irecos.v15i2.17867.
- Faridawaty, Arnita, Dewi, S. (2024) Using a*algorithm and google maps api for web-based path optimisation public vehicles routes in medan city. Jurnal Penelitian Pendidikan IPA 10, 332–336. URL: <https://jppipa.unram.ac.id/index.php/jppipa/article/view/8388>, doi:10.29303/jppipa.v10iSpecialIssue.8388.
- Ganor, T. (2017) An integrated spatial search engine for maps and aerial photographs on a google maps api platform. Journal of Map & Geography Libraries 13, 175–197. URL: <https://doi.org/10.1080/15420353.2016.1277574>, doi:10.1080/15420353.2016.1277574, arXiv:<https://doi.org/10.1080/15420353.2016.1277574>.
- Hu, S. (2012) Online Map Service Using Google Maps API and Other JavaScript Libraries: An Open Source Method. Springer Berlin Heidelberg, Berlin, Heidelberg. pp. 265–278. URL: https://doi.org/10.1007/978-3-642-27485-5_17, doi:10.1007/978-3-642-27485-5_17.
- Hu, S., Dai, T. (2013) Online map application development using google maps api, sql database, and asp .net. International Journal of Information and Communication Technology Research 3.
- Hu, W.C., Kaabouch, N., Yang, H.J., Wang, X. (2014) Essential android technologies and google maps apis for location-based services, in: 47th Annual Midwest Instruction and Computing Symposium.
- Hubeny, T. (2022) Informační systém pro zemědělskou společnost. Bachelor's thesis. Jihlava: College of Polytechnics Jihlava, Czech Republic. URL: <https://knihovna.vspj.cz/cs/bakalarske-prace/obhajene>.
- Li, S. (2011) A method for building thematic map of gis based on google maps api, in: 2011 19th International Conference on Geoinformatics, pp. 1–4. doi:10.1109/GeoInformatics.2011.5980798.
- Musil, M., Smrčka, F. (2023) Increasing task administration efficiency by means of a customizable ict solution, in: Proceedings of the 19th European Conference on Management Leadership and Governance (305-312). London: Academic Conferences International Limited Curtis Farm, Kidmore End, Nr Reading, RG4 9AY, United Kingdom.
- Nurwarsito, H., Savitri, N. (2018) Development of mobile applications for posyandu administration services using google maps api geolocation tagging, in: 2018 International Conference on Sustainable Information Engineering and Technology (SIET), pp. 168–173. doi:10.1109/SIET.2018.8693170.
- Ozan Ozturk, Mustafa Serkan Isik, B.S., Seker, D.Z. (2022) Generation of istanbul road data set using google map api for deep learning-based segmentation. International Journal of Remote Sensing 43, 2793–2812. URL: <https://doi.org/10.1080/01431161.2022.2068989>, doi:10.1080/01431161.2022.2068989, arXiv:<https://doi.org/10.1080/01431161.2022.2068989>.
- Padarian, J., Minasny, B., McBratney, A. (2015) Using google's cloudbased platform for digital soil mapping. Computers & Geosciences 83, 80–88. URL: <https://www.sciencedirect.com/science/article/pii/S009830041530008X>, doi:<https://doi.org/10.1016/j.cageo.2015.06.023>.
- Parvathi, R., Pattabiraman, V., Shakthi, B. (2025) Patch. ai: Forest cover virtualization on digital maps using satellite imagery (google maps api), in: Recent Trends in Geospatial AI. IGI Global Scientific Publishing, pp. 137–154.
- Rahmi, A., Piarsa, I.N., Buana, P.W. (2017) Findoctor-interactive android clinic geographical information system using firebase and google maps api. International Journal of New Technology and Research 3, 263272.
- Smrčka, F., Musil, M., Chalupová, M., 2022. Management system for integration of the disabled on the labour market, in: European Conference on Management, Leadership & Governance, Academic Conferences International Limited. pp. 382–388.
- Smrčka, F., Musil, M., Dostálová, Z. (2024) The dobrometr application as a tool for quantifying the economic value of volunteering, in: Proceedings of the 20th European Conference on Management Leadership and Governance ECMLG2024 (539-545). Lisbon: Published by Academic Conferences International Limited Reading, UK, Academic Conferences International Limited. pp. 539–545.
- Wang, F., Xu, Y. (2011) Estimating o–d travel time matrix by google maps api: implementation, advantages, and implications. Annals of GIS 17, 199–209. URL: <https://doi.org/10.1080/19475683.2011.625977>, doi:10.1080/19475683.2011.625977, arXiv:<https://doi.org/10.1080/19475683.2011.625977>.
- Yousif, A.N., Ibrahim, H.M. (2023) Online destinations map using google maps api based on the private database. International Journal of Information Technology & Computer Engineering 3, 35–39. URL: <https://journal.hmjournals.com/index.php/IJITC/article/view/2648>, doi:10.55529/ijitc.35.35.39.
- Zhang, C., Sun, Z., Heo, G., Di, L., Lin, L. (2016) A geopackage implementation of common map api on google maps and openlayers to manipulate agricultural data on mobile devices, in: 2016 Fifth International Conference on Agro-Geoinformatics (Agro-Geoinformatics), pp. 1–4. doi:10.1109/Agro-Geoinformatics.2016.7577654.
- Zhang, H., Li, M., Chen, Z., Bao, Z., Huang, Q., Cai, D. (2010) Land use information release system based on google maps api and xml, in: 2010 18th International Conference on Geoinformatics, pp. 1–4. doi:10.1109/GEOINFORMATICS.2010.5567575.

A Study on Assessing Circular Economic Practices in the Construction Sector

Mona Noreng and Anandasivakumar Ekambaram

SINTEF, Trondheim, Norway

Mona.Noreng@sintef.no

siva@sintef.no

Abstract: Circular economic practices are encouraged in several sectors, including the construction sector. These practices and related performances are assessed by using indicators. In general, indicators play a significant role in measuring performance / effect of actions and operations, which can then lead to devise plans to improve the performance in the future. This paper looks at small and medium-sized enterprises (SMEs) in the construction sector. In this context, indicators can play a role in supporting a systematic understanding of how circular economy practices are perceived and adopted among SMEs in the construction sector. In this study a set of indicators from an established framework is applied with modifications and evaluated. Since this study is connected to a project, the indicators are categorized to fit the project's context, and their relevance is evaluated based on input from representatives from the SMEs who participated in this study. By ranking a set of indicators, we gain insight into which aspects of circular economy (which indicators) are currently perceived as most important or applicable. This insight can help to prioritize areas for further investigation and practical application within the project. This paper is based on a part of a technology acceptance study for circular economy (CE). It focuses on the development and categorization of indicators to evaluate circularity mechanisms (CM), recycling techniques (RT) and technology knowledge (TK) within the SMEs in the construction sector. Quantitative method was applied in this study. In this regard, a questionnaire was used to obtain data from potential respondents. The findings reveal, among other things, that indicators related to organizational and strategic drivers, particularly handling human resource, social circularity, and policy & regulation adoption, are perceived as the most relevant and/or consistently understood. These results suggest that SMEs demonstrate relatively high maturity or a strong degree of prioritization regarding general / overall organizational awareness, strategic alignment, and stakeholder engagement with CE principles.

Keywords: Circular economy, Indicator, Construction sector, Small and medium sized enterprises (SMEs)

1. Introduction

This paper focuses on the development and categorization of indicators to evaluate circularity mechanisms (CM), recycling techniques (RT) and technology knowledge (TK) within small and medium-sized enterprises (SMEs) in the construction sector.

According to OECD/DAC an indicator is a: “Quantitative or qualitative factor or variable of interest, related to the intervention and its results, or to the context in which an intervention takes place” (OECD, 2022). Indicators play a significant role in measuring performance/effect of actions and operations, which can then lead to devise plans to improve the performance. Karlsen (2023, page 59) mentions that “measurable indicators [...] are used to track progress towards achieving a particular goal or objective”. Referring to previous studies, Martin et al. (2024) emphasize the important contribution of robust indicators to circular economy (CE) in assessing circularity of materials, supply chains and organizations. Using indicators is well-suited to measure topics such as CM, RT and TK, as the indicators provide a practical way to identify and structure relevant aspects of the topics. By breaking down complex topics into measurable components, indicators support a systematic understanding of how circular economy practices are perceived and potentially adopted among SMEs in the construction sector. By ranking a set of indicators, we gain insight into which aspects of circular economy (which indicator) are currently perceived as most important or applicable, and also, helping to prioritize areas for further investigation and practical application within the project.

In this study, a set of indicators from an established framework (Jayakodi et al., 2024) is adopted with modifications. The indicators are categorized to fit the project's context, and their relevance is evaluated based on input from the representatives (respondents) from SMEs who participated in this study. The categorization of indicators is further detailed in the next chapter. This paper is connected to a project called “SUM4Re” (<https://sum4re.eu/>), funded by the European Commission.

2. Categorization of Indicators

Jayakodi et al. (2024) conducted literature review to identify CE assessment indicators specific to main contractor organisations. Their study covered both the construction project and organization level and identified 18 project-level indicators and 20 organisation-level indicators, with 16 indicators overlapping both levels.

The study on which this paper is based, focuses on SMEs in the construction sector and has therefore limited its scope to the indicators identified by Jayakodi et al. (2024) from construction-specific sources. The indicators from the framework (Jayakodi et al., 2024) were reorganized to better align with the context of this study, which focuses on SMEs in the construction sector. Since the participating companies in this research are active construction SMEs, the selected indicators were considered more relevant and accessible for the target respondents in our study.

To structure the data, we have divided the indicators into the following categories:

- **Circularity Mechanisms (CM)** – Indicators related to practices and processes that enable the reuse, recycling, and efficient management of resources to minimize waste and close material loops within construction projects
- **Recycling Techniques (RT)** – Indicators related to specific methods and technologies applied to facilitate material recovery, reuse, and reduction of construction and demolition waste.
- **Technology Knowledge (TK)** – Indicators related to the degree to which organizations adopt, understand, and innovate with digital and technical solutions to support circular economy goals.

In addition to these three categories, a fourth category, **Organizational & Strategic Drivers (OSD)**, was added as a necessary expansion to capture indicators related to framework conditions, human resources, and strategic choices. This aligns with previous findings in the circular economy literature, which point to a significant overlap between project-level and organizational-level indicators (Jayakodi et al., 2024) and emphasize that organizational support, collaboration or regulatory frameworks are often requirements for implementing circular initiatives (Ali et al., 2024; Klein et al., 2020).

- **Organizational & Strategic Drivers (OSD)** – Indicators related to internal capabilities, policies, stakeholder engagement, and strategic initiatives that guide and support the implementation of circular economy principles at the organizational level.

The indicators are placed in different categories as shown in Table 1. The different categories are colour-coded to visually distinguish between them, making it easier to interpret the distribution and thematic focus of the indicators. Some indicators can represent more than one category. In these cases, the indicators are listed under both, with a notation indicating which category is considered the most relevant (“primary”) and which category it also can be relevant for (“secondary”). Each indicator is assigned the colour of its primary category.

Table 1: Categorization of indicators

Circularity Mechanisms	Recycling Techniques	Technology Knowledge	Organizational & Strategic Drivers
Managing Supply Chain (primary)	Circular Economy Driven Building Design (primary)	Adoption of Technologies	Handling Human Resource
Waste Circularity (primary)	Circular economy Driven Building Construction (primary)	Circular economy-driven innovations	Social Circularity
Managing logistics	Waste Circularity (secondary)	Circular Economy Driven Building Design (Secondary)	Circular economy-driven policies and regulations adoption
Land circularity	Material Circularity (secondary)		Circular economy-driven Stakeholder collaboration and management
Material Circularity (primary)	Water Circularity (secondary)		Economic Circularity
Water Circularity (primary)			Circular Economy Services (primary)
Emission Circularity			Managing Supply Chain (secondary)
Energy Circularity			
Circular Economy Services (secondary)			
Circular economy Driven Building Construction (secondary)			

Several indicators could arguably fit within both the CM and OSD categories, as they encompass broad aspects of circularity mechanisms and Organizational & Strategic Drivers. However, the categorization presented here reflects our assessment of the most appropriate and representative placement for each indicator.

A brief description of the 18 indicators from Table 1 are presented in Table 2. Table 2 also contains dimensions that are associated with each of the indicators. The description and the dimensions can be considered to concretize / operationalize the indicators in a given context.

Table 2: Description and dimensions of indicators (Jayakodi et al. 2024)

Indicator	Description	Dimensions
Adoption of Technologies	The degree of adoption of digital technologies to achieve circular economy objectives in your projects / organization.	• Smart devices for staff • Integrated web services to improve the business performance • BIM based construction • AR for reuse and recycle practices • Addictive manufacturing • IoT for construction site controlling • Material passport
Energy circularity	The degree of renewable energy produced on-site or nearby, renewable energy consumption and energy-saving mechanisms to total energy consumption in your projects / organization.	• Total energy consumption • On-site energy generation • Energy from local sources • Renewable energy consumption • Energy saving due to active and passive energy saving mechanisms
Social Circularity	The degree of social value creation due to circular economy implementation in your projects / organization.	• Use of local workforce • Community participation to CE activities • Quality of life of the community • Health assurance of the community • Impact on animal and living species • Community consultation on CE
Circular Economy Driven Building Design	The degree of adoption of circular economy-driven building design concepts to your projects / organization.	• Design for disassembly • Design for maintenance • Design for Recovery • Design for product life extension • Design for remanufacturing • Design for conservation
Circular economy Driven Building Construction	The degree of adoption of circular economy-driven building construction methods/techniques in your projects / organization.	• Prefabricated elements • Modular construction
Material Circularity	The degree of material from cyclical sources, locally sourced, and rapidly renewable materials to the total amount of materials used in your projects / organization.	• Total materials • Virgin materials • Reused materials • Recycled materials • Rapidly renewable materials • Locally sourced materials • Bio-based materials • Reusable materials • Recyclable materials • Hazardous materials • Non-hazardous materials
Managing logistics	the degree of adoption of circular economy in the logistics management process in your projects / organization.	• Availability waste treatment infrastructure • Appropriate waste treatment infrastructure • Transportation channels for reverse logistics • Organization own waste treatment infrastructure

Indicator	Description	Dimensions
		Sustainability mobility initiatives
Economic circularity	the degree of monetary value creation due to circular economy implementation in your projects / organization.	- CE related incomes - CE related expenses - CE project investments
Land circularity	the degree of adaptive re-utilization of land and land conservation to the total area of the land in your projects / organization.	- Adaptive reuse of the land for new purpose - Conservation of the land - Improvement of the land
Emission Circularity	The degree of energy direct and energy indirect greenhouse gas emission reduction to the total emissions in your projects / organization.	- Total greenhouse gases emission - Energy direct greenhouse gases emission - Energy indirect greenhouse gases emission - Emission of ozone depletion substances - Eco friendly fuels
Circular economy-driven innovation	The ability to carry out research and development and innovations to achieve circular economy objectives in your projects / organization.	- Research and development on circular economy - Construction related circular economy innovations
Waste Circularity	The degree of waste goes through the cyclical paths to the total waste generated in your projects / organization.	- Total waste - Waste for landfilling - Waste for incineration - Waste for reuse - Hazardous waste - Non-hazardous waste - Wastewater for reusing - Wastewater for recycling
Handling Human Resource	The ability to strengthen the circular economy skills and knowledge of the workforce in your projects / organization.	- Circular economy related training - Circular economy related skill development programs - Decent work environment - Work satisfaction
Managing Supply Chain	The degree of adoption of circular economy in the supply chain management process in your projects / organization.	- Eco-suppliers Number - Accurate material estimation and procurement - Suppliers to minimize excess packaging - Suppliers to provide small quantity of materials
Circular Economy Services	The degree of providing value-added services for stakeholders engage in your projects / organization.	- Take back products - Sharing economy - Product as a service - Product life extension
Circular economy-driven Stakeholder collaboration and management	the degree of stakeholder collaboration and management to achieve circular economy objectives in your projects / organization.	- Stakeholder meetings - Stakeholder trainings
Water Circularity	The degree of on-site sourced water and cycle-sourced water to the total amount of water consumed in your projects / organization.	- Total water consumption - Reused water - Recycled water - Water saving due to water saving mechanisms - Water efficiency
Circular economy-driven policies and regulations adoption	The extent to which policies and regulations are implemented to promote and support circular economy principles within your projects / organization.	Environment policies, regulations, and taxation

3. Research Method

The study on which this paper is based, applied a quantitative method: Questionnaire survey. The questionnaire was answered by 66 small and medium-sized construction companies in Europe during the spring of 2025, but not all of the respondents have answered all the questions. The answers per question ranged from 63-66 unique responses. Each question represented one of the indicators, in total 18 questions. The companies were asked to range the indicators on a scale from 1-10 in response to how relevant the indicators are for the company or its projects, 1 corresponds to no alignment within the company/projects and 10 corresponds to the company/projects aligning 100% with the statement.

The survey represents an analysis which gives a snapshot of the current perspective of the SMEs in the construction sector. It gives a picture of how the different indicators in relation to Circularity Mechanisms, Recycling Techniques, Technology Knowledge and Organizational Strategic Drivers are perceived and prioritized at a given point in time and offers an insight into the construction sector's readiness and attitude to CE practices.

4. Results

The results show an average score for the different indicators ranging from 5.67 to 6.54. The indicators with average scores are listed in Table 3. For each indicator, the average score was calculated based on the number of valid responses received. The indicators are colour-coded as described in Chapter 2.

To support the analysis of response variation, boxplots were created for each indicator. A boxplot provides a visual summary of the distribution of responses. The boxplot which can be seen in Figure 1 helps identify indicators with high consistency, those with narrow boxes, short whiskers, and few outliers, and those with greater variation, which may reflect differing levels of understanding or relevance among respondents. The central line within each box represents the median, while the triangle indicates the average score.

An analysis of all the results per indicator shows that there is a response variation between indicators both in terms of average score and how consistent respondents have been.

The average scores of the indicators ranged from 5.67 to 6.54, allowing for a ranking of the indicators based on perceived relevance among the participating SMEs. The three indicators with the highest average scores, Handling Human Resource (6.54), Social Circularity (6.52), and Circular Economy–Driven Policies and Regulations Adoption (6.51), are all categorized under Organizational & Strategic Drivers (OSD). Indicators within the Technology Knowledge (TK) category, such as Adoption of Technologies (6.37) and Circular Economy Driven Innovations (6.32), are positioned in the upper-middle range. Indicators from the Circularity Mechanisms (CM) category are more widely distributed, with Managing Supply Chain (6.49) among the higher scores, while Energy Circularity (5.67) and Emission Circularity (5.89) are among the lowest. Recycling Techniques (RT) indicators, such as Circular Economy Driven Building Design (6.03) Circular Economy Driven Building Construction (5.98), are generally found in the lower half of the ranking. This distribution illustrates how average scores can be used to rank indicators across categories and identify which indicators are currently perceived as more or less relevant by the respondents.

Table 3: The indicators ranged from highest to lowest average score

Average Score	Indicator
6,54	Handling Human Resource
6,52	Social Circularity
6,51	Circular Economy Driven Policies and Regulations Adoption
6,49	Managing Supply Chain
6,37	Adoption of Technologies
6,32	Circular Economy Driven Innovations

6,31	Circular Economy Driven Stakeholder Collaboration and Management
6,26	Waste Circularity
6,14	Managing Logistics
6,13	Land Circularity
6,03	Circular Economy Driven Building Design
6,00	Material Circularity
5,98	Circular Economy Driven Building Construction
5,98	Circular Economy Services
5,92	Water Circularity
5,89	Emission Circularity
5,83	Economic Circularity
5,67	Energy Circularity

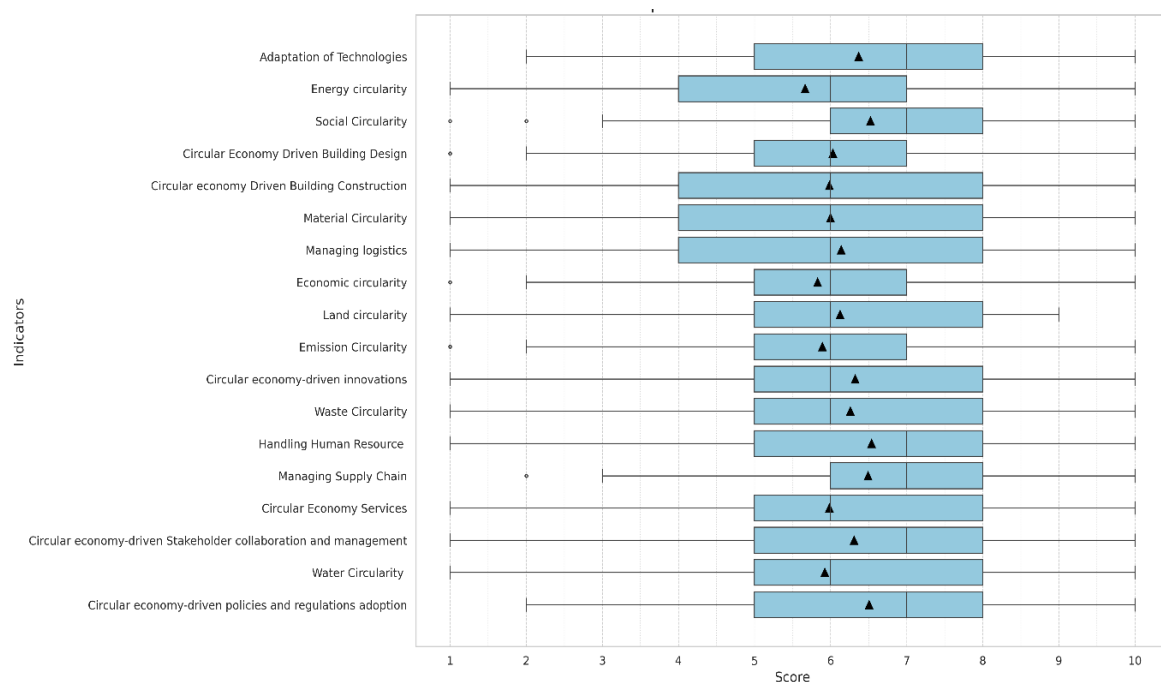


Figure 1: Boxplot of indicator scores

If we look at the boxplot indicators such as Social Circularity, Circular Economy Driven Building Design, Economic Circularity, Emission Circularity, and Managing Supply Chain show relatively tight distributions, suggesting a shared understanding and consistent prioritization among respondents. In contrast, indicators like Circular Economy Driven Building Construction, Material Circularity, and Managing Logistics show wider distributions, indicating greater variation in how these topics are perceived or implemented.

The plot helps identify indicators with high consistency, those with narrow boxes, short whiskers, and few outliers, and those with greater variation, which may reflect differing levels of understanding or relevance among respondents. The central line within each box represents the median, while the triangle indicates the average score.

5. Discussion

Several researchers (Jayakodi et al., 2024; Norell & Sehn, 2024; Demirkessen & Ozorhon, 2017) point out that the construction sector is highly unorganised and fragmented. For that reason, it is important to include a broad range of indicators to gain a good understanding of the CE performance across the sector. A wide set of indicators was therefore included in the survey to get a comprehensive understanding of how different drivers

of circular economy relate to circularity mechanisms, recycling techniques, technology knowledge and organizational strategic drivers.

To establish robust and relevant indicators for these topics, it is necessary to consider multiple factors simultaneously, not just, for example, circularity mechanisms in isolation. It is important to understand why or how a company prioritizes these aspects, as they are closely linked to strategic choices, value chains, and organizational culture. To analyse the results, we examined which indicators the companies said were suitable for their company and projects, and how much agreement there was across the companies for each indicator.

The analysis of each response per indicator shows that there is a variation between indicators both in terms of average score and how consistent respondents have been. If we look at the boxplot (Figure 1), we can see the distribution of responses for each indicator. This boxplot visualization helps identify indicators with high consistency and those with greater variation, which may reflect different levels of understanding or relevance among respondents. As previously mentioned, indicators such as Social Circularity, Circular Economy Driven Building Design, Economic Circularity, Emission Circularity, and Managing Supply Chain show relatively tight distributions, suggesting a shared understanding and consistent prioritization among respondents. In contrast, indicators like Circular Economy Driven Building Construction, Material Circularity, and Managing Logistics show wider, indicating greater variation in how these topics are perceived or implemented.

This variation may reflect differences in experience, maturity, prioritization or relevance across companies. When an indicator shows both high consistency and a high average score, it may suggest that the topic is both well understood and widely prioritized. Conversely, indicators with low average scores and high variation may point to uncertainty, lack of familiarity, or lower perceived relevance.

Based on this interpretation of the data, it can be said that the industry appears to be more mature or have a stronger degree on prioritization regarding Handling Human Resources and Social Circularity, as they have a higher average score, in relation to Economic Circularity and Energy Circularity, with a low average score.

Interestingly, although Circular Economy Driven Building Design and Circular Economy Driven Building Construction are thematically related, they show different patterns in the data. The design indicator shows higher consistency and a higher average score, while the construction indicator is among those with the most variation. This may reflect the fact that design-related circular practices, such as material selection or design for disassembly, are more familiar and easier to conceptualize, whereas construction practices require more complex implementation, coordination, and resources. It may also indicate that respondents are more involved in planning and design phases than in on-site construction activities.

By collecting information from SMEs and using indicators derived from construction-specific literature, this study provides insights into which indicators are directly relevant for evaluating current practices, barriers, and technology acceptance in construction companies that operate close to projects where CE solutions are implemented in practice.

In this study, a 1–10 scale was used to assess the perceived relevance of each indicator for the participating SMEs. This approach allows for a more nuanced understanding of how circular economy practices are perceived and prioritized across different companies and contexts. Compared to binary or ternary systems (e.g., yes/no or yes/partly/no), which are often used in CE assessment tools, the 1–10 scale provides a spectrum of responses. While binary and ternary systems can indicate whether a practice is present or partially implemented, they do not capture the degree or maturity or prioritization of implementation. In contrast, a 1–10 scale enables respondents to express gradations in relevance and implementation, allowing for the definition of a CE level rather than a simple presence or absence. This also facilitates statistical analysis of variation, which can be essential for understanding CE practices and readiness.

The three indicators with the highest scores suggests that small and medium-sized construction companies are aware of the importance of strengthening the circular economy skills and knowledge of the workforce (Handling Human Resource), acknowledge the social value creation due to circular economy implementation in their projects and organisation (Social Circularity), and believe it is important to implement policies and regulations to promote and support circular economy principles (Policy & Regulation Adoption). This result can be seen in connection with other studies: The importance of focusing on policies and regulations is also pointed out by other researchers. Bilal et al. (2020) present several barriers to CE and say that “lack of environmental regulations and laws is driving the rest of the barriers to the circular economy” (page 1). It is interesting to note that one of those rest of the barriers is lack of proper training and development programs for the members of supply chain. The study conducted by Martin et al. (2024) also mention that inefficient / lack of policies and

regulations is one of the major barriers to promoting CE principles. When it comes to lack of knowledge as a barrier, the authors, by referring to AlJaber et al. (2023), say “When knowledge is limited, stakeholders may fail to see the possible economic and environmental benefits, thus missing the opportunity to create more circular and lucrative results” (page 474). Martin et al. (2024) then point out the importance of ensuring proper strategies that support creating awareness, reflection, learning and development of new knowledge. Ayaz & Tatoglu (2024) highlight the role of social value creation in operational and strategic landscape of SMEs within the context of CE. According to the authors, the insight obtained from their study “provides a departure from conventional notions, signaling that SMEs can concurrently pursue economic prosperity, social responsibility, and environmental stewardship” (page 13). Le et al. (2024) mention the importance as well as the process of integrating CE into corporate strategies of SMEs to deal with environmental and social issues effectively.

The fact that several indicators categorized as Organizational & Strategic Drivers have a higher average score than many of the other indicators suggests that the organisations prioritize or are more mature in terms of internal awareness, strategic alignment, and stakeholder engagement than in the practical implementation of technical and practical circular economy solutions. This is also supported by the score of the indicators in the category Recycling Techniques, which are the category with the lowest acquired average score across the categories, and by the results from the lowest scoring indicator over all, Energy circularity, that suggest that companies make limited use of renewable energy sources and implement energy-saving measures to only a limited extent in their operations.

The relatively high average score for the indicators relevant to Technology Knowledge suggests that the organisations have adopted digital technologies to achieve circular economy objectives and have, to some extent, the ability to carry out research, development and innovations to achieve circular economy objectives. The results indicate that while technology is not yet fully embedded (average scores of 6.32 and 6.37 out of 10), there appears to be an interest and a perceived relevance based on the survey responses, which may serve as a positive indicator for future implementation.

The low score in the category of Recycling Techniques, as mentioned above, might suggest that CE driven building design concepts and building construction methods and techniques are not that well implemented in the SMEs. These findings highlight a potential gap between strategic intent and operational execution, possibly indicating a barrier to technology and circularity adoption. It may also reflect a lack of access to knowledge, tools, or incentives to implement such techniques in practice.

The category Circularity Mechanisms covers a broader range of the CE related practices and includes both some of the lowest scoring indicators but also some high scoring indicators. This variation is expected, given the diversity of topics within the category. The highest scoring indicator in this category, Managing Supply Chain, suggests that CE in the supply chain is perceived as both relevant and actionable. The lowest scoring indicator in the survey was Energy circularity, that suggest that companies make limited use of renewable energy sources and implement energy-saving measures to only a limited extent in their operations. This may reflect structural limitations, lack of incentives, or a perception that energy-related decisions are outside their immediate control.

Even though the average score of the 18 indicators only ranges from 5.67 to 6,54 it does not necessary mean that it is a lack of meaningful variation. It might suggest a general agreement amongst the respondents, and that the indicators are from moderately to highly relevant or are only partially implemented in the companies and their projects. To extract more information from the survey response, it may also be useful to consider several factors, for instance, boxplots that show the variation and spread in the data. For example, indicators with both high average scores and low variation (e.g., Social Circularity) suggest strong consensus and perceived importance, while indicators with similar averages but high variation (e.g., Material Circularity) may indicate uncertainty or differing levels of understanding. The median values, which mostly fall between 6 and 7, further support the interpretation that the typical assessment aligns closely with the average, reinforcing the reliability of the findings.

The indicators analysed in this study also provided a foundation for the development of future tools for assessing and managing circular economy practices in the construction sector. The most relevant indicators, based on both average scores and response consistency, can serve as core elements in CE assessment tools tailored to SMEs. Such tools could support companies in conducting self-assessments, identifying areas for improvement, and tracking progress over time. Additionally, the indicators can be used as a framework for training, maturity assessments, and as a basis for policy development and support schemes, particularly in relation to technology implementation and capacity building.

6. Concluding Remarks

This study identified and evaluated 18 circular economy indicators relevant to small and medium-sized enterprises in the construction sector, based on an established framework and survey data. The findings reveal that indicators related to organizational and strategic drivers, particularly Handling Human Resource, Social Circularity, and Policy & Regulation Adoption, are perceived as the most relevant and/or consistently understood. These results suggest that SMEs demonstrate relatively high maturity or a strong degree of prioritization regarding general/overall organizational awareness, strategic alignment, and stakeholder engagement with CE principles.

Indicators within the Technology Knowledge category, such as Adoption of Technologies and CE-driven Innovations, also scored relatively high, indicating a certain degree of interest and partial implementation of digital tools and innovation to support CE goals.

In contrast, indicators related to Recycling Techniques, such as CE Driven Building Construction, and indicators related to Circularity Mechanisms, such as Energy Circularity, Emission Circularity and Water Circularity received lower average scores and some of them also showed a greater variation in responses. These findings highlight a potential gap between strategic intent and operational execution. This may also point to areas where companies lack the tools, knowledge, or incentives to implement CE practices effectively.

Therefore, while the high-scoring indicators can serve as a foundation for CE maturity models and assessment tools, the lower-scoring indicators represent critical areas for future focus. Targeted support, such as training, policy incentives, and practical tools, should be directed toward these areas to help bridge the gap between strategic intent and implementation. Doing so will strengthen the sector's overall capacity to adopt circular economy practices in a meaningful and scalable way.

Acknowledgement

The authors thank the reviewers wholeheartedly for their valuable comments.

This study was conducted as part of the SUM4Re project (Creating materials banks from digital urban mining), which has received funding from the Horizon Europe research and innovation program under grant agreement no. 101129961. Funded by the European Union. Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union or HADEA. Neither the European Union nor the granting authority can be held responsible for them.

Ethics declaration: No need for ethical clearance.

AI declaration: An AI tool was used to finetune the language to ensure a better reading experience.

References

- Ali, Y., Uddin, A., & Petrillo, A., (2024). The impact of government support and organizational culture on sustainable performance: Unveiling the mediating role of circular economy and eco-innovation, *Sustainable Futures*, 8, 100346.
- AlJaber, A.; Martinez-Vazquez, P.; Baniotopoulos, C. (2023). Barriers and Enablers to the Adoption of Circular Economy Concept in the Building Sector: A Systematic Literature Review. *Buildings*, 13(11), 2778.
- Ayaz, O. & Tatoglu, E. (2024). Unveiling the power of social value: Catalyzing circular economy in emerging market SMEs, *Journal of Cleaner Production*, Vol. 453.
- Bilal, M.; Khan, K. I. A.; Thaheem, M. J.; Nasir, A. R. (2020). Current state and barriers to the circular economy in the building sector: Towards a mitigation framework, *Journal of Cleaner Production*, Vol. 276.
- Demirkesen, S.; Ozorhon, B. (2017). Impact of integration management on construction project management performance, *International Journal of Project Management*, Volume 35, Issue 8, pp. 1639-1654.
- Jayakodi, S.; Senaratne, S.; Perera, S.; Bamdad, K. (2024). Circular economy assessment using project-level and organisation-level indicators for construction organisations: A systematic review, *Sustainable Production and Consumption*. Vol. 48, pp. 324-338.
- Karlsen, J. T. (2023). *Project management – From startup to success*, Scandinavian University Press.
- Klein, N.; Ramos, T. B.; Deutz, P. (2020). Circular Economy Practices and Strategies in Public Sector Organizations: An Integrative Review», *Sustainability*, 12(10), 4181.
- Le, T. T.; Tran, P. Q.; Dhar, B. K. (2024). Circular economy and social life cycle assessment: The role of corporate renewable energy strategies, environmental justice, and environmental impacts, *Journal of Cleaner Production*, Vol. 485.
- Martin, H.; Chebrolu, D.; Chadee, A.; Brooks, T. (2024). Too good to waste: Examining circular economy opportunities, barriers, and indicators for sustainable construction and demolition waste management, *Sustainable Production and Consumption*, Vol. 48, pp. 460-480.

- Norell, M., & Stehn, L. (2024). Architects coping with continuous fragmentation. *Architectural Engineering and Design Management*, 21(1), 1–16.
- OECD (2022). DAC Network on Development Evaluation, Glossary of Key Terms in Evaluation and Results-Based Management, 2nd Edition – Prepublication version.

Talent Management Approaches in the Kenyan Banking Sector: The Role of Organizational Characteristics

Lydia Nthei¹, Ken Kamoche² and Hellen Otieno¹

¹Strathmore University, Kenya

²Nottingham University Business School, UK

lydia.nthei@gmail.com (Corresponding author)

ken.kamoche@nottingham.ac.uk

hotieno@stratmore.edu

Abstract: Kenya's banking sector is navigating a turbulent era where competition is fierce and the way banks manage talent may determine their survival. Both established giants and agile newcomers face the same question: which talent management (TM) approaches best sustain competitive advantage amid de-globalization, re-shoring, digital disruption, and shifting demographics? While most prior studies—largely from developed economies—highlight organizational size, little is known about how the combined influence of size and age shapes TM adoption in emerging markets. This study addresses that gap by examining Kenyan banks across three tiers. A cross-sectional survey of 456 employees yielded 399 valid responses, analyzed through structural equation modeling (SmartPLS 4.0). Findings reveal that larger and older banks tend to adopt hybrid TM approaches that blend inclusive and exclusive practices, whereas smaller and younger banks favor inclusive approaches. This study enriches TM scholarship by providing evidence from a resource-constrained, developing economy and offers practical guidance for aligning TM strategies with organizational size and maturity in an era of shifting global dynamics.

Keywords: Talent management approaches, Organizational size, Organizational age, Kenyan banking sector

1. Introduction

In the constantly changing business environment, organizations face unprecedented challenges brought about by globalization, technological advancements, demographic shifts, and changing global business patterns including de-globalization and re-shoring (Collings, Mellahi and Cascio, 2019; Gallardo-Gallardo, Thunnissen and Scullion, 2020; D'Ambrosio and Lavoratori, 2025). To navigate these complexities, talent management (TM) has become a significant strategic priority, focusing on attracting, developing, and retaining talent. TM is broadly defined as a structured process for attracting, identifying, developing, engaging, retaining, and deploying employees who drive organizational success (Collings, Mellahi and Cascio, 2019).

Organizations adopt varying approaches to TM, typically classified as exclusive, inclusive, or hybrid (Anlesinya, Dartey-Baah and Amponsah-Tawiah, 2019). Exclusive TM focuses on high-potential and high-performing employees, allocating significant resources to their development and to critical roles (Dang *et al.*, 2020; Wiblen and McDonnell, 2020). Inclusive TM emphasizes equal opportunities and engagement for all employees, fostering fairness and cohesion across the workforce (Swales, Downs and Orr, 2014; Mousa *et al.*, 2022). Hybrid TM combines elements of both, strategically targeting high-performing employees while nurturing the broader talent pool to ensure flexibility and resilience (Anlesinya, Dartey-Baah and Amponsah-Tawiah, 2019; King and Vaiman, 2019; Holck and Stjerne, 2020).

Organizational characteristics, particularly size and age, influence the adoption of these approaches. Large and mature organizations, with greater resources and complex structures, often adopt hybrid or exclusive TM to maximize the contributions of critical employees (Lenton, 2021; Vukotić, Karabašević and Mirčetić, 2022). In contrast, smaller or younger organizations tend to adopt inclusive TM approaches, focusing on workforce cohesion and engagement (Anlesinya, Dartey-Baah and Amponsah-Tawiah, 2019; Lenton, 2021). Additionally, sectoral differences matter: public sector organizations often lean toward exclusive TM (Nosan and Nazarenko, 2021).

Despite extensive research on TM in developed economies, there are limited studies that examine how organizational size and age influence TM adoption in developing economies, particularly in the banking sector. Existing studies (Lenton, 2021; Vukotić, Karabašević and Mirčetić, 2022) primarily focus on large organizations or specific industries, leaving gaps in understanding medium-sized firms, younger organizations, and public sector entities. Moreover, most studies do not simultaneously explore the combined effect of size and age on the adoption of inclusive, exclusive, and hybrid TM approaches.

This study addresses these gaps by exploring the role of organizational characteristics—size and age—in shaping TM approaches in the Kenyan banking sector. Using data from 38 commercial banks, both public and private,

the study examines how these characteristics influence the adoption of hybrid, inclusive, and exclusive TM approaches. By focusing on a developing economy, the study contributes to the broader TM literature, providing insights into how resource constraints and organizational maturity shape strategic talent decisions. The findings have practical implications for managers seeking to align TM strategies with organizational size, age, and contextual needs.

The remainder of the paper is structured as follows: a theoretical foundation and hypothesis development followed by the methodology, results and finally, discussion and conclusion.

2. Theoretical Foundation

This study is anchored on Social Exchange Theory (SET), initially developed by Homans (1958) and further elaborated by Blau (1964), which provides a framework for understanding the reciprocal relationships between organizations and employees. SET posits that individuals and organizations engage in exchanges where benefits are provided with the expectation of reciprocity, and these relationships are maintained when perceived rewards outweigh the costs (Gouldner, 1960; Cropanzano and Folger, 1991). In the context of TM, SET emphasizes that employees respond positively to fair and supportive organizational practices with engagement, loyalty, and enhanced performance, whereas perceived inequities may result in dissatisfaction or turnover. This perspective is particularly relevant for examining organizational size and age, as these characteristics influence the allocation of resources, decision-making processes, and the perceived fairness of TM practices. For example, larger and older organizations are more likely to adopt hybrid or exclusive TM approaches, concentrating resources on critical roles or high-performing employees, whereas smaller or younger organizations may favor inclusive TM approaches to build trust and engagement across the workforce.

While SET explains the social relational mechanisms behind TM, the Resource-Based View (RBV) offers a complementary perspective by highlighting the strategic role of organizational resources in shaping TM practices. According to RBV, organizations achieve a competitive advantage by leveraging valuable, rare, inimitable, and non-substitutable resources, including human capital (Barney, 1991; Collings, Mellahi and Cascio, 2019). Larger and more mature organizations typically possess greater financial, structural, and human resources, allowing them to implement resource-intensive TM approaches, such as exclusive or hybrid systems targeting high-potential employees. In contrast, smaller or younger organizations may lack such resources, making inclusive TM approaches that maximize the contribution of all employees more practical and sustainable.

Together, SET and RBV provide a robust theoretical foundation for this study. SET explains how relational dynamics, fairness, and reciprocity shape employee responses to TM practices, while RBV clarifies how organizational resources determine the feasibility and strategic selection of TM approaches. By integrating these perspectives, this study links organizational characteristics (size and age) to the adoption of hybrid, inclusive, and exclusive TM approaches, providing a theoretical justification for the hypotheses. In particular, larger and older organizations are expected to leverage their accumulated resources to adopt hybrid or exclusive TM approaches, while smaller and younger organizations are likely to rely on inclusive approaches that foster workforce engagement and cohesion. This dual-theory approach strengthens the explanatory power of the study, allowing for a comprehensive understanding of both the social and structural mechanisms that influence TM strategy adoption.

3. Talent Management Approaches

Talent management (TM) has emerged as a critical strategic priority for organizations navigating rapid technological advancements, demographic shifts, and evolving global economic dynamics such as de-globalization and re-shoring (Collings, Mellahi and Cascio, 2019; Gallardo-Gallardo, Thunnissen and Scullion, 2020; D'Ambrosio and Lavoratori, 2025).

These shifts compel organizations to rethink workforce strategies to maintain competitiveness, flexibility, and resilience. TM is broadly defined as a systematic process of attracting, selecting, developing, engaging, retaining, and deploying employees who drive organizational success (Collings, Mellahi and Cascio, 2019). Implementation varies across organizations, giving rise to three primary approaches: exclusive, inclusive, and hybrid (Anlesinya, Dartey-Baah and Amponsah-Tawiah, 2019; King and Vaiman, 2019).

Exclusive TM focuses on high-potential and high-performing employees, often allocating significant resources to their development and retention (Wiblen and McDonnell, 2020). Organizations that adopt exclusive TM approaches tend to focus on developing employees deemed talented, allocating more resources for their training and development (Wiblen and McDonnell, 2020). These employees are often treated as more valuable

and assigned roles critical to organizational success (Dang *et al.*, 2020; Kamoche and Leigh, 2021). This strategy is common in large organizations with substantial resources, which are able to invest heavily in a select group of employees (Vukotić, Karabašević and Mirčetić, 2022).

Inclusive TM, in contrast, emphasizes equal opportunities for all employees, fostering a culture of fairness, engagement, and collaboration (Mousa *et al.*, 2022). This approach is especially prevalent in smaller organizations or public sector entities with limited resources and strong commitments to equality and diversity (Nosan and Nazarenko, 2021). Inclusive TM is also increasingly adopted by organizations seeking to enhance employee engagement and organizational culture (Swales, Downs and Orr, 2014).

Hybrid approaches combine elements of both exclusive and inclusive approaches, targeting specific employee segments for strategic roles while maintaining a foundational talent pool to ensure organizational flexibility and resilience (King and Vaiman, 2019). Hybrid TM is gaining popularity as organizations attempt to balance developing high-performing individuals with nurturing the wider workforce (Anlesinya, Dartey-Baah and Amponsah-Tawiah, 2019). This approach is particularly effective in complex, dynamic environments, enabling organizations to respond to changing market conditions while sustaining a strong talent pool (Holck and Stjerne, 2020). The choice of TM approach is shaped by organizational characteristics such as size, age, and sector. Larger organizations with complex structures and substantial resources are more likely to adopt exclusive or hybrid TM approaches, leveraging high-potential employees to drive strategic objectives (Vukotić, Karabašević and Mirčetić, 2022). Smaller organizations, often constrained by resources, tend to adopt inclusive approaches to build cohesion and engagement (Lenton, 2021). Similarly, organizational age influences TM strategies: younger firms may favor inclusive TM to cultivate a fair and engaged culture, whereas mature organizations may lean toward exclusive approaches to sustain competitive advantage (Lenton, 2021).

4. Organizational Characteristics and TM Approaches

Empirical studies have highlighted the influence of organizational characteristics on the implementation of TM approaches. For instance, Dang *et al.* (2020) found that public banks in Vietnam tended to adopt inclusive TM, viewing it as an extension of traditional HR practices, whereas private banks favored exclusive TM, targeting high-potential and high-performing employees through specialized development programs. Similarly, Wiblen and McDonnell (2020) demonstrated that the meaning ascribed to "talent" within an organization shapes its TM approach: organizations emphasizing high potential and performance tend to adopt exclusive or hybrid approaches, while those discouraging workforce differentiation favor inclusive TM. Anlesinya and Amponsah-Tawiah (2020) advocate for a hybrid TM approach that balances the development of top performers while nurturing the development of the rest of the workforce across all levels.

Organizational characteristics, particularly size and age, play a significant role in determining the adoption of TM approaches. Larger organizations, with greater resources and complex structures, are more likely to adopt exclusive and hybrid TM approaches, focusing on high-performing employees to drive strategic goals (Vukotić, Karabašević and Mirčetić, 2022). In contrast, smaller organizations often adopt inclusive TM approaches to foster a cohesive and engaged workforce (Lenton, 2021).

Beyond organizational size, age also plays a critical role. Younger firms, particularly startups, may prioritize inclusive TM to foster a culture of fairness and employee engagement, while mature organizations may lean toward exclusive TM to sustain competitive advantage (Lenton, 2021). In addition, the sector (public or private) can further shape the choice of TM approach. Public sector organizations favor inclusive TM approaches due to their commitment to equality and diversity (Nosan and Nazarenko, 2021).

While these trends are well documented in developed economies, the influence of size, age, and sector on TM approaches in developing economies, including Kenya, has received limited attention.

5. Hypotheses

Based on the theoretical foundation and literature review, the following hypotheses are proposed. Each hypothesis explicitly examines the influence of organizational size and age on the adoption of different talent management (TM) approaches.

***H1:** Organizational size and age are positively associated with the adoption of a hybrid talent management approach.*

***H2:** Organizational size and age are negatively associated with the adoption of an inclusive talent management approach.*

H3: Organizational size and age are positively associated with the adoption of an exclusive talent management approach.

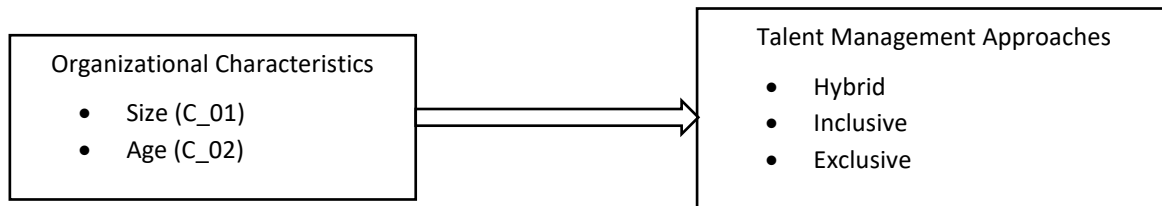


Figure 1: Conceptual Framework

5.1 Methodology

This study employed a quantitative research design to examine the influence of organizational characteristics (size and age) on the adoption of talent management (TM) approaches—hybrid, inclusive and exclusive—within the Kenyan banking sector. The study targeted all 38 commercial banks in Kenya, encompassing both public and private institutions, thereby ensuring comprehensive coverage of the sector.

5.2 Sampling and Data Collection

A multistage sampling technique was used to select participants. Banks were first categorized into three tiers (1, 2 and 3) based on the Central Bank of Kenya classification system, which uses a weighted composite index (WCI), that includes net assets, customer deposits, capital reserves, market share, and loan accounts (CBK, 2022).

Tier 1 banks had a WCI above 5%, Tier 2 banks between 1 and 5%, and Tier 3 below 1%. Within each tier, participants were randomly selected using proportional allocation, ensuring representation across all categories. Data were collected using a structured questionnaire developed in KoboToolbox. The questionnaires were distributed with the assistance of branch managers and relationship managers, who shared them via official email and WhatsApp. Due to data privacy laws, the authors were not given the respondents contacts. Out of the target population of 456 respondents, 399 responses were received, representing an 87.5% response rate. The survey captured key organizational characteristics, including size (number of branches) and age (years of operation), as well as the adoption of hybrid, inclusive and exclusive TM approaches.

Table 11: Descriptive Statistics for Bank characteristics

Variable	Category	Frequency	Percent
Bank tier	Tier 1	262	65.7%
	Tier 2	74	18.5%
	Tier 3	63	15.8%
	Total	399	100%
Duration of bank existence in years	Under 10 years	11	2.8%
	11 - 20 years	43	10.8%
	21 -30 years	29	7.3%
	31- 40 years	58	14.5%
	Over 40 years	258	64.7%
	Total	399	100%
Number of bank branches	Below 10	14	3.5%
	10-20	48	12%
	21 - 30	48	12%
	31 - 40	10	2.5%

Variable	Category	Frequency	Percent
	Above 40	279	69.9%
	Total	399	100%
Ownership of the bank	The State	13	3.3%
	Privately Owned	310	77.7%
	Both the state and privately owned	76	19%
	Total	399	100%
Branches outside Kenya	Yes	298	74.7%
	No	101	25.3%
	Total	399	100%
Talent management approach	Exclusive approach	66	16.5%
	Inclusive approach	162	40.6%
	Hybrid approach	171	42.9%
	Total	399	100%

The descriptive analysis from 399 observations reveals key structural and operational characteristics. The majority of banks (65.7%) fall under Tier 1, with Tier 2 and Tier 3 banks representing 18.5% and 15.8%, respectively. Most banks in the sample are well-established, with 64.7% having operated for over 40 years, while only 2.8% are relatively new (under 10 years old). In terms of branch networks, 69.9% of banks have an extensive presence, operating more than 40 branches, compared to a small fraction (3.5%) with fewer than 10 branches. Ownership is predominantly private (77.7%), with only 3.3% being fully state-owned, while 19% have mixed public-private ownership. A significant proportion (74.7%) of banks maintain an international presence, operating branches outside Kenya. Regarding talent management, the hybrid approach (42.9%) is the most common, closely followed by the inclusive approach (40.6%), whereas the exclusive approach is the least adopted (16.5%). Overall, the findings suggest that the banking sector is characterized by large, long-established, privately owned institutions with a strong international footprint, primarily employing hybrid or inclusive talent management approaches.

5.3 Measures

Organizational characteristics were measured using two items: “for how long has your bank been in existence?” (age) and “how many branches does your bank have?” (size).

Talent management approaches were measured using items adapted from established literature: Hybrid TM had 6 items (e.g., “In my organization, while all positions/roles are valued, certain critical roles play a significant role in achieving business objectives”) (Anlesinya, Dartey-Baah and Amponsah-Tawiah, 2019; King and Vaiman, 2019). Inclusive TM had 2 items (e.g., “My organization does not differentiate employees on the basis of talent and contribution”) (Mousa *et al.*, 2022). Exclusive TM had 3 items (e.g., “My organization values the work and contribution of talented employees more”) (Dang *et al.*, 2020; Wiblen and McDonnell, 2020).

Responses were recorded on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

5.4 Data Analysis

Data were analyzed using SmartPLS version 4.0, following a two-step approach: (1) measurement model assessment and (2) structural model assessment, where hypotheses were tested using bootstrapping with 5000 subsamples, generating path coefficients and p-values.

To evaluate the validity, reliability, and collinearity of the data, we conducted confirmatory factor analysis (CFA) using SmartPLS version 4.0. Following established guidelines, convergent validity and composite reliability were assessed, with Cronbach’s alpha and composite reliability values required to exceed 0.70 (Sheko and Spaho, 2018). Additionally, discriminant validity was evaluated based on the criterion that the average variance extracted (AVE) should be greater than 0.5 (Hair, 2014). The results of the analysis met all the required threshold

values, confirming the validity and reliability of the data. The outcomes for reliability, discriminant validity, and convergent validity are summarized below:

Table 2: Assessment of the Measurement Model

Construct	Factor loadings	VIF	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
Organizational characteristics			0.725	0.878	0.782
C_01 (Size)	0.913	1.479			
C_02 (Age)	0.856	1.479			
Exclusive Talent Approach			0.837	0.891	0.734
d_01	0.908	2.014			
d_06	0.931	2.728			
d_07	0.714	1.841			
Inclusive Talent Approach			0.721	0.724	0.588
e_04	0.517	1.058			
e_05	0.954	1.058			
Hybrid Talent Approach			0.835	0.876	0.543
f_01	0.81	1.984			
f_02	0.67	1.799			
f_03	0.827	2.194			
f_04	0.732	1.823			
f_05	0.648	1.605			
f_06	0.719	1.764			

After confirming the reliability and validity of the measurement model, we proceeded to evaluate the significance of the path coefficients. This was achieved using a bootstrapping procedure, which involved generating 5,000 subsamples from the original dataset. The results support Hypothesis 1 and Hypothesis 2, while Hypothesis 3 is not supported. Specifically, the findings indicate that organizational characteristics (size and age) have a positive and significant influence on the adoption of the hybrid talent management (TM) approach ($\beta = 0.149$, $p < 0.002$). This supports Hypothesis 1, which posits that organizational size and age influence the adoption of hybrid TM. Similarly, Hypothesis 2 is supported, as organizational characteristics demonstrate a significant negative influence on the adoption of the inclusive TM approach ($\beta = -0.140$, $p < 0.003$). However, Hypothesis 3 is not supported and is therefore rejected. The results show that organizational characteristics do not significantly influence the adoption of the exclusive TM approach ($\beta = -0.073$, $p > 0.325$). The p-value is greater than 0.05, indicating that the relationship is not statistically significant.

Below is the structural model and the summary of the hypotheses.

Structural Model

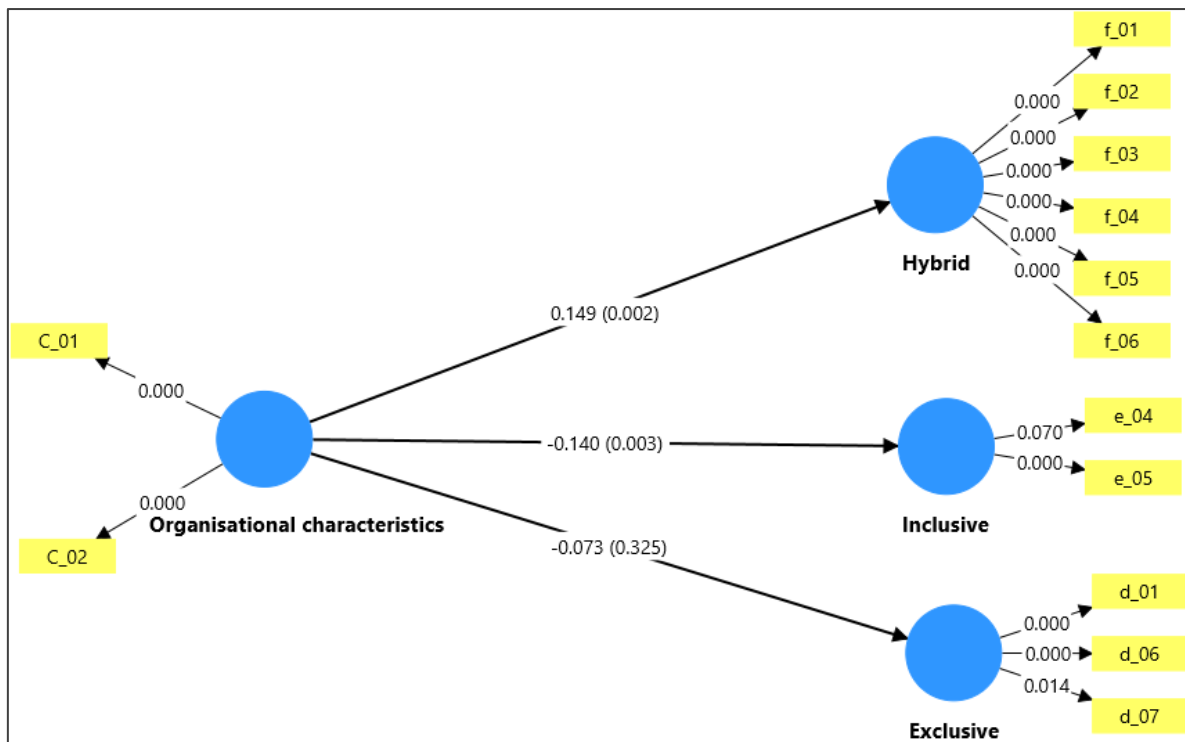


Figure 1: Path Diagram C_01 (Size); C_02 (Age)

Table 2: Summary of the Hypotheses

Hypothesis	Path Coefficient	T statistics	Decision
H1: Organizational characteristics → Hybrid	0.149*** (0.048)	3.075	Supported
H2: Organizational characteristics → Inclusive	-0.140 *** (0.047)	2.963	Supported
H3: Organizational characteristics → Exclusive	-0.073 (0.075)	0.985	Rejected

Robust standard errors enclosed in parentheses. *** $p < 1\%$, ** $p < 5\%$, * $p < 10\%$

6. Discussion and Conclusion

This study investigated the influence of organizational characteristics, specifically size and age, on the adoption of talent management (TM) approaches—hybrid, inclusive and exclusive—within the Kenyan banking sector. The results reveal that organizational size and age significantly influence the adoption of hybrid and inclusive TM approaches, while no significant relationship was found for exclusive TM.

Specifically, organizational size and age were positively associated with the adoption of hybrid TM, supporting Hypothesis 1. This suggests that larger and more mature organizations are likely to adopt hybrid TM approaches, which balance inclusivity and exclusivity. These findings are consistent with previous research indicating that larger organizations often implement hybrid TM to optimize both high-performing employees and the broader workforce (Anlesinya and Amponsah-Tawiah, 2020; Holck and Stjerne, 2020). From a theoretical perspective, this aligns with the Social Exchange Theory (SET), which emphasizes that organizations with greater resources can engage in more strategic exchanges with employees, rewarding both critical talent and the general workforce (Blau, 1964). In addition, the Resource-Based View (RBV) explains that larger and older organizations

possess more tangible and intangible resources to implement hybrid TM strategies effectively, thereby leveraging their capabilities for sustained competitive advantage (Barney, 1991).

Conversely, organizational size and age were negatively associated with the inclusive TM approach, supporting Hypothesis 2. This implies that smaller and younger organizations are more likely to adopt inclusive TM approaches, likely due to their focus on building diverse and collaborative workforces (Swailles, Downs and Orr, 2014; Lenton, 2021). SET offers a useful lens here, suggesting that inclusive TM facilitates reciprocal relationships and trust within organizations that may have fewer formal resources.

Hypothesis 3, which proposed a relationship between organizational size and age, and the exclusive talent management approach, was not supported. This indicates that the exclusive TM approach may be influenced by other factors beyond than organizational size and age, such as organizational culture, leadership style, or strategic priorities (Mousa *et al.*, 2022). This finding suggests the need for further research to identify additional determinants of exclusive TM adoption, particularly in developing economies.

This study contributes to the TM literature by empirically demonstrating the differentiated role of organizational size and age in shaping TM approaches in the context of a developing economy. The findings highlight that: firstly, hybrid TM is a preferred approach for larger and mature banks, offering a balanced strategy that leverages both specialized talent and broader workforce capabilities. Secondly, inclusive TM is more suited to smaller and younger banks, supporting workforce engagement and cohesion in resource-constrained environments.

From a practical perspective, these insights provide guidance for managers and policymakers in the banking sector. Larger banks can focus on hybrid TM to maximize the strategic contribution of key employees while maintaining inclusivity, whereas smaller banks can implement inclusive TM to strengthen employee engagement, enhance employer branding, and attract talent.

Despite its contributions, the study has limitations. Due to time and resource constraints, the study focused solely on organizational size and age as predictors of TM approaches, potentially overlooking other important factors such as culture and leadership style. Future studies could explore these variables to provide a more comprehensive understanding of TM approach adoption. Additionally, the study was conducted within the Kenyan banking sector, which may limit the generalizability of the findings to other sectors or regions. Future research could replicate this study in different sectors or countries to validate the findings. Moreover, longitudinal studies could also be conducted to examine how TM approaches evolve over time in response to changes in organizational characteristics.

In conclusion, this study demonstrates that organizational size and age are key determinants of TM approach adoption in the Kenyan banking sector, with larger and mature organizations favoring hybrid strategies and smaller, younger organizations favoring inclusive approaches. By integrating SET and RBV, the study provides both theoretical and practical insights into how organizations can align TM strategies with their structural characteristics to achieve sustained performance and competitive advantage.

Acknowledgements

The authors wish to acknowledge Strathmore University for providing ethical clearance and institutional support that enabled this study. Gratitude is also extended to management and staff of the participating commercial banks for their cooperation and time in completing the survey. The authors also thank colleagues and other mentors who provided valuable guidance and feedback during the preparation of this manuscript.

Ethical Declaration: This study was conducted in accordance with ethical research guidelines. Participation was voluntary, and informed consent was obtained from all respondents. Confidentiality and anonymity of participants were maintained throughout the study. Ethical clearance for the research was obtained from Strathmore University.

AI Declaration: AI tools (e.g., language models) were not used in the preparation of this manuscript, except for minor language editing. All ideas, analysis, interpretations, and conclusions presented in this paper are the original work of the authors.

References

- Anlesinya, A. and Amponsah-Tawiah, K. (2020) "Towards a responsible talent management model," *European Journal of Training and Development*, 44(2/3), pp. 279–303.

- Anlesinya, A., Dartey-Baah, K. and Amponsah-Tawiah, K. (2019) "Strategic talent management scholarship: a review of current foci and future directions," *Industrial and Commercial Training*, 51(5), pp. 299–314. Available at: <https://doi.org/10.1108/ICT-11-2018-0095>.
- Barney, J. (1991) "Firm resources and sustained competitive advantage," *Journal of management*, 17(1), pp. 99–120.
- Blau, P. (1964) *Exchange and power in social life*. New York: Wiley.
- CBK (2022) *Central Bank of Kenya directory of licenced commercial banks, mortgage finance institutions and authorized non-operating companies*. Nairobi: Central Bank of Kenya.
- Collings, D.G., Mellahi, K. and Cascio, W.F. (2019) "Global talent management and performance in multinational enterprises: A multilevel perspective," *Journal of management*, 45(2), pp. 540–566.
- Cropanzano, R. and Folger, R. (1991) "Procedural justice and worker motivation in steers," in Steers, R. and Porter, L. W., *Motivation and work behavior*. New York: McGraw-Hill Inc, pp. 131–143.
- D'Ambrosio, A. and Lavoratori, K. (2025) "Reshoring to survive? The other side of de-globalization," *Journal of Industrial and Business Economics*, pp. 1–23.
- Dang, N.T.T. et al. (2020) "Talent conceptualization and talent management approaches in the Vietnamese banking sector," *The Journal of Asian Finance, Economics, and Business*, 7(7), pp. 453–462.
- Gallardo-Gallardo, E., Thunnissen, M. and Scullion, H. (2020) *Talent management: Context matters*. Taylor & Francis.
- Gouldner, A.W. (1960) "The norm of reciprocity: A preliminary statement," *American Sociological Review*, 25(2), pp. 161–178.
- Hair, J.F. (2014) *Multivariate data analysis*. Harlow, Essex, UK: Pearson Education Limited.
- Holck, L. and Stjerne, I.S. (2020) "How inclusive can exclusive talent management be?," in S. Swailes (ed.) *Managing talent: A critical appreciation*. London: Emerald Publishing Limited, pp. 107–123.
- Homans, G.C. (1958) "Social behavior as exchange," *American Journal of Sociology*, 63(6), pp. 597–606.
- Kamoche, K. and Leigh, F.S. (2021) "Talent management, identity construction and the burden of elitism: the case of management trainees in Hong Kong," *Human Relations*, p. 0018726721996778.
- King, K.A. and Vaiman, V. (2019) "Enabling effective talent management through a macro-contingent approach: A framework for research and practice," *BRQ Business Research Quarterly*, 22(3), pp. 194–206.
- Lenton, A. (2021) *Investigating the theory and practice of inclusive talent management*. dobpsych. Kingston University. Available at: <https://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.853873> (Accessed: March 10, 2025).
- Mousa, M. et al. (2022) "Why him not me? Inclusive/exclusive talent identification in academic public context," *International Journal of Public Administration*, 45(10), pp. 747–759. Available at: <https://doi.org/10.1080/01900692.2021.1887217>.
- Nosan, N. and Nazarenko, S. (2021) "Talent management practices in IT companies of Ukraine: Differences in exclusive and inclusive approaches," *Problems and Perspectives in Management*, 19(4), pp. 436–445. Available at: [https://doi.org/10.21511/ppm.19\(4\).2021.35](https://doi.org/10.21511/ppm.19(4).2021.35).
- Sheko, A. and Spaho, Alma.B. (2018) "Information technology inhibitors and information quality in supply chain management: A pls-sem analysis," *Academic Journal of Interdisciplinary Studies*, 7(3), pp. 125–138.
- Swailes, S., Downs, Y. and Orr, K. (2014) "Conceptualising inclusive talent management: Potential, possibilities and practicalities," *Human Resource Development International*, 17(5), pp. 529–544.
- Vukotić, S., Karabašević, D. and Mirčetić, V. (2022) "Strategic approach to talent management: Through contexts of time and environment," in *International May Conference on Strategic Management – IMCSM22. International May Conference on Strategic Management*, Bor, Serbia: Technical Faculty IMCSM22, pp. 126–134.
- Wiblen, S. and McDonnell, A. (2020) "Connecting 'talent' meanings and multi-level context: a discursive approach," *The International Journal of Human Resource Management*, 31(4), pp. 474–510. Available at: <https://doi.org/10.1080/09585192.2019.1629988>.

Financial Literacy, Risk, and Role Models: Investment Behavior Among Members of the Association of Women Business Leaders in Iceland

Ásta Dís Óladóttir and Thora Christiansen

University of Iceland, Reykjavík, Iceland

astadis@hi.is

thc@hi.is

Abstract: This study investigates the factors influencing the investment behavior of women in senior business leadership in Iceland, focusing on the barriers that limit their participation in financial markets. Survey data from 316 members of the Association of Women Business Leaders (AWBL) provide a unique perspective on women who, in principle, possess the education, income, and networks to engage actively in investing. Drawing on an interdisciplinary framework that integrates financial literacy, risk attitudes, socialization, and institutional trust, the study tests four hypotheses. The findings show that AWBL members primarily invest in tangible and lower-risk assets, supporting H1 on gendered investment participation. Consistent with H2, women who received financial education in childhood report significantly higher confidence and are less likely to cite lack of knowledge or role models as barriers. Results also support H3, as lower-income women are more likely to identify lack of capital, risk aversion, and limited knowledge as constraints. In contrast, H4 is only partially supported: while some older participants expressed distrust in financial institutions, this factor played a less prominent role than expected. Overall, the study demonstrates that structural, psychological, and social barriers persist even among women in leadership, reinforcing the importance of early financial education, tailored investment products, and visible female role models. Theoretically, it advances gender and finance research by applying a holistic framework to an underexplored group. Practically, it highlights the need for policies that address both knowledge gaps and structural inequalities to close the gender investment gap. Unlike previous studies focusing on the general population, this paper examines women who, despite having financial capacity and access, still face structural and psychological barriers to investing.

Keywords: Economic empowerment, Financial literacy, Investment barriers, Investment incentives, Women's investment behavior

1. Introduction

Gender equality in economic participation remains a persistent challenge, despite significant progress in women's access to education and labor market opportunities (Nordic Labour Journal, 2025; Óladóttir et al., 2024; Christiansen & Óladóttir, 2022). The World Economic Forum defines economic participation as gender equality in access to employment, wages, leadership positions, and investment opportunities. When barriers to women's economic participation exist, they limit women's ability to build assets, engage in financial markets, and achieve financial independence (WEF, 2025). No country in the world currently offers women equal opportunities to men in the labor market, according to a recent report by the World Bank. Moreover, the global gender gap is wider than previously estimated. Drawing on data from 190 countries, the World Bank argues that closing this gap could increase global GDP by up to 20% (World Bank, 2024).

Despite growing discourse around economic equality, women are still significantly less likely than men to invest in stocks and other financial instruments. This gender disparity in investment behavior may affect women's long-term financial security, as asset accumulation and voluntary savings outside of formal pension systems, sometimes referred to as the "fourth pillar" of retirement security, tend to be lower among women (World Bank, 2005, 2025). This study aims to examine the factors that influence women's investment behavior in the Icelandic business sector, including both barriers and drivers. The research seeks to explore various aspects of women's investment activity and decision-making, including access to investment opportunities, trust in financial institutions, financial literacy and knowledge, risk tolerance, attitudes toward uncertainty, and the impact of role models and support systems. The paper addresses the following research questions: (1) What factors influence the investment behavior of members of the Association of Women Business Leaders in Iceland (AWBL), and (2) What barriers limit the active engagement of AWBL members in financial markets?

To answer these questions, the paper presents a theoretical discussion on gender differences in investment behavior, followed by an analysis of data collected through a survey of 316 AWBL members in Iceland. The analysis sheds light on how social, economic, and psychological factors shape the investment behavior of women leaders and identifies potential policy and institutional measures to increase their participation in financial markets. The study offers insights that are not only relevant to the Icelandic context but carry broader implications for international efforts to promote financial inclusion and gender-equitable wealth creation.

2. Literature Review: Gender, Financial Behavior, and Investment Participation

Despite advances in women's education and labor force participation, a persistent gender gap in investment behavior remains, both globally and in Iceland (Arion Bank, 2025; Jha & Shayo, 2025; Niessen-Ruenzi & Zimmerer, 2024). Women invest less frequently, exhibit lower confidence in financial decisions, and participate less in stock markets. This "gender investment gap" is shaped by intersecting psychological, social, and institutional factors. To explain women's investment behavior, especially among those in leadership, this study builds on a framework of four interrelated dimensions: financial literacy, risk attitudes, socialization, and institutional trust. To address the research questions, this section reviews existing research on women's investment behavior, providing a theoretical and empirical foundation. The theoretical contribution lies in integrating financial literacy, risk perception, socialization, and institutional trust into a single interdisciplinary framework, while the empirical background synthesizes findings on gendered financial behavior to contextualize the Icelandic case.

2.1 Gendered Investment Participation

Gender differences in investment behavior are especially evident in equity market participation (Jha & Shayo, 2025; Torma et al., 2023; Niessen-Ruenzi & Zimmerer, 2024). Women exhibit patterns associated with lower self-confidence and higher risk aversion; they are more likely to choose mutual or index funds and less likely to trade individual stocks. Their investment goals often emphasize long-term security and family welfare over short-term gains (N26, 2022; Fidelity, 2024). Barriers to participation include lack of financial knowledge, risk aversion, and perceptions of inaccessibility (Marinelli et al., 2017). Young women cite insufficient knowledge as a deterrent (BlackRock & YouGov, 2024). Encouragingly, recent data indicate a growing interest: ETF ownership among women has risen significantly over the past three years (BlackRock & YouGov, 2024). In the Icelandic context, women and men have participated equally in supplementary pension savings since 1999, with women slightly ahead since 2005 (Daníelsson et al., 2023). While direct investment activity remains lower among women, this may reflect preferences for lower-risk savings instruments rather than unwillingness to save. Thus, we hypothesize that women in business leadership are more likely to invest in low-risk or tangible assets (e.g., real estate, funds, artwork) and less likely to invest in high-risk financial instruments (e.g., individual stocks, private equity, or cryptocurrencies), reflecting lower financial confidence and higher risk aversion (H1).

2.2 Financial Literacy and Socialization

Financial literacy, defined as the ability to manage personal finances, directly influences investment behavior (OECD, 2016; Bucher-Koenen et al., 2016). Women generally report lower levels of financial knowledge and confidence, even when actual competence is equal (Gudjonsson et al., 2022; Merkoulova & Veld, 2022). In Iceland, financial education in schools remains inconsistent. A 2024 survey by the Icelandic Financial Services Association found girls scored lower than boys in both financial awareness and confidence (Fjármálavit, 2022). Participants also reported that early financial education was vague or impractical. Socialization reinforces these gaps. Boys are more often encouraged to be financially independent and take risks, while girls are less likely to receive messages about autonomy or financial initiative (Eagly & Wood, 1991). These early messages influence lifelong attitudes toward investing and financial self-efficacy. We therefore hypothesize that women who received financial education during childhood report higher confidence in investment decision-making and are less likely to perceive a lack of knowledge or role models as barriers (H2).

2.3 Risk Tolerance and Decision-Making

A well-established body of research confirms that women tend to be more risk-averse than men (Croson & Gneezy, 2009; Eckel & Grossman, 2002). This affects both asset choices and trading behavior. Men tend to trade more often, driven by overconfidence, while women trade less frequently and pursue more conservative strategies (Barber & Odean, 2001). Interestingly, some studies find that women achieve slightly better long-term returns (Oskarsson, 2024). The roots of risk aversion are debated. Biological explanations suggest hormonal influences (Sapienza et al., 2009), while sociological theories emphasize gendered expectations: boys are encouraged to be assertive and competitive, whereas girls are encouraged to be cautious and responsible (Eagly & Wood, 1991). While women are underrepresented in discretionary investing, their participation in mandatory and voluntary pension savings is robust. This suggests that aversion is directed more toward complex or high-risk financial decisions than toward saving. In addition to gendered patterns, income levels also influence risk tolerance. Riley and Chow (2018) show that relative risk aversion decreases once individuals move above the poverty line and declines substantially among the very wealthy. Their study further suggests that while risk aversion decreases with age up to retirement, it tends to increase again after age 65. These findings highlight

that risk attitudes are shaped not only by gender and socialization but also by structural economic security. Based on previous studies on income and risk attitudes, we hypothesize that women with lower income levels exhibit higher risk aversion and are more likely to perceive a lack of capital as a barrier to investing (H3).

2.4 Institutional Trust, Advisor Use, and Investment Behavior

Trust in financial institutions plays a critical role in shaping investment participation, and women consistently report lower levels of trust in financial firms and advisors (Guiso et al., 2008). This distrust often discourages women from engaging with formal financial markets or seeking professional financial advice. In Iceland, trust in the banking system remains low in the wake of the 2008 financial crisis, with only 20.6% of the population expressing trust in 2025—a slight increase from previous years (Gallup, 2025). Such low institutional trust may have an outsized impact on women, who tend to be more sensitive to relational cues, transparency, and the advisor's communication style (Ford & Kent, 2009).

Beyond institutional credibility, emerging research highlights gender-specific dynamics in the advisor-client relationship. Klein et al. (2021) demonstrate that gender bias influences both perceptions of financial advisors and client trust, with women being perceived as less competent, even when their qualifications are identical. This not only erodes confidence in the advice received but may also deter women from engaging with advisors at all, particularly when few female advisors are visible. Many women, therefore, turn to peers, partners, or family members for financial guidance, perceiving formal advisory settings as male-dominated or unrelatable.

These dynamics extend beyond perceptions to measurable outcomes. While financial advisors are typically assumed to improve financial confidence and reduce barriers, our study investigates whether this holds among women business leaders in Iceland. Drawing on prior work, we hypothesize that women with lower levels of trust in financial institutions are less likely to participate actively in financial markets and more likely to perceive institutional barriers to investing (H4). We further hypothesize that women who consult financial advisors will report greater investment confidence and fewer perceived barriers than those who do not (H5). Together, these hypotheses address both systemic and interpersonal aspects of trust and how they influence women's financial participation.

Globally, the consequences of limited market engagement are substantial: lower investment levels among women translate into long-term wealth disparities and reduced retirement security (Niessen-Ruenzi & Schneider, 2022). While Iceland's robust public pension system mitigates some of these risks, structural gender gaps in pay and cumulative lifetime earnings continue to constrain women's ability to invest and accumulate financial assets (Neelakantan & Chang, 2010). Addressing institutional trust and the accessibility of financial advisory services is therefore essential not only for financial inclusion but also for long-term gender equity in wealth accumulation.

2.5 Toward Financial Inclusion

In summary, persistent gender gaps in investing stem from interlocking forces: lower financial literacy, greater risk aversion, limited trust in institutions, and socialized gender roles. While women in Iceland and elsewhere have made strong gains in employment and education, these factors continue to limit their financial participation (Magnús Harðarson, President of Nasdaq Iceland, personal communication, April 11, 2025). Looking ahead, women's financial influence is growing rapidly. By 2030, U.S. women alone are expected to control over \$30 trillion in assets (Bowley et al., 2024). Alongside this shift, women show stronger interest in value-aligned investing, especially ESG strategies (Aristei & Gallo, 2024). Financial institutions are beginning to respond with products and services tailored to women's goals and preferences (Smucker & Atherton, 2024; Thorarinsdottir et al., 2024).

3. Methodology

This study explores the barriers and enablers of investment participation among Icelandic women in leadership. To capture the experiences of women with financial capacity, access to information, and professional experience, the target group consisted of AWBL members. This group was selected because its members are highly educated, financially capable, and professionally active, making them particularly well-positioned to engage in financial markets. At the same time, this focus introduces potential sample bias, as it does not capture the broader population of Icelandic women. A convenience sampling method was used (Katz, 1972). The survey was distributed via the private (AWBL) Facebook group, which included around 1,400 members, from February 21 to March 10, 2025. A total of 316 women participated. Participation was anonymous and voluntary, and participants were informed that their answers could not be traced back to them. The demographic profile of

respondents reflects the target population: most were between 46 and 55 years old, and nearly three-quarters held a graduate degree. Approximately 74% worked in the private sector, and around 50% reported a net monthly income exceeding 800,000 ISK (EUR 5,600). A majority were married or in long-term partnerships. The survey included questions covering investment behavior, perceived barriers, financial confidence, and exposure to financial education. This methodological approach provides robust insight into both structural and psychological barriers, even among women who are, in principle, well-equipped to participate in financial markets. At the same time, the non-random sample limits generalizability, and findings should be interpreted with this context in mind. Participants' investment experience was explored by asking whether they had invested in specific asset classes over the past five years. The options included: stocks, bonds, funds, tangible assets (e.g., real estate or art), private equity or start-ups, cryptocurrencies, foreign currencies, and other investments.

4. Findings

This section presents the results of the survey conducted among 316 AWBL members in Iceland. The analysis is organized around the five hypotheses (H1–H5), using both descriptive and inferential statistics to assess their validity.

4.1 Investment Preferences and Risk Aversion

H1: Women in business leadership are more likely to invest in low-risk or tangible assets (e.g., real estate, funds, artwork) and less likely to invest in high-risk financial instruments (e.g., individual stocks, private equity, or cryptocurrencies), reflecting lower financial confidence and higher risk aversion.

Survey data indicates that the most common investments among AWBL members were in tangible assets (e.g., real estate, art), followed by stocks and funds. Investments in higher-risk categories such as private equity, cryptocurrencies, or foreign currencies were relatively rare. Figure 1 illustrates that 38% of participants had invested in only one asset type, while just over 5% reported holding five or more types of investments. Approximately 6% of respondents reported having no investment activity in any of the listed asset classes during the period.

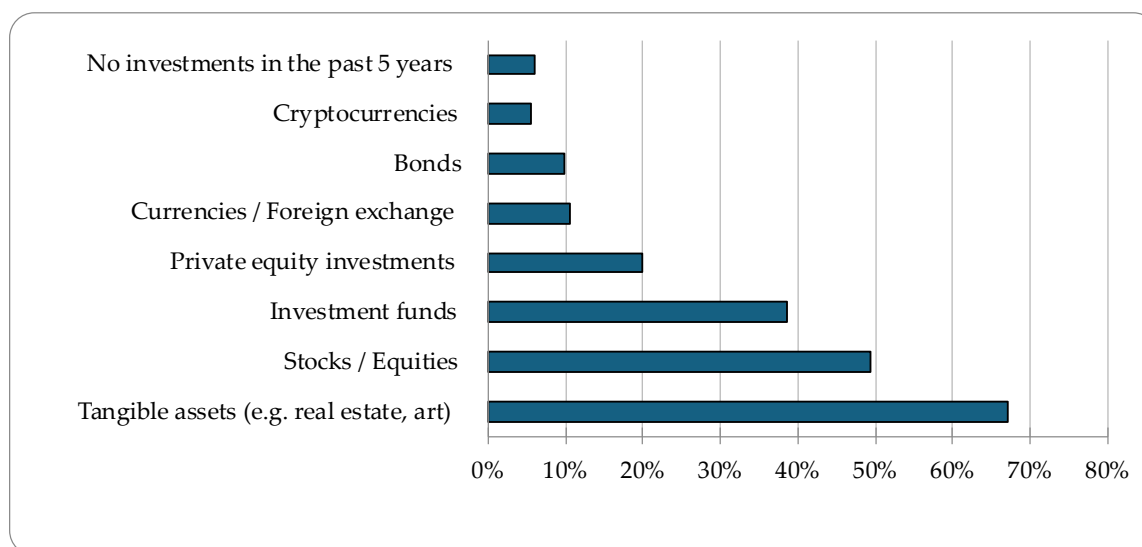


Figure 1: Types of Investments Reported by AWBL Members (Past 5 Years)

H1 is supported; the asset choices reported by participants reflect risk-averse behavior and lower confidence in navigating complex or volatile financial instruments. This pattern aligns with prior research showing gendered preferences for more stable investment classes, suggesting that even among financially capable women, there is a strong preference for low- to moderate-risk assets.

4.2 Financial Education and Investment Confidence

H2: Women who received financial education during childhood report higher confidence in investment decision-making and are less likely to perceive a lack of knowledge or role models as barriers.

Participants who had received childhood financial education (35.7% of the sample) were significantly more confident in making investment decisions ($M = 3.11$, $SD = 1.07$) compared to those without such education ($M =$

2.74, SD = 1.15), $t(270) = 2.65$, $p = .009$, $d = 0.32$. Additionally, early financial education was significantly associated with fewer perceived barriers based on lack of financial knowledge, $\chi^2(1, N = 272) = 11.16$, $p < .001$, $\phi = .20$, and lack of role models, $\chi^2(1, N = 272) = 3.99$, $p = .046$, $\phi = .12$.

H2 is supported; early financial education is positively associated with greater self-efficacy and fewer perceived knowledge-based constraints. These results suggest that early financial socialization plays a significant role in building financial confidence and reducing psychological barriers to investment.

4.3 Income Level, Risk Aversion, and Perceived Barriers

H3: Women with lower income levels exhibit higher risk aversion and are more likely to perceive a lack of capital, fear of risk, and limited financial knowledge as barriers to investing.

Respondents were divided into two income groups: those earning $\leq 1,000,000$ ISK/month and those earning more. Three significant differences emerged, indicating that women with lower incomes are more likely to face structural and psychological barriers to investing, particularly in terms of capital availability, $\chi^2(1, N = 241) = 5.42$, $p = .020$, $\phi = .15$, risk aversion, $\chi^2(1, N = 241) = 3.74$, $p = .053$, $\phi = .12$ (marginally significant), and lack of financial knowledge, $\chi^2(1, N = 241) = 11.72$, $p < .001$, $\phi = .22$.

H3 is supported; lower income levels correlate with higher perceived barriers and more conservative investment behavior. This suggests that lower income may correlate with lower risk tolerance, a trend well-documented in the literature (Riley & Chow, 2018).

4.4 Institutional Trust and Participation

H4: Women with lower levels of trust in financial institutions are less likely to participate actively in financial markets and more likely to perceive institutional barriers to investing.

Overall, institutional trust was not a dominant barrier, cited by only 18% of participants. However, trust perceptions varied slightly by age, with older women (46+) marginally more likely to report distrust in financial institutions, $\chi^2(1, N = 277) = 3.73$, $p = .054$, $\phi = .12$ (marginally significant).

No significant relationship was found between trust and investment confidence, suggesting that trust may not be a primary constraint for this highly educated, professionally networked population. H4 is partially supported; while institutional trust shows some relevance, especially among older women, it does not emerge as a major barrier to participation.

4.5 Use of Financial Advisors and Perceived Barriers

H5: Women in business leadership who consult financial advisors will report higher investment confidence and fewer perceived barriers than those who do not.

Just under a quarter of participants (23.6%) reported having used a financial advisor within the past five years. To evaluate H5, we compared self-reported investment confidence and perceived barriers between those who used advisors and those who did not. Contrary to expectations, no statistically significant difference was found in mean confidence levels between advisor users ($M = 2.92$, $SD = 1.10$) and non-users ($M = 2.91$, $SD = 1.15$), $t(267) = 0.08$, $p = .936$. Furthermore, advisor use was not significantly associated with lower reporting of barriers such as lack of financial knowledge, fear of risk, or limited capital.

Surprisingly, women who had used financial advisors were more likely to cite the lack of role models as a barrier, $\chi^2(1, N = 277) = 6.68$, $p = .010$, $\phi = .15$. This counterintuitive result may reflect a mismatch between clients' expectations and the style or demographics of available advisors, as suggested in recent literature on gender bias in financial advisory relationships (Klein et al., 2021). H5 is not supported. Financial advisor use did not correlate with increased confidence or reduced perceived barriers. On the contrary, it was associated with heightened sensitivity to the lack of relatable role models.

5. Discussion

This study set out to examine the factors influencing the investment behavior of women in business leadership in Iceland and the barriers that limit their active participation in financial markets. By focusing on members of the Association of Women Business Leaders (AWBL), a group characterized by high income, education, and professional status, the study provides new insight into how structural and psychological factors affect even women who, in principle, are well-positioned to invest.

H1, Gendered investment participation. The findings confirm that women in leadership predominantly invest in tangible and relatively low-risk assets, such as real estate, artwork, and funds, while fewer reported participation in high-risk categories like private equity, cryptocurrencies, or foreign currencies. This pattern is consistent with prior research emphasizing women's greater risk aversion and preference for conservative strategies (Croson & Gneezy, 2009; Barber & Odean, 2001). Importantly, the concentration of AWBL members in asset-based investments highlights that gendered investment behavior persists even among financially capable and professionally accomplished women. Thus, H1 is supported.

H2, Financial literacy and socialization. The study also provides evidence that early financial education has a lasting effect. Women who reported financial education in childhood expressed significantly higher confidence in their investment decision-making and were less likely to cite lack of knowledge or role models as barriers. These findings support prior work linking financial literacy and gendered socialization to adult investment behavior (OECD, 2016; Fjármálavit, 2022). They also emphasize that financial education has the potential to counteract some of the gendered messages that girls receive during formative years (Eagly & Wood, 1991). In line with H2, early exposure appears to foster financial self-efficacy and mitigate barriers rooted in knowledge and role model scarcity.

H3, Income and risk tolerance. The results further indicate that income plays a crucial role in shaping barriers. Women with lower incomes were significantly more likely to report a lack of capital, fear of risk, and limited financial knowledge than higher-income participants. This finding aligns with Riley and Chow's (2018) argument that relative risk aversion decreases once individuals move above a threshold of economic security and decline further among the very wealthy. Our results, therefore, support H3 and highlight that financial capability is closely tied to structural conditions, not only psychological or social factors.

H4, Institutional trust and H5, Use of financial advisors. In contrast, institutional trust played a less prominent role than expected. While some older participants reported distrust toward financial institutions, this was not among the most frequently cited barriers. This diverges from studies emphasizing women's lower trust in financial advisors and institutions (Guiso et al., 2008). Similarly, H5 was not supported: women who consulted financial advisors did not report greater confidence or fewer barriers. In fact, they were more likely to cite the absence of role models, echoing Klein et al.'s (2021) findings on gender bias in perceptions of advisors. One possible explanation is that women in leadership have stronger networks and professional access, which reduces the salience of institutional trust as a barrier, or that other obstacles, such as a lack of capital and confidence, are more immediate constraints. Thus, H4 is only partially supported, and H5 is not supported.

Taken together, the results highlight how investment behavior is shaped by an interplay of structural (income, access to capital), psychological (confidence, risk aversion), and social (role models, financial education) factors. Even among highly educated and financially capable women, barriers such as lack of knowledge and risk aversion persist, suggesting that gendered patterns of financial behavior are deeply entrenched and not automatically resolved by education or career success.

5.1 Theoretical and Practical Contribution

This study advances gender and finance research by integrating four explanatory dimensions financial literacy, risk attitudes, socialization, and institutional trust into a unified framework. It demonstrates that even among financially capable and professionally accomplished women, gendered investment behavior persists. These findings challenge conventional assumptions that education and income automatically eliminate gender disparities in financial participation. By focusing on Iceland a country internationally recognized for gender equality the study shows that structural parity does not necessarily translate into behavioral parity. Theoretically, it bridges micro-level behavioral explanations (e.g., confidence, risk aversion) with macro-level institutional and cultural factors (e.g., trust, financial norms), thus offering a more holistic understanding of the gender investment gap.

From a practical perspective, the findings emphasize the need for interventions that address both structural and psychological barriers. Early and gender-sensitive financial education can foster confidence and long-term engagement. Financial institutions should design investment products that better align with women's risk preferences and long-term security goals, while policymakers and educators should strengthen programs that promote financial autonomy among young girls. Finally, the finding that advisory services do not significantly improve confidence or participation underscores the importance of cultural and gender representation within financial advising. Promoting visible female advisors and inclusive client engagement strategies may increase trust and relevance for women investors.

5.2 Limitations and Future Research

At the same time, several limitations must be acknowledged. The reliance on a convenience sample from AWBL restricts generalizability, as findings cannot be extended to all Icelandic women or to men. Self-reported data may also be subject to recall or desirability bias. Finally, the study emphasizes barriers rather than motivations for investing, which leaves open important questions about what drives women to overcome these obstacles. Future research should therefore adopt comparative designs, including broader and more diverse populations, and investigate how institutional and cultural contexts shape women's financial engagement over time. Cross-country studies could further test whether the Icelandic findings emerging from one of the world's most gender-equal societies reflect global patterns or context-specific conditions. Ultimately, understanding the interplay of financial literacy, socialization, and structural access can inform evidence-based policy measures that foster women's economic empowerment and close the gender investment gap both in Iceland and internationally.

Acknowledgements

The authors would like to thank the Icelandic Centre for Research (Rannís, grant no. 239880-051), the Research Fund of the University of Iceland (grant nos. 15512 and 15533), and the main supporter of the Research Center for equal opportunities in economic participation and leadership at University of Iceland, Arion Bank. The authors also wish to express their gratitude to their collaboration partners at Creditinfo, Gallup, GemmaQ, the Icelandic Pension Funds Association, and Nasdaq Iceland, as well as to all participants in the study, the members of the Association of Women Business Leaders.

Ethics Declaration: This study was conducted in accordance with the University of Iceland's ethical guidelines. All participants were informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw at any time without consequence.

AI Declaration: Artificial intelligence (AI) tools, specifically OpenAI's ChatGPT, were used in the development of this paper. AI support was applied for language refinement, clarity enhancement, and formatting in line with the conference style guidelines. The authors reviewed, verified, and revised all AI-generated text to ensure accuracy, academic integrity, and alignment with the research findings. No AI tools were used to generate, collect, or analyze the study data.

References

- Arion Bank (2025) "Áhugaverðar staðreyndir um stöðu kvenna á fjármálamarkaði". Available at: <https://www.arionbanki.is/konur/stadreyndir/>
- Aristei, D. and Gallo, M. (2024) "Gender-related effects of financial knowledge and confidence on preferences for ethical intermediaries and sustainable investments". *International Journal of Bank Marketing*, 42(3), pp. 486–512. <https://doi.org/10.1108/IJBM-06-2023-0355>
- Barber, B.M. and Odean, T. (2001) "Boys will be boys: Gender, overconfidence, and common stock investment" *The Quarterly Journal of Economics*, 116(1), pp. 261–292. <https://doi.org/10.1162/003355301556400>
- BlackRock and YouGov (2024) "People & Money – The Trends Shaping Investing in the Nordics" Available at: <https://www.blackrock.com/se/individual/literature/brochure/people-and-money-nordics-infographic.pdf>
- Bowley, T., Gosai, D., Mantaro, M., Hope, K. and Xu, R. (2024) "The Rising Wealth of Women. Bank of America Institute." Available at: <https://institute.bankofamerica.com>
- Bucher-Koenen, T., Lusardi, A., Alessie, R. and van Rooij, M. (2016) "How financially literate are women?" *The Journal of Consumer Affairs*, 51(2), pp. 255–283. <https://doi.org/10.1111/joca.12121>
- Christiansen, T.H. and Óladóttir, Á.D. (2022) "The board needs more courage to make the decision to hire a woman CEO": Women directors call for more inclusive hiring procedures" in Marques, J. and Dhiman, S. (eds) *Leading with Diversity, Equity and Inclusion – Approaches, Practices and Cases for Integral Leadership Strategy*. Cham: Springer. https://doi.org/10.1007/978-3-030-95652-3_26
- Croson, R. and Gneezy, U. (2009) "Gender differences in preferences" *Journal of Economic Literature*, 47(2), pp. 448–474. <https://doi.org/10.1257/jel.47.2.448>
- Danielsson, Á., Sigurðardóttir, R. and Haraldsdóttir, S.J. (2023) "Participation in Supplementary Pension Savings in Iceland" *Central Bank of Iceland Working Paper No. 91*. Available at: https://www.cb.is/library/Skraarsafn---EN/Working-Papers/WP_91.pdf
- Eagly, A.H. and Wood, W. (1991) "Explaining sex differences in social behavior: A meta-analytic perspective" *Personality and Social Psychology Bulletin*, 17(3), pp. 306–315. <https://doi.org/10.1177/0146167291173011>
- Eckel, C.C. and Grossman, P.J. (2002) "Sex differences and statistical stereotyping in attitudes toward financial risk" *Evolution and Human Behavior*, 23(4), pp. 281–295. [https://doi.org/10.1016/S1090-5138\(02\)00097-1](https://doi.org/10.1016/S1090-5138(02)00097-1)
- Fidelity (2024) "New Research from Fidelity® Shows 71% of Women Own Investments in the Stock Market" *Press release*, 3 October. Available at: <https://newsroom.fidelity.com>

- Fjármálavit (2022) "Fjármálalæsi unglinga: Fræðsla er undirstaða farsældar í fjármálum" Available at: <https://fjarmalavit.is/wp-content/uploads/2022/11/Fjarmalavit-loka-2022.pdf>
- Ford, M.W. and Kent, D.W. (2009) "Gender differences in student financial market attitudes and awareness: An exploratory study" *Journal of Education for Business*, 85(1), pp. 7–12. <https://doi.org/10.1080/08832320903217366>
- Gallup (2025) "Traust til stofnana" [Trust in Institutions]. Available at: <https://www.gallup.is/nidurstodur/thjodarpuls/traust-til-stofnana/>
- Gudjonsson, S., Kristinsson, K. and Minelgaite, I. (2022) "Follow us, not? Gender differences in financial literacy within the global leader of gender equality" *Entrepreneurship and Sustainability Issues*, 10(2), pp. 351–361. [https://doi.org/10.9770/jesi.2022.10.2\(21\)](https://doi.org/10.9770/jesi.2022.10.2(21))
- Guiso, L., Sapienza, P. and Zingales, L. (2008) "Trusting the stock market" *The Journal of Finance*, 63(6), pp. 2557–2600. <https://doi.org/10.1111/j.1540-6261.2008.01408.x>
- Jha, S. and Shayo, M. (2025) "Trading stocks builds financial confidence and compresses the gender gap" *The Economic Journal*, 135(665), pp. 235–263. <https://doi.org/10.1093/ej/ueae076>
- Katz, D. (1972) "Some final considerations about experimentation in social psychology" in McClintock, C.G. (ed.) *Experimental Social Psychology*. New York: Holt, Rinehart & Winston.
- Klein, G., Shtudiner, Z. and Zwillling, M. (2021) "Uncovering gender bias in attitudes towards financial advisors" *Journal of Economic Behavior & Organization*, 189, pp. 257–273. <https://doi.org/10.1016/j.jebo.2021.06.040>
- Marinelli, N., Mazzoli, C. and Palmucci, F. (2017) "How does gender really affect investment behavior?" *Economics Letters*, 151, pp. 58–61. <https://doi.org/10.1016/j.econlet.2016.12.006>
- Merkoulova, Y. and Veld, C. (2022) "Why do individuals not participate in the stock market?" *International Review of Financial Analysis*, 83, 102292. <https://doi.org/10.1016/j.irfa.2022.102292>
- Neelakantan, U. and Chang, Y. (2010) "Gender differences in wealth at retirement" *American Economic Review*, 100(2), pp. 362–367. <https://doi.org/10.1257/aer.100.2.362>
- Niessen-Ruenzi, A. and Schneider, C. (2022) "The gender pension gap in Germany – reasons and remedies" CESifo Forum, 23(2), pp. 20–24. Available at: <https://hdl.handle.net/10419/263839>
- Niessen-Ruenzi, A. and Zimmerer, L. (2024) "The Gender Investment Gap: Reasons and Consequences" *Finance Research Letters*, in press. Preprint available at SSRN: <https://doi.org/10.2139/ssrn.4692726>
- Nordic Labour Journal (2025) "Iceland: Equality must be fought in every sector" 26 February. Available at: <http://www.nordiclbourjournal.org/i-fokus/in-focus-2025/theme-gender-equality/article.2025-02-20.8567295754>
- OECD (2016) OECD/INFE "International Survey of Adult Financial Literacy Competencies" Paris: OECD Publishing. <https://doi.org/10.1787/28b3a9c1-en>
- Oskarsson, M.L. (2024) "Gender Differences in Investment Behaviour" FI Analysis 42. Stockholm: Finansinspektionen. Available at: <https://www.fi.se/contentassets/21a10d76e3f149aa95f62ecfeead9b60/fi-analysis-42-english.pdf>
- Óladóttir, Á.D., Christiansen, T.H., Gunnarsdóttir, S. and Kristjánsdóttir, E.S. (2024) "Closing the gap: TMT quotas, investment strategies, and succession policies for gender equality" in Marques, J. (ed.) "Encyclopedia of Diversity, Equity, Inclusion and Spirituality" Cham: Springer. https://doi.org/10.1007/978-3-031-32257-0_88-1
- Riley, W.B. and Chow, K.V. (2018) "Asset allocation and individual risk aversion" *Financial Analysts Journal*, 48(6), pp. 32–37. <https://doi.org/10.2469/faj.v48.n6.32>
- Sapienza, P., Zingales, L. and Maestripietri, D. (2009) "Gender differences in financial risk aversion and career choices are affected by testosterone" *Proceedings of the National Academy of Sciences*, 106(36), pp. 15268–15273. <https://doi.org/10.1073/pnas.0907352106>
- Smucker, M. and Atherton, A. (2024) "Gender Lens Investing Q1 2024: A Review of Sustainable and Equality-Focused Investing" Parallel Finance. Available at: <https://parallelfinance.com/gender-lens-investing-review/>
- Statistics Iceland (2025) "Assets, proportional distribution, sum of deciles 1997–2023" (table THJ09004). Available at: <https://px.hagstofa.is/pxen/pxweb/en/>
- Thorarinsdóttir, F.T., Óladóttir, Á.D., Darmstadt, G.D. and Benediktsdóttir, S. (2024) "Gender lens investing: A scoping review from theoretical foundations to public equity applications" *Sustainability*, 16(20), 8916. <https://doi.org/10.3390/su16208916>
- Torma, J., Barbic, J. and Ivanov, M. (2023) "Analyzing the effects of financial education on financial literacy and financial behavior" *SouthEast European Journal of Economics and Business*, 18(2), pp. 63–86. <https://doi.org/10.2478/jeb-2023-0019>
- World Bank (2005) "Old-Age Income Support in the 21st Century: An International Perspective on Pension Systems and Reform" Washington, DC: World Bank. Available at: <https://documents1.worldbank.org/curated/en/466041468141262651/pdf/32672.pdf>
- World Bank (2024) "Women, Business and the Law 2024" Washington, DC: World Bank. Available at: <https://openknowledge.worldbank.org/entities/publication/853a55af-f1ba-4979-949c-61979af2fbb9>
- World Bank (2025) "State of Social Protection Report 2025: The 2-Billion-Person Challenge" Washington, DC: World Bank. Available at: <https://www.worldbank.org/en/topic/socialprotection/publication/state-of-social-protection-2025-2-billion-person-challenge>
- World Economic Forum (2025) "Global Gender Gap Report 2025" Geneva: WEF. Available at: <https://www.weforum.org/publications/global-gender-gap-report-2025/>

Leadership in Higher Education: Women's Mentorship and Leadership Styles

Elsa Catalina Olivas Castellanos¹, Leonel De Gunther Delgado², Fabiola Salas Díaz³, María Gabriela Ortiz Martínez¹, Armando Elizondo Noriega³, Ana Yael Vanoye-García¹ and María Yolanda Burgos López¹

¹Tecnologico de Monterrey, Monterrey, Mexico

²Universidad de Sonora, Hermosillo, Mexico

³Tecnologico de Monterrey, Hermosillo, Mexico

cat.olivas@tec.mx

leonel.degunther@unison.mx

fabiola.salasd@tec.mx

gabriela.ortiz@tec.mx

armando.elizondo@tec.mx

avanoye@tec.mx

yolanda.burgos@tec.mx

Abstract: Women's leadership across industries worldwide continues to be promoted by governments, companies, and organizations alike. This paper presents preliminary results from a broader qualitative research on women in leadership positions in higher education institutions (HEI), government positions, and companies related to higher education (HE) worldwide. This paper presents the views of women in leadership roles in HEI (including department, institution, board of directors, among others) and related organizations (such as consultancies, embassies) on 1) the mentorship they have received (if any) from their role models, and 2) which leadership styles they perceive to practice in their daily activities in their current role. Through semi-structured interviews, we gathered information about participants' views, practices, and leadership styles. The participants included women from diverse nationalities, ages, socioeconomic, cultural, and academic backgrounds, all of whom currently hold leadership roles in or related to higher education. The interviews were recorded, videotaped, subsequently transcribed, and then coded using MAXQDA, a qualitative analysis software. Results indicated that most participants had received mentorship from previous leaders such as thesis advisors, university deans, faculty heads, or colleagues in similar positions. Participants in the study also cited parents and spouses as role models and mentors influencing their personal and professional decisions. They reported learning qualities such as innovation, creativity, resilience, and soft skills from their mentors. Regarding their leadership styles, most women did not identify with a specific style but rather described some dynamics and approaches they employ in their current leadership roles. Mentorship in the higher education field can support women in the early stages of their careers, help develop their leadership styles, and encourage them to strive for such positions. The study concludes that targeted mentorship programs for women should be established and promoted to incorporate broader perspectives at the highest levels of decision-making in higher education institutions.

Keywords: Educational innovation, Female leadership, Higher education, Leadership, Mentorship

1. Introduction

Comprehending the role mentorship plays in women's leadership positions in higher education, and their adopted dynamics and leadership styles, can offer a roadmap for others who are contemplating pursuing similar paths in their careers. Today, most leadership positions worldwide are held by men in government, corporate, and in most sectors of society (UN Women, 2025). By having women in decision-making roles, industries will have different perspectives that can add to problem-solving discussions of pressing issues, as well as contribute to production and economic growth (Kyambade, M. *et al.* (2024). While women in leadership roles are steadily rising, the United Nations (UN) reports that it will take an estimated 130 years for the gender gap to close in executive government positions (UN Women, 2025).

In higher education, leadership has historically been represented by men, including deans, department heads, and other roles. According to the QS World University Rankings of 2025, only 29% of the top 100 universities were led by women (Cornish, 2025). In turn, work policies, career growth within the institution, and male perspectives have overlooked women's voices, experiences, and the different stages of their lives, and how these may affect their professional development or stagnation (AEEN, 2024; Llorens et al., 2021; Padavic, Ely & Reid, 2020).

Nonetheless, few studies focus on the mentorship, if any, that female leaders in higher education have received, providing us with a roadmap to study their experiences in their professional journey. With this in mind, this study was guided by the following research questions: 1) Did they receive mentorship from their role models/mentors? and 2) which leadership style they perceived to practice in their current role?.

2. Mentorship as a Tool for Women's Leadership Development

Mentorship is widely recognized as an effective tool for providing a roadmap for transitioning roles in an institution. Mentorship alludes to “[being] a dynamic and transformative relationship which affects both parties” (McIlongo & Strydom, 2021). However, if there is a lack of female representation in these positions in HE organizations, there can also be a lack of mentorship opportunities for women, and by women (Okonedo, 2024).

Choosing to pursue leadership positions in one’s career requires role models, in addition to mentorship. Stefani (2024) noted, “fewer studies have examined the impact of role models and perceived support from parents and peers on career persistence” (p. 2). In the case of women, there are even fewer role models in leadership in higher education who can work as mentors for other women. Bozeman & Feeney’s (2009) mentorship model understands this process as a training and adaptation route where individuals can learn and acquire hands-on experience for leadership positions. Their model focuses on women’s mentorship and how they can attain these roles within organizations.

According to Bhatti (2021), internationally, there has been a significant increase in women's participation in leadership roles within universities, mainly at lower and mid-level positions. However, progress remains slow for women in senior leadership. In the workforce, women are typically hired based on their professional achievements, whereas men are recruited for their potential. Despite this, female academics are less likely to secure positions at HEI with a strong research focus and often earn lower salaries.

Mentoring has been part of educational systems since the early 20th century. Educational research shows that mentoring programs lead to positive results for students, faculty, and administrators (Nkrumah, 2022). Access to collaborative and mentoring networks is essential for advancing women leaders in universities. These networks increase women’s visibility in traditionally male-dominated academic structures and help promote their advancement to senior leadership roles (Bhatti, 2021).

3. Leadership Styles

To lead is to guide, listen, provide safe environments where individuals can express their opinions without fear or judgment, and encourage growth and development. When it comes to leadership in higher education, the traditional leadership styles have been commonly practiced: democratic, laissez-faire, transformational, and even bureaucratic. For women, leadership in the beginning meant being included in decision-making; therefore, leadership style was highly structured and motivated by strictness (Galsanjigmed & Sekiguchi, 2023).

Leadership can be defined as “the accomplishment of a goal through the direction of human assistants” (Prentice, 1961, p. 102). Today, leaders should consider other aspects of their organizations to be effective players. In HE, transformational leadership stands out as being “one of the most widely studied and applied styles(...)”. Meta-analytic findings also have proved that transformational leadership impacts greater in organizations when it is controlled by contextual factors (Abbas & Ali, 2023; Garzón-Lasso, et al., 2024; Judge & Piccolo, 2004).

Transformational leaders [create] a shared vision, fostering (...) purpose, and encouraging innovation. [They] focus on developing their staff’s potential, providing them with growth opportunities, and recognizing their achievements” (Tan, 2025, p.2). Leadership styles are key drivers of organizational effectiveness, and in higher education are no exception. The team, the organization, the attitudes, and the experience are several aspects that come into play when choosing a leadership style that is adequate for higher education. As Tan mentioned (2025), “leadership styles have a profound impact on leadership effectiveness in education. While no single (...) style is universally superior, the most effective educational leaders are those who can adapt their style to the needs of their (...) context” (p. 1).

To understand which leadership styles women have in higher education, and from whom they adopted some of their practices via mentorship, this study focuses on testimonies and their experiences in leadership. This paper presents the views of women in leadership roles (including department, institution, board of directors, among others) and related organizations (such as consultancies, embassies) on 1) the mentorship they have received (if any) from their role models, and 2) which leadership styles they perceive to practice in their daily activities in their current role. Through a qualitative research approach, via semi-structured interviews, the paper presents the findings on the testimonies of a group of women with these positions in higher education.

4. Methodology

This study used a qualitative approach to analyze the testimonies of women in leadership positions in higher education and if mentorship influenced their leadership. Once permission was granted from the ethics

committee of the Universidad de Sonora, participants were recruited via an invitation email for the study. All females who had leadership roles in higher education institutions, organizations, consultancies, and state-led agencies were invited. The response was expected to be low, since the study looked for women in top universities in the QS World University Ranking (2024), twelve participants accepted and were interviewed.

An invitation to the study was done through convenience, via email directly to their professional email account, by the academic network of some of the authors and of some of the institutional ties and collaborations. The email invitation stated the study's objective, the data collection and analysis process, as well as the possibility of the study being published in conferences and academic journals. Informed consent was obtained by the participants; however, one participant asked not to be audio or video recorded but agreed for the interviewer to take notes of the conversation.

The qualitative approach of the study provided an in-depth look into the experiences, definitions and personal styles of higher education leaders (Gill, 2008). The structured interviews were conducted by one of the authors, who has a doctoral degree in educational innovation and has conducted previous studies on leadership in higher education. The interviews were designed with practice and organizational behavior theories in mind.

The interview script consisted of 9 questions around the topics; however, this number varied depending on whether participants answered some questions with another answer, and if other questions emerged as a result of their answers. They included questions related to their field of work and the people in it, their dynamics, their knowledge capital, leadership definition, and styles. The study and interview design were approved by an expert committee in Social Sciences and Educational Innovation from the University of Sonora (Mexico).

4.1 Participants

Participants in the preliminary results of the study came from diverse backgrounds, ethnicities, and from public, private, and state positions. The participants' ages ranged from their mid-thirties to their late sixties. Participants were coded as P1 to P12; their brief profile is presented in Table 1. Some of the participants had previously held leadership roles in other organizations, and others were relatively new in their positions at the time of the interview (one to two years). The study had informants from seven different nationalities, with American and Spanish among the top nationalities. We did not offer any type of incentive for their participation in the study.

Table 1: Profile of participants of the study

Part. #	Nationality	Type of organization	Country
P1	British	University	United Kingdom
P2	American	University	United States of America
P3	Spanish	University	Spain
P4	Brazilian	University	Mexico
P5	Spanish	University	Spain
P6	American	venture capital (vc) firm	United States of America
P7	Australian	Governmental	Australia
P8	American	Consulting firm	United States of America
P9	Mexican	University	Mexico
P10	Scottish	University	United Kingdom
P11	American	Consulting firm	United States of America

Part. #	Nationality	Type of organization	Country
P12	American	University	United Kingdom

4.2 Data Collection

Information was collected through semi-structured interviews, which were conducted online from November 2023 to February 2025, using the Zoom platform (paid subscription), private meeting rooms, and in-person interviews at Tecnológico de Monterrey's Monterrey Campus, in the northwestern part of Mexico. Interviews were transcribed, and some parts of the participants' answers were eliminated as instructed during some interviews (mostly when mentioning names of people). The duration of the interviews ranged from thirty minutes to an hour and a half; this allowed the interviewer to follow up with more questions during the same.

4.3 Data Analysis

When all interviews were transcribed, they were uploaded to the MAXQDA qualitative software program for organizing themes, categories, and codes of each interview. The coding was done by one of the authors, who holds a PhD in educational innovation and had prior experience with the qualitative software and research involving semi-structured interviews.

The diversity of the participants' cultural backgrounds provided a new outlook on how they view leadership as an act of giving back, and preparing the new leaders by mentoring those in their teams, in cases where it applied. Also, the experiences of taking a step back from academia and government roles provided the participants with a new perspective on owning their years of experience and becoming their own leaders.

5. Results and Discussion

The results showed that some participants mentioned having had role models rather than mentors in their professional careers as leaders. During the analysis of the results, we identified that most of the participants did not mention a specific leadership style in their daily practices. However, the majority of informants noted qualities they carried in their practice from different types of leadership.

5.1 Mentors or Role Models

This paper defined mentorship as the process of guiding others into adopting and transitioning into leadership roles in their professional careers (Bozeman & Feeney, 2009). These preliminary results show the presence of more role models than mentors in the transition of the participants into leadership positions in higher education (HE).

The informants mentioned a sense of service, of diligently acting and delivering results in their leadership positions, rather than having a mentorship to guide them. There were even fewer participants who mentioned having had women as key mentors in their careers. Some participants mentioned role models who continued to inspire them in fulfilling their current leadership position. However, more than mentors, they had role models who did not take to mentoring them but to providing them with their example or experience.

Participant 6 did not mention any specific gender nor a person who had mentored her. She viewed how several people throughout the years had mentored her to achieve her current leadership:

"I think I've been very fortunate and that I have worked with some amazing people in my career and have cultivated mentors along the way. So, just about every job, I've had amazing mentors that I still call and rely on, and ask for help or advice or guidance or whatever" (Participant 6).

This shared belief of having great male and female leaders was reported by others. Participant 9 mentioned that more than a mentor, what has guided her is a vision rather than a person:

"I am very inspired by a mission, by a vision, and a sense of purpose. I had great leaders in my life and of course, I admire them, both male and female, because of specific traits (...). I think motivation has to come from within, and the best motivation is having a purpose that transcends(...). Like I said, I admire other women who do this, and have done this, it is not easy (...) because we want it all (...).

Participant 3 shared how both men and women have influenced her leadership practices and have been a source of mentorship and inspiration. Nonetheless, informants mentioned having had more male mentors than women:

"Female referents, I've had only a few. (...) [I had] this [woman as a] boss at [a university], I think she is the only woman I've had [as a mentor] in research. My [male] thesis director whom I've trained with, (...) I've always admired his brilliance, and I have tried to guide myself through that path in the scientific aspect. In the management aspect, my reference is my dean, who has put me in this field, (...) and I admire how he manages things".

On the other hand, Participant 4 linked mentorship to her current leader in the same organization where she works today. Additionally, Participant 4 talked about how this male mentor guided her, but mainly answered her questions about the role, the decision-making process, the organization, and overall self-development:

"I think that my leader [is my mentor], and not because he is my boss today, but because I was fortunate to have leaders [where I work], who were people from whom I could learn and who were also very generous. My leaders [have] never held back information, knowledge or opportunities; and that is something big and it had a great impact on the type of leader that I aspire to be".

Other mentors mentioned by the informants were not necessarily from their field but were more of emotional support in the form of parents or spouses/partners. Participant 7 noted that her influence came from her partner: *"I think there have been a lot of people who have influenced particular elements of particular times. If I had to think of someone at particular times, I would say my partner because he's been consistent throughout the time we've been together".*

Participants enhanced their decision-making skills, creativity, resilience, and soft skills mostly by way of seeing and communicating with their senior leaders, rather than having a training program to become their future leaders. Some participants reported that having the wrong mentors shaped them into the type of leaders they wanted to be; others noted that by being in the same boardrooms as their mentors and their senior leaders, and adopted the practices they admired from them.

The results indicated that, more than having female mentors for their leadership development, participants attributed their leadership styles, dynamics, and practices to role models. Most of the participants mentioned male role models, whether it be due to a lack of female representation in leadership roles, or because they did not take gender as an aspect to consider, but rather skills. These testimonies come to enhance what McIlongo & Strydom (2021) mentioned about women not having enough support to gain knowledge and skills for leadership positions: "women (...) believe that mentorship plays an important role in their career development; however, women are not always convinced that the mentorship programme will be effectively implemented" (p. 8).

One finding we did not anticipate was the mention from several participants of how other women in power had made it difficult for them to achieve their own positioning. Informants noted that not only did they not receive mentorship from other women who were already in leadership positions in their organizations or institutions, but that they encountered opposition from them. Participant 10 also shared how some of the negative experiences she had with leaders came from other women: *"I think I sort of feel that women can also be very [mean] towards others (...)".*

5.2 Leadership Styles

The shared themes of leadership traits of participants were inclusivity and teamwork. Participants of the study did not explicitly say which leadership style they thought they practiced, but rather qualities of different types. Except for one informant, the participants did not label their leadership style in this study. Participant 9 named her leadership style as being transformational:

"I believe in transformational leadership, I think my style is one of trust and open communication, and setting very clear expectations and following through (...)".

Whether it was due to her position in the institution or that she had previous knowledge of the types of leadership, this participant described several aspects of transformational leadership and gave examples in her everyday role. Similar to previous studies by Abbas & Ali, 2023 and Judge & Piccolo, 2004, Participant 9 understood that she had to inspire motivation, influence positively, and consider each person from her organization to gain the results the institution needed, through a transformational leadership style.

Participants described their leadership style as one that had to change with time, during, and after the lockdown due to COVID-19. This meant not only that the well-being of their team members and organizations was a priority, but they too had to adopt new tools, including being more inclusive. Participant 1 noted the following:

"I(...) feel that leadership has changed a lot. I think positively, and that as we become leaders, we may learn to do things one way and have had to think about that and think about whether the people who we are leading want that anymore".

Other participants mentioned having this sense of inclusivity in their leadership. Participant 2 also described how, during the pandemic until this day, she makes sure to be aware of everyone's well-being:

"I would lead my team in a pandemic as a huddle, (...) I would ask simple questions, such as: how are you? How is your team? Do you need anything from me? (...) And now with a crisis in the Middle East, we have the huddle back, checking in on our mental health; some are struggling. I care about community. I want a strong and inclusive community. There are human resources issues, managing the team, a lot of services, and new moms (postpartum issues)".

This inclusivity that participants mentioned was connected with a sense of teamwork. Participant 11 mentioned that she not only included others in the decision-making process, but also understood that their ideas and points of view were part of coming up with solutions:

"Too many leaders just let people talk. That's not listening. You know, it– it's listening, it's collaborating, visioning, you know, having a– an idea of, okay, I can see where I think we need to go. I'm not sure how to get there".

Participant 3 noted that her leadership style was an autocratic one in the beginning, this due to her previous belief that women in leadership had to "act" like the men. However, experience and time made her style more democratic, which included others in the decision process:

"I believe that what characterizes me as a leader is teamwork. Absolutely, absolutely, I am a person of consensus. I like to discuss all of the decisions, and [me and my team] meet regularly (...). I rarely do anything by myself".

Most of the participants mentioned they led with a leadership style of trust, where teams believe in the leader, and leaders provide growth opportunities and safe environments for the members to discuss and express their ideas. Participant 10 described her leadership as

"I suppose (...), sometimes it's really a difficult balance between. There is a managerial part where you just need to make sure that the work is done in time, that everyone in the team is doing their work. But, I think it's also leaving some wiggle room, especially for the more junior people on the team, to make sure that they have some time to discover for themselves what they want to do in the future".

As Tan (2025) noted, "Leaders who can flexibly adopt elements of various leadership styles based on the context and needs of their teams are more likely to achieve long-term success" (p. 3). Participants considered their leadership style as a mix between inclusive, human-oriented, of trust, and welcoming of letting others participate in the decision-making process.

The study did present limitations, which we made note of. There was a small number of participants who agreed to volunteer in the study; this was due in part to their agendas. The study focused on the higher education sector worldwide; this proved to be daring since the backgrounds and experiences of leaders varied greatly, as well as the education systems where they developed their leadership skills. Some participants were women of color (WOC), the experiences of white and WOC women in leadership positions can vary greatly. For future studies, it is advised to compare such differences in race and education systems. It is also suggested to focus on institutions that have mentorship programs for women for leadership positions in higher education.

6. Conclusions

Examining women's mentorship and leadership practices in higher education helps understand their paths to power and how they lead. Interviews with the participants highlighted the opportunities they gained through hard work, though most did not have mentors during their leadership development. Additionally, as some informants noted, once women attain leadership positions, some may be less welcoming to other women due to fears of competition.

The participants mentioned having role models who inspired them and past leaders they looked up to. The informants shared how they developed their leadership skills by working closely with former leaders and thesis directors—not by being directly guided, but by being in the decision-making rooms with them. This, in turn, led some participants to adopt leadership styles and exhibit male stereotypes of leadership (tough, rigid,

authoritarian) early in their careers, which alienated them from other women who also displayed these traits in their leadership.

The study found that participants felt confident in their roles as leaders in higher education. Their leadership style, even if not specifically mentioned, incorporated traits such as inclusivity, trust, and teamwork, which were core to their practice. They "[adapted] their style to the needs of their staff, students, and the educational context" (Tan, 2025, p. 3). Fostering mentorship programs for women, developing their skills, and informing women about professional growth in higher education can encourage employers in higher education to consider women's perspectives and well-being for leadership roles. Additionally, advancing studies on women's leadership will provide institutions, organizations, and industry leaders with relevant information for mentorship and inclusivity initiatives aimed at reducing the gender gap within their organizations.

Acknowledgements

We want to acknowledge the technical and financial support of the Writing Lab, Institute for the Future of Education, Tecnológico de Monterrey, Mexico, in the production of this work.

Ethics Declaration: Ethical approval for this study was obtained by an expert committee of the Social Sciences Department and Educational Innovation Program from the *Universidad de Sonora* (Mexico). Written informed consent to participate in the study was obtained from participants to be published in this article. The authors declare that there is no conflict of interest.

AI Declaration: We acknowledge the use of the free version of Grammarly (<https://app.grammarly.com/>) to identify grammatical mistakes in prepositions and other incorrectly written words in the manuscript. In this paper, Grammarly (free version) was used to identify grammatical mistakes since the authors are not native English speakers.

References

- Abbas, M. & Ali, R. (2023). Transformational versus transactional leadership styles and project success: A meta-analytic review. *European Management Journal*, [online] 41(1), pp.125–142. doi:<https://doi.org/10.1016/j.emj.2021.10.011>.
- AEEN (2024). *Women: Obstacles to career development persist - AEEN*. [online] AEEN. Available at: <https://www.aeen.org/women-obstacles-to-career-development-persist/>.
- Bhatti, A. and Ali, R. (2021). Women's Leadership Pathways in Higher Education: Role of Mentoring and Networking. *Asian Women*, 37(3), pp.25–50. doi:<https://doi.org/10.14431/aw.2021.9.37.3.25>.
- Bozeman, B. & Feeney, M. K. 2009. Public Management Mentoring: A Three-Tier Model. *Review of Public Personnel Administration*, 29, 134-157.
- Cornish, L. (2025). *Enhancing women leadership in Higher Education | IWD 2025 | QS*. [online] QS. Available at: <https://www.qs.com/insights/articles/iwd-2025-enhancing-women-leadership-in-higher-education/>
- Galsanjigmed, E. and Sekiguchi, T. (2023). Challenges women experience in leadership careers: An integrative review. *Merits*, [online] 3(2), pp.366–389. doi:<https://doi.org/10.3390/merits3020021>.
- Garzón-Lasso, F., Serrano-Malebrán, J., Arenas-Arango, S. & Molina, C. (2024). Full range leadership style and its effect on effectiveness, employee satisfaction, and extra effort: an empirical study. *Frontiers in Psychology*, [online] 15. doi:<https://doi.org/10.3389/fpsyg.2024.1380935>.
- Gill, P., Stewart, K., Treasure, E. and Chadwick, B., (2008). Methods of data collection in qualitative research: interviews and focus groups. *British dental journal*, 204(6), pp.291-295.
- Judge, T.A. & Piccolo, R.F. (2004). Transformational and Transactional Leadership: a Meta-Analytic Test of Their Relative Validity. *Journal of Applied Psychology*, 89(5), pp.755–768. doi:<https://doi.org/10.1037/0021-9010.89.5.755>.
- Kyambade, M. et al. (2024) 'Bridging the gender gap: analyzing women's participation and leadership representation in university governance', *Cogent Social Sciences*, 10(1). <https://doi.org/10.1080/23311886.2024.2432519>
- Llorens, A., Tzovara, A., Bellier, L., Bhaya-Grossman, I., Bidet-Caulet, A., Chang, W.K., Cross, Z.R., Dominguez-Faus, R., Flinker, A., Fonken, Y., Gorenstein, M.A., Holdgraf, C., Hoy, C.W., Ivanova, M.V., Jimenez, R.T., Jun, S., Kam, J.W.Y., Kidd, C., Marcelle, E. and Marciano, D. (2021). Gender bias in academia: A lifetime problem that needs solutions. *Neuron*, 109(13), pp.2047–2074. doi:<https://doi.org/10.1016/j.neuron.2021.06.002>.
- Nkrumah, T. and Scott, K.A. (2022). Mentoring in STEM higher education: a synthesis of the literature to (re)present the excluded women of color. *International Journal of STEM Education*, 9(1). doi:<https://doi.org/10.1186/s40594-022-00367-7>.
- Okonedo, E. (2024). *Women Leaders in Business Schools Transitioning to Senior Roles in Universities*. [online] Global Focus Magazine. Available at: <https://globalfocusmagazine.com/women-leaders-in-business-schools-transitioning-to-senior-roles-in-universities/>
- Padavic, I., Ely, R.J. and Reid, E.M. (2020). Explaining the persistence of gender inequality: The work–family narrative as a social defense against the 24/7 work culture. *Administrative Science Quarterly*, 65(1), pp.61–111. doi:<https://doi.org/10.1177/0001839219832310>.

- Prentice, W.C.H. (2004) 'Understanding Leadership', *Harvard Business Review*, 82(1), pp. 102–109. Available at: <https://research.ebsco.com/linkprocessor/plink?id=300b858c-9bd0-3426-a02e-902cc2dad1f3>
- Stefani, A. (2024). Parental and Peer Influence on STEM Career Persistence: From Higher Education to First Job. *Advances in Life Course Research*, 62, pp.100642–100642. doi:<https://doi.org/10.1016/j.alcr.2024.100642>.
- Tan, S. (2025). Leadership styles and their impact on leadership effectiveness in education. *Academy of Educational Leadership Journal*, [online] 29(1), pp.1–3. Available at: <https://www.abacademies.org/articles/leadership-styles-and-their-impact-on-leadership-effectiveness-in-education.pdf>.
- Unesco (2025). *Education: UNESCO Report calls for more women at the top*. [online] Available at: <https://www.unesco.org/en/articles/education-unesco-report-calls-more-women-top>.
- UN Women (2025). *Facts and Figures: Women's Leadership and Political Participation*. [online] UN Women. Available at: <https://www.unwomen.org/en/articles/facts-and-figures/facts-and-figures-womens-leadership-and-political-participation>.
- White, P., Ba Akhlagh, S., Fanshawe, M., Charteris, J. and Gregory, S. (2025). Pivotal moments in mentorship: using arts-based reflective practice to explore the impact of mentorship on women in higher education. *Reflective Practice*, pp.1–19. doi:<https://doi.org/10.1080/14623943.2024.2426278>.

Aligning Regional Innovation Ecosystems: The MEAM-3LAM Model and CAM Actor Mapping

Håkan Ozan¹ and Annika Steiber²

¹Novelty Quest Research, Stockholm, Sweden

²RDHY Silicon Valley Research Center, CA, USA

hakan.ozan@noveltyquest.com

rdhy.siliconvalley@gmail.com

Abstract: This paper presents an integrated framework for analyzing and developing regional innovation ecosystems through the combination of three complementary models: the METRIC Ecosystem Actor Model (MEAM v2), the Three-Layer Alignment Model (3LAM), and the Conceptual Actor Mapping (CAM) methodology. MEAM v2 provides a comprehensive taxonomy of innovation ecosystem actors organized by function (Innovation Development, Innovation Support, and Structural Support) and categorized into ten distinct actor types. The 3LAM model adds vertical dimension by distinguishing between Public Innovation Ecosystems (PIE), Business Innovation Ecosystems (BIE), and Innovation Management Systems (IMS). CAM operationalizes these frameworks through a four-step diagnostic process. The integration of these three models offers practitioners and policymakers a robust toolkit for ecosystem assessment, gap identification, and strategic intervention design. Based on extensive literature review and empirical testing with 1,682 firms across Swedish regions, this framework provides actionable insights for enhancing innovation ecosystem performance through improved actor alignment and orchestration.

Keywords: Innovation ecosystems, Actor taxonomy, Governance layers, Ecosystem diagnostics, MEAM, 3LAM

1. Introduction

Innovation ecosystems have emerged as critical determinants of regional competitiveness and economic development. These complex, multi-actor environments depend on effective interactions between diverse stakeholders to generate value and drive innovation (Stam and Spigel, 2018). However, despite growing recognition of their importance, practitioners and policymakers often struggle with the lack of structured tools to analyze actor configurations, identify systemic gaps, and design targeted interventions that enhance ecosystem performance.

This paper addresses this challenge by presenting an integrated framework that combines three complementary models developed through extensive research and empirical testing. The METRIC Ecosystem Actor Model (MEAM v2) provides a functional taxonomy of innovation actors, categorizing them into ten distinct types across three core functions (Ozan et al., 2024). The Three-Layer Alignment Model (3LAM) adds a vertical governance perspective by distinguishing between public, business, and organizational innovation layers. Finally, the Conceptual Actor Mapping (CAM) methodology operationalizes these frameworks through practical diagnostic tools that enable systematic ecosystem analysis.

The integration of these three models represents a significant advance in innovation ecosystem analysis. Unlike existing approaches that often focus on single dimensions or rely on generic stakeholder categories, this framework offers granular actor classification while maintaining a systemic perspective. It captures both horizontal functional relationships and vertical governance dynamics, providing practitioners with actionable diagnostic tools. This paper demonstrates how the synergistic combination of MEAM, 3LAM, and CAM creates a comprehensive toolkit for ecosystem assessment, gap identification, and strategic intervention design.

The strategic relevance of innovation ecosystems lies in their potential to align diverse stakeholders, drive knowledge exchange, and accelerate regional economic transformation. Yet, persistent analytical blind spots, particularly regarding support roles, governance alignment, and role-based diagnostics, limit their effectiveness. Given the increasing role of regional innovation ecosystems in determining long-term economic resilience and technological competitiveness, the lack of structured and multi-layered analysis tools presents a significant barrier to both public policy effectiveness and firm-level innovation uptake. Without clear diagnostic frameworks, investments risk misalignment and ecosystem initiatives underperform. This paper addresses these challenges by offering a model-based approach that enables more actionable, actor-specific insights for both research and policy application.

2. The MEAM v2 Actor Taxonomy

The METRIC Ecosystem Actor Model version 2 represents a refined taxonomy that emerged from comprehensive literature analysis spanning 2015 to 2025. The model organizes innovation ecosystem actors according to three core functions that capture the essential activities required for effective innovation systems.

Innovation Development encompasses those actors directly involved in generating and commercializing innovations. Within this function, Research actors such as universities, public research organizations, and corporate R&D departments generate new knowledge through basic or applied research (Tolstykh et al., 2021). Entrepreneurship actors, including startups, spin-offs, and corporate venture units, initiate innovation through new venture creation and intrapreneurship (Stam, 2015). Competence actors, comprising technical universities, vocational institutions, and training centers, develop the skills and human capital essential for innovation absorption and implementation.

The Innovation Support function includes actors providing specialized services that enable innovation processes. Advisory actors offer technical, legal, and strategic expertise crucial for navigating complex innovation challenges. Finance actors, ranging from venture capital firms to public funding agencies, supply the capital and de-risking mechanisms necessary for innovation investment. Development actors, including technology parks and prototyping labs, translate research outputs into marketable solutions by bridging the gap between invention and commercialization.

Structural Support comprises actors creating the enabling conditions for innovation to flourish. Networking actors such as industry associations and innovation platforms facilitate information exchange and collaboration across organizational boundaries (Gamidullaeva, 2018). Ecosystem Orchestration actors, including cluster organizations and regional innovation offices, coordinate activities and align ecosystem goals across multiple stakeholders (Masucci et al., 2020). Policy Management actors shape institutional frameworks, priorities, and incentives that guide innovation direction. Education actors provide the foundational knowledge and long-term capability development that underpin innovation capacity.

This functional organization addresses a critical gap identified in the literature review. While existing frameworks adequately represented Knowledge and Market domains, Support functions remained consistently underdeveloped across taxonomies (Madanaguli et al., 2021). MEAM v2 rectifies this through expanded categorization of orchestration, intermediation, and capability-building roles that prove essential for ecosystem effectiveness. This distinction is theoretically important because the effectiveness of an ecosystem often hinges not just on the presence of innovators and funders, but on the strength of enabling actors who connect, guide, and translate across functions and layers. Practically, overlooking these support roles leads to fragmented systems where policies fail to reach firms, and research fails to commercialize. The enhanced taxonomy in MEAM v2 enables policymakers and practitioners to identify structural holes, such as absent IP advisors or weak ecosystem orchestrators that may otherwise remain invisible in standard stakeholder mappings.

3. The Three-Layer Alignment Model (3LAM)

The Three-Layer Alignment Model provides a vertical dimension to ecosystem analysis by distinguishing three nested governance contexts where innovation occurs. This layered perspective recognizes that actors operate within different institutional logics and governance arrangements that fundamentally shape their roles and interactions.

Public Innovation Ecosystems (PIE) represent the outermost layer, encompassing policy frameworks, public funding mechanisms, and strategic coordination at regional or national levels. Within this layer, actors such as ministries, development agencies, and public orchestrators operate under formal mandates and public accountability structures. These actors engage in meta-governance activities, increasingly moving from hierarchical control toward collaborative approaches that promote stakeholder engagement and cross-sectoral alignment (Sørensen and Torfing, 2016). The PIE layer establishes the institutional conditions, regulatory frameworks, and strategic priorities that shape innovation trajectories across the ecosystem.

Business Innovation Ecosystems (BIE) comprise the middle layer, consisting of market-driven networks where firms, intermediaries, and platforms engage in collaborative innovation. This layer includes clusters, accelerators, industry associations, and other entities operating through hybrid governance arrangements that blend market mechanisms with collaborative structures (Wang et al., 2022). BIE actors navigate the tension

between competition and cooperation, creating value through shared resources, knowledge spillovers, and collective capability building. The governance logic here emphasizes flexibility, reciprocity, and mutual benefit rather than hierarchical control.

Innovation Management Systems (IMS) form the innermost layer, representing the internal organizational capabilities through which individual entities manage innovation. This includes R&D units, innovation managers, corporate venture arms, and other functions operating under firm-specific governance. While seemingly contained within organizational boundaries, IMS capabilities fundamentally determine how effectively organizations can absorb external knowledge, participate in collaborative innovation, and translate opportunities into tangible outcomes.

The power of 3LAM lies in recognizing the interdependencies between these layers. Policy frameworks established at the PIE level shape market conditions within BIE, which in turn influence the development of firm-level capabilities in IMS. Conversely, innovations emerging from individual organizations aggregate into business ecosystem dynamics, which inform and sometimes challenge existing policy frameworks (Liu et al., 2022). Understanding these vertical linkages proves crucial for designing interventions that account for systemic effects rather than treating each layer in isolation.

4. The Conceptual Actor Mapping (CAM) Methodology

The Conceptual Actor Mapping methodology transforms the theoretical insights of MEAM and 3LAM into practical diagnostic tools. CAM emerged from the recognition that even well-designed taxonomies often fail to generate actionable insights due to the lack of systematic implementation methods. The methodology provides a structured four-step process that guides practitioners through comprehensive ecosystem analysis.

The process begins with Scope Definition, where analysts establish the geographic or institutional boundaries of their analysis, determine which governance layers to prioritize, and clarify specific analytical goals. This crucial first step ensures that subsequent analysis remains focused and relevant to stakeholder needs. Whether examining a regional innovation system, an industry cluster, or a specific innovation program, clear scope definition prevents the common pitfall of attempting overly broad analysis that yields generic insights.

Actor Elicitation follows, involving the systematic identification and categorization of ecosystem participants. Using MEAM v2 as a template, practitioners map known stakeholders to the ten actor categories while simultaneously tagging them according to their primary and secondary governance layers from the 3LAM model. This dual classification reveals not only what types of actors are present but also where they operate within the governance hierarchy. The process often uncovers previously overlooked actors and highlights those performing multiple roles across categories or layers.

The construction of Role-Interaction Matrices represents the analytical core of CAM. These matrices visualize actor presence, role intensity, and engagement patterns across governance layers. By arranging MEAM categories as rows and 3LAM layers as columns, practitioners can quickly identify where roles are well-populated, where functional redundancy exists, and where structural holes may hinder system performance. The matrices support both qualitative assessment and semi-quantitative scoring, accommodating varying levels of data availability.

Gap-Impact Assessment completes the diagnostic process by interpreting matrix patterns to identify strategic priorities. This step moves beyond simple gap identification to assess the systemic impact of missing or weak actor roles. For instance, the absence of orchestration actors may have cascading effects on collaboration patterns throughout the ecosystem. Similarly, overextended actors attempting to fill multiple roles may indicate systemic vulnerabilities. The assessment generates actionable recommendations for capacity building, institutional development, or strategic recruitment of missing actor types.

CAM's flexibility allows adaptation to various contexts and purposes. The methodology scales from rapid participatory workshops using simplified visual tools to comprehensive multi-stakeholder assessments employing detailed quantitative metrics. This adaptability, combined with its grounding in robust theoretical frameworks, enables CAM to bridge the persistent gap between academic ecosystem models and practical implementation challenges (Talmar et al., 2020).

5. Integration: The MEAM–3LAM–CAM Framework

The true innovation of this research lies not in the individual models but in their integration into a coherent framework that captures the multi-dimensional nature of innovation ecosystems. MEAM provides the

functional taxonomy answering "what types of actors exist," 3LAM adds the governance perspective explaining "where these actors operate," and CAM supplies the methodology for "how to analyze and improve actor configurations." This integration enables comprehensive ecosystem analysis that would be impossible using any single approach.

Table 1 illustrates this integration by mapping MEAM actor categories across 3LAM governance layers, revealing crucial patterns in actor distribution and engagement.

Table 1: Actor categories by layer relevance (PIE, BIE, IMS)

Actor category	PIE	BIE	IMS	Notes on layer engagement
Research	✓	✓	✓	Universities, research institutes span all layers through funding, partnerships, and internal labs
Entrepreneurship		✓	✓	Startups and intrapreneurs mainly drive firm-level innovation and external ventures
Competence	✓	✓		Training centers and universities support both public and business innovation readiness
Advisory	✓	✓	✓	Consultants and legal/technical advisors work across layers via services and contracts
Finance	✓	✓		Venture capitalists, grant agencies, and funders shape PIE and BIE innovation investments
Development		✓	✓	Applied R&D and technical centers enable translation from ideas to implementation
Networking	✓	✓		Clusters and industry groups link public actors and businesses through collaboration
Ecosystem orchestration	✓	✓		Innovation offices, cluster organizations, and intermediaries align actors and strategies
Policy management	✓			Ministries, innovation agencies function primarily at the PIE level
Education	✓		✓	Universities contribute foundational knowledge and internal firm training efforts

This mapping reveals several important insights. Some actors, particularly Research and Advisory categories, operate across all three layers, serving as natural bridges between governance contexts. Others, such as Policy Management, remain firmly anchored in specific layers, reflecting their institutional mandates. The distribution patterns help explain common ecosystem challenges, such as the difficulty of translating policy initiatives into firm-level innovation when intermediary actors are absent or weak (Drori and Lavie, 2023).

The integrated framework supports multiple practical applications that demonstrate its value for ecosystem development. Ecosystem Baseline Assessment uses the framework to map current actor configurations, revealing structural strengths and weaknesses that might otherwise remain hidden. Gap Analysis compares actual versus ideal actor distributions, enabling evidence-based prioritization of capacity-building investments. Orchestration Design identifies missing or weak coordination mechanisms across layers, informing the development of new intermediary institutions or the strengthening of existing ones (Zohar et al., 2021). Policy Alignment ensures that public programs developed at the PIE level match the actual needs and capabilities present in BIE and IMS layers (Yaghmaie and Vanhaverbeke, 2019). For example, a regional development agency used the framework to identify the absence of local IP advisory actors, prompting the launch of a specialized support initiative. Similarly, a startup operating in green tech was able to locate funding and testing resources by navigating CAM maps co-created in its local innovation platform.

6. Empirical Insights and Validation

The literature review underpinning the development of MEAM v2 and the CAM methodology was conducted using Scite.ai alongside academic databases such as Scopus and Web of Science. A total of 108 peer-reviewed publications were identified through keyword-based relevance filtering (e.g., "innovation ecosystem actors," "regional governance," "ecosystem diagnostics") and citation prioritization. The selection emphasized functional diversity (innovation development, support, and structural roles) and ensured topical alignment with the actor-role categories defined in the MEAM framework. The framework underwent extensive empirical testing through regional innovation diagnostics involving 1,682 firms across five Swedish regions (Ozan et al., 2024). This large-scale application provided valuable validation of the framework's diagnostic

power while revealing systemic patterns that would have remained invisible using traditional analytical approaches. The empirical testing was supported by a large-scale survey conducted by the research company Verian (formerly Kantar Public), targeting SMEs and large firms across five Swedish regions. A total of 1,682 companies responded to structured paper survey and follow-up telephone interviews, based on a standardized questionnaire focusing on innovation management practices, support actor interactions, and public program engagement. The survey covered topics such as the use of structured innovation systems, cooperation with intermediaries, and access to innovation support. The results were analyzed by region and sector, providing a consistent dataset for evaluating the presence of capability gaps and validating CAM-based diagnostics. The same questionnaire and sampling methodology can be replicated in other regions to produce comparable insights.

The findings painted a sobering picture of innovation ecosystem maturity. Only 17% of participating firms reported applying systematic innovation management practices, such as those aligned with ISO 56002 standards. Using the integrated framework, this low adoption rate could be traced to specific gaps in the ecosystem architecture. The absence or weakness of competence-building actors meant that firms lacked access to the training and support needed to develop formal innovation management capabilities. Furthermore, the limited presence of advisory actors specializing in innovation management left firms without guidance on implementing systematic approaches.

Public program engagement proved equally revealing. Despite substantial public investment in innovation support, only 22% of firms had engaged with regional programs in the previous year. The framework analysis revealed this was not simply a communication or marketing failure. Instead, it reflected a fundamental misalignment between program design at the PIE level and actual firm needs at the BIE and IMS levels. Specifically, the weak presence of intermediary actors who could translate between policy language and business requirements created a structural barrier to program utilization.

Collaboration patterns provided additional validation of the framework's analytical value. Only 18% of firms reported collaboration with intermediaries, and just 13% had partnered with universities or research organizations. The CAM matrices clearly illustrated how gaps in orchestration roles created isolated pockets of activity rather than the interconnected networks characteristic of thriving innovation ecosystems. Without actors dedicated to relationship building and network facilitation, potential collaborations remained unrealized despite geographic proximity and complementary capabilities.

These empirical findings demonstrate how the integrated framework moves beyond surface-level symptoms to reveal underlying structural causes. Rather than simply noting low collaboration rates, the framework identifies specific missing actor roles and governance misalignments that create systemic barriers to innovation. This diagnostic precision enables targeted interventions addressing root causes rather than symptoms.

7. Discussion and Implications

The MEAM–3LAM–CAM integrated framework represents a significant theoretical and practical advance in innovation ecosystem analysis. Theoretically, it contributes to ecosystem literature by providing the most comprehensive actor taxonomy developed to date, specifically addressing previous gaps in Support function categorization. The framework successfully integrates horizontal functional perspectives with vertical governance considerations, previously treated as separate analytical domains (Cooke, 2016). Most importantly, it bridges the persistent gap between conceptual frameworks and operational diagnostics, offering a pathway from theoretical understanding to practical application.

For practitioners, the framework offers transformative benefits. It enables movement beyond generic "triple helix" or "quadruple helix" approaches toward role-specific analysis that captures the true complexity of modern innovation ecosystems. The systemic perspective helps practitioners understand how actor gaps in one layer cascade through the entire ecosystem, creating bottlenecks and inefficiencies. By transforming complex ecosystem dynamics into concrete intervention targets, the framework supports evidence-based decision-making. The standardized categories and methods also enable meaningful comparative analysis across regions, sectors, or time periods. For example, a start-up navigating a regional innovation ecosystem can use the CAM framework to identify missing support roles, such as seed-stage financing, IP advisory, or prototype testing facilities, and align its partnerships accordingly. Public-private partnerships (PPPs), such as regional energy transitions or health-tech accelerators, can use the integrated MEAM–3LAM–CAM framework

to coordinate actors across governance levels, ensuring policy goals at the public layer translate into business capabilities and innovation adoption at the firm level.

The framework's application reveals several critical insights for innovation policy and practice. First, the prevalent focus on creating new programs or institutions often overlooks the more fundamental need for orchestration and intermediation roles that connect existing actors. Second, the assumption that innovation support can be designed at the policy level and implemented directly at the firm level ignores the crucial translational role of BIE actors. Third, internal innovation management capabilities at the IMS level fundamentally determine whether firms can absorb and benefit from ecosystem resources, suggesting that capability building deserves equal attention to external support provision.

However, the framework also faces limitations requiring acknowledgment. Actor roles may vary significantly by sector or regional context, necessitating adaptive application rather than rigid implementation. The CAM methodology, while comprehensive, remains labor-intensive, requiring significant time and expertise for full implementation. Automation and digital tool development represent important areas for future development. Additionally, while tested in Swedish contexts, the framework requires validation across different cultural and institutional settings to ensure global applicability.

8. Conclusion

The MEAM–3LAM–CAM integrated framework offers a robust solution to the complex challenge of analyzing and developing innovation ecosystems. By combining functional taxonomy, governance layers, and diagnostic methodology, it provides practitioners and policymakers with comprehensive tools for ecosystem assessment and intervention design. The framework's strength lies fundamentally in the synergistic integration of its components rather than their individual contributions. MEAM's granular actor categorization gains strategic relevance through 3LAM's governance perspective, while both become actionable through CAM's diagnostic process (Zheng and Cai, 2022).

As innovation ecosystems grow in complexity and importance for economic development, the need for structured analytical frameworks becomes increasingly critical. This integrated approach offers a foundation for more effective ecosystem governance, supporting the transition from ad hoc coordination to strategic orchestration. It enables evidence-based decision-making by revealing the structural foundations of ecosystem performance and dysfunction (Santos et al., 2015).

Future development should focus on several key areas. Automation of CAM diagnostics would increase accessibility and reduce implementation barriers. Sectoral adaptations could capture industry-specific actor roles while maintaining comparability. Longitudinal studies tracking ecosystem evolution would validate the framework's predictive power. Integration with digital platforms could enable real-time ecosystem monitoring and adaptive governance.

The ultimate value of this framework lies in its potential to enhance innovation ecosystem performance through improved understanding and targeted intervention. By providing a common language and analytical structure, it enables more effective collaboration between researchers, policymakers, and practitioners. As regions worldwide seek to build competitive innovation ecosystems, the MEAM–3LAM–CAM framework offers a scientifically grounded yet practically applicable approach to this critical challenge.

Ethics declaration: This research did not require ethical clearance as it involved no human participants in experimental conditions, no collection of personal or sensitive data, and no interventions that could cause harm. The empirical data used in this study was collected as part of a regional innovation ecosystem assessment where firms participated voluntarily and all data was anonymized at the point of collection. The research was conducted in accordance with standard academic research ethics and institutional guidelines.

AI declaration: Artificial intelligence (AI) tools were used throughout this research project to enhance quality, efficiency, and linguistic clarity, without substituting the intellectual contribution or analytical responsibility of the authors. All key decisions, interpretations, and conclusions presented in the paper were made by the researchers, who retained full academic control and accountability at every stage. Specifically, Scite.ai was used during the literature review phase to assist in the identification and evaluation of relevant academic sources by querying research databases and contextualizing citations. ChatGPT (OpenAI) was employed during the planning process to explore methodological considerations, validate early conceptual design, and—importantly—to improve the academic tone and clarity of the English language throughout the manuscript, as the authors are non-native English speakers. ProWritingAid was used continuously as a proofreading tool to

refine grammar, style, and structure during writing. In the final stages, Claude (Anthropic) was used to support the structural alignment of content and to verify adherence to submission guidelines. The use of these tools was carefully managed to ensure that AI served as a supportive and augmentative resource, not a generative or decision-making agent. The authors affirm that all original ideas, arguments, and scholarly interpretations remain their own.

References

- Cooke, P. (2016) 'The virtues of variety in regional innovation systems and entrepreneurial ecosystems', *Journal of Open Innovation: Technology, Market, and Complexity*, 2(3).
- Drori, I. and Lavie, D. (2023) 'How Do Innovation Ecosystems Emerge? The Case of Nanotechnology in Israel', *Journal of Management Studies*, 61(8).
- Gamidullaeva, L. (2018) 'Towards combining the innovation ecosystem concept with intermediary approach to regional innovation development', *MATEC Web of Conferences*, 212.
- Liu, B. et al. (2022) 'An Evolutionary Analysis of Relational Governance in an Innovation Ecosystem', *Sage Open*, 12(2).
- Madanaguli, A. et al. (2021) 'The innovation ecosystem in rural tourism and hospitality -- a systematic review of innovation in rural tourism', *Journal of Knowledge Management*, 26(7).
- Masucci, M., Brusoni, S. and Cennamo, C. (2020) 'Removing bottlenecks in business ecosystems: The strategic role of outbound open innovation', *Research Policy*, 49(1).
- Ozan, H., Ferry, J. and Bieblad, L. (2024) *Measuring and Developing Regional Innovation Ecosystems - The METRIC Approach*.
- Santos, H.R. et al. (2015) 'Collaborative Innovation in the Public Sector a Case of the Brazilian Federal Government', in *Electronic Government and the Information Systems Perspective*, Springer, pp. 132-145.
- Sørensen, E. and Torfing, J. (2016) 'Metagoverning Collaborative Innovation in Governance Networks', *The American Review of Public Administration*, 47(7).
- Stam, E. (2015) 'Entrepreneurial Ecosystems and Regional Policy: A Sympathetic Critique', *European Planning Studies*, 23(9).
- Stam, E. and Spigel, B. (2018) 'Entrepreneurial Ecosystems', *The SAGE Handbook of Small Business and Entrepreneurship*.
- Talmar, M. et al. (2020) 'Mapping, analyzing and designing innovation ecosystems: The Ecosystem Pie Model', *Long Range Planning*, 53(4), p. 101850.
- Tolstykh, T., Gamidullaeva, L. and Shmeleva, N. (2021) 'Universities as Knowledge Integrators and Cross-Industry Ecosystems: Self-Organizational Perspective', *Sage Open*, 11(1).
- Wang, C.-H., Chang, C.-H. and Lee, Z.C.R. (2022) 'Business-to-business platform ecosystem practices and their impacts on firm performance: evidence from high-tech manufacturing firms', *Journal of Manufacturing Technology Management*, 33(5).
- Yaghmaie, P. and Vanhaverbeke, W. (2019) 'Identifying and describing constituents of innovation ecosystems', *EuroMed Journal of Business*, 15(3).
- Zheng, X. and Cai, Y. (2022) 'Transforming Innovation Systems into Innovation Ecosystems: The Role of Public Policy', *Sustainability*, 14(12).
- Zohar, T., Parag, Y. and Ayalon, O. (2021) *Weaving an Innovation Network from the Middle Out: the Case of the Renewable Energy Ecosystem*.

Strategic Injustice in AI-Assisted Goal Setting: The Marginalization of Social Objectives

Mikolaj Pindelski

Warsaw School of Economics, Poland

mikolaj.pindelski@sgh.waw.pl

Abstract: The study investigates how artificial intelligence driven decision making influences the prioritization of traditional financial objectives versus sustainability related goals. Using a modified “cake sharing” model in the NetLogo simulation environment, it was examined three objectives: improving ROI, increasing revenue, reducing costs, and ensuring sustainability of sales activities. There were run 500 iterations in the simulation phase. The simulation paired the sustainability oriented goal (SDG) with each financial objective. There was observed potential systematic discrimination against non-financial targets. Input data were derived from CD Projekt’s 2024 financial and non-financial reports, analyzed with ChatGPT to recommend strategic priorities before integration into the NetLogo framework. Findings reveal that AI generated recommendations favor financial objectives, particularly ROI, leading to marginalization of sustainability goals. It confirmed the hypotheses that AI supported goal setting can reinforce a bias. While the model is simplified and limited to four objectives under controlled conditions, the results underscore the risk of relying on generative AI in strategic planning. The study highlights the need for managers to critically assess algorithmic assumptions in AI-supported decision making.

Keywords: SDG, LLM, Goals discrimination, Artificial Intelligence, OpenAI, Strategic discrimination

1. Introduction

The growing application of artificial intelligence and AI driven large language models across both individual enterprises and broader economic systems is becoming increasingly evident. Numerous studies point to the displacement of human labor by algorithmic and AI-driven systems (Ming-Hui, Rust, 2018; Frey & Osborne, 2013, 2017; Frank et.al. 2019) and the transformative influence of AI on economic processes (Agrawal et al., 2019). The AI-driven forecasting and performance optimization techniques (Mehendale et al., 2019) and demand prediction systems (Bandara et al., 2019) support the dominance of financial objectives in AI-supported strategies primarily increase of revenue (Khalimonchuk, Pozovna, 2024; Trivedi & Patel, 2020). This trend draws attention to an important research question: does the use of artificial intelligence in strategic goal setting result in a consistent preference for traditional financial outcomes, potentially at the expense of broader, socially-oriented goals such as those aligned with the Sustainable Development Goals (SDGs)?

The aim of this study is to examine the effects of setting different strategic objectives and the way they evolve over time. It is to be checked by applying the agent-based simulations in the NetLogo software environment (Tisue & Wilensky, 2004). Specifically, four objectives were modeled:

1. maximizing return on investment (ROI),
2. increasing revenue,
3. reducing costs,
4. promoting sustainability in sales, treated here as the SDG-related objective.

To test for potential bias or discrimination in strategic recommendations, the SDG objective was paired in turn with each of the three financial objectives: ROI, revenue, and cost reduction. Each pair was simulated across 500 iterations to observe how the prioritization of one objective affected the progression of the other. The simplified input parameters were defined for each scenario, after which financial and non-financial data of the CD Projekt company were entered into ChatGPT. The reports are open and available on the www of the company. The model was then prompted to select the preferred goal within each pairing.

Following this, a NetLogo analytical framework was applied to accelerate the simulation process and track the evolution of indicators over time. Once initial results were obtained, they were reintroduced into ChatGPT to generate updated strategic guidance for a subsequent simulation round. This iterative approach was designed to capture how generative AI might influence the strategic trajectory in environments with competing goals. The integration of ChatGPT with NetLogo has already shown promising outcomes in similar applications (Chen et.al. 2024; Martinez et al., 2024).

Through this approach, the study aims to identify whether and to what extent the use of generative AI in strategic goal setting leads to the systematic marginalization of socially valuable objectives when paired with dominant financial metrics.

2. Motivation and Research Goals

Organisations are increasingly incorporating artificial intelligence systems, algorithmic frameworks, and advanced analytical tools into a wide range of operational tasks, including forecasting, decision-making, and resource allocation. These technologies are applied in diverse areas such as creditworthiness assessment, recruitment, and strategic planning. However, despite their perceived objectivity, algorithms are not free from bias. Growing evidence points to the phenomenon of “algorithmic injustice,” whereby systems assumed to be neutral may in fact exhibit systematic discrimination. That may happen against specific social groups, types of decisions, or strategic priorities. Such outcomes may arise not from deliberate intent but from the structure of training data and the modelling assumptions embedded in the algorithms. This issue is particularly relevant in the context of strategic management. Beyond operational decisions such as targeting specific customer segments or optimizing operations, algorithms are now influencing strategic decisions, including the formulation of strategic goals. When AI systems are tasked with goal setting, they frequently prioritise objectives associated with economic performance, such as revenue growth or ROI, potentially at the expense of social or sustainability related goals. The risk arises when AI is designed or trained to maximise a single, quantifiable target, potentially leading to the marginalisation of other important objectives.

The aim of this study is to examine how AI influenced strategic target decisions evolve over time, and to what extent prioritising one objective may systematically suppress the development of others. In particular, the study explores whether the use of generative artificial intelligence, such as OpenAI’s large language models, introduces bias in the strategic goal setting process by favouring specific targets over others. To investigate this issue, two research hypotheses are proposed:

H1: Prioritising one strategic goal over another will lead to a significant decline in the performance of the non prioritised objective over time.

H2: The use of generative AI, such as OpenAI’s ChatGPT, in strategic goal-setting may result in biased decisions that systematically discriminate against certain objectives.

These hypotheses are tested through simulations conducted in the NetLogo platform, using a modified version of the “cake-sharing” model. The model is based on the premise that it is not possible to simultaneously maximise all objectives indefinitely. A condition analogous to the Pareto efficiency principle. Once a Pareto optimal point is reached, further improvement in one objective necessarily entails trade-offs in the others. The simulation assumes a finite and constant resource pool (e.g., 100%), which must be allocated among competing objectives. The core question is whether the AI-driven system will seek to maintain a Pareto-optimal balance across objectives over time, or whether it will consistently prioritise the maximisation of a single AI-recommended goal, to the detriment of others. For example, an aggressive focus on revenue growth may limit the achievement of social impact targets or even undermine cost-efficiency goals. By analysing how these trade-offs play out over time particularly those combining traditional strategic metrics (ROI, revenue, cost) with sustainability-related targets (SDG). The study seeks to uncover patterns of algorithmic preference that may affect long-term strategic balance within the strategy.

3. Research Method and Simulation Model Design

The simulation involves the preparation of a model in the NetLogo environment to investigate how the choice of different strategic targets shapes business performance. The simulation assumes 500 iterations, during which four possible operating strategies will be explored: maximising revenue, maximising the value of ROI, minimising the costs and maximising the value of social objectives. An agent simulation model will be created within NetLogo to reflect the dynamics of the strategic processes. A key role in this process will be played by ChatGPT, which will automatically recommend a strategic target for a given simulation cycle based on the analysis of financial and non-financial reports of the CD Projekt company. The decision to select a target will be based on an analysis of prevailing trends, such as the priority of increasing revenue, improving financial efficiency (ROI), reducing costs or increasing social impact (ESG, CSR). In the context of the social objective, general indicators have been selected to be introduced into the model, but which can influence the achievement of the others. These include donating a portion of turnover to social causes, removing provisions from contracts that are disadvantageous to customers but profitable for the organisation, and the organisation of free training by the company's human capital for local communities. These objectives may limit the possibility of achieving the sought-after higher or lower values of the other objectives, respectively.

During the 500 iterations of the simulation, it will be observed how the preference for one objective affects other areas. For example, choosing to maximise revenue may lead to discriminate SDGs. While an emphasis on maximising social value may reduce immediate revenue. The NetLogo software will be used to build result sets, visualise trends and benchmark analyses between alternative strategies, allowing the discrimination of other objectives to be accurately indicated when one objective is dominant. The final result of the simulation will therefore be a full characterisation of the interrelationship between, enabling the most sustainable strategies to be recommended based on the specific market and organisational conditions of the company in question.

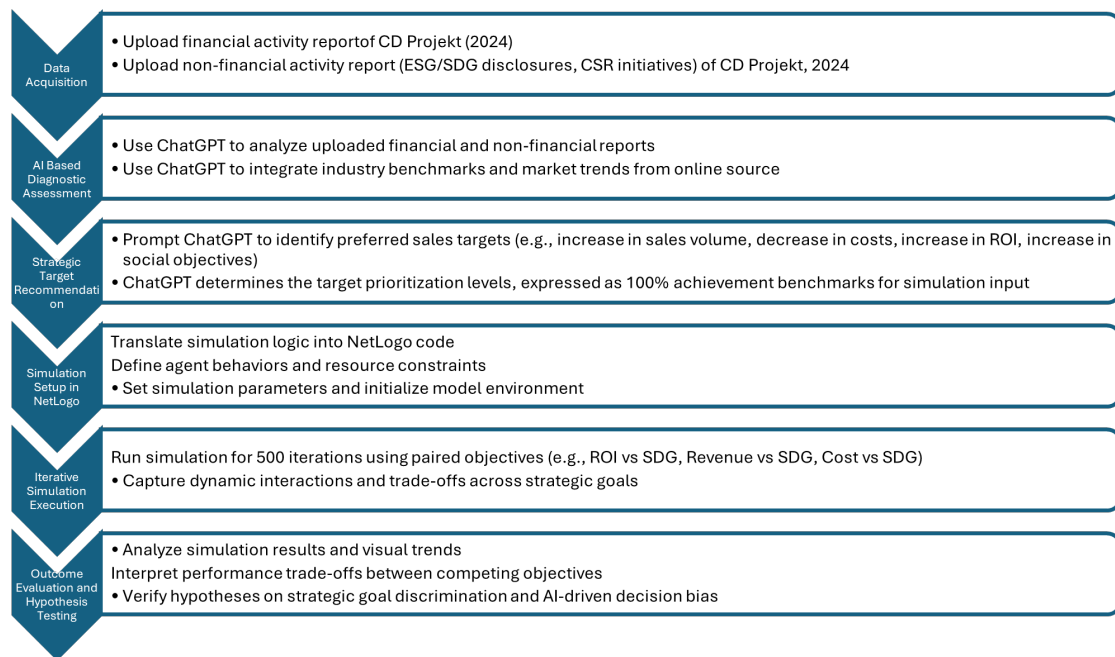
The cake sharing model reflects a situation in which agents compete for predetermined and limited resources or outcomes. Decisions about their allocation consequently affect the targets achieved. In the simulation adopted in the study, the strategic objectives related to the sales function relate to an increase in revenue, a reduction in costs, an increase in ROI and an increase in the social objectives index. These can be treated as a limited resource, or fragments of a whole cake to be shared with a resource constraint and influenced by the chosen strategy of action. Certain assumptions are made here as to the validity of the choice of model. It was therefore assumed that in a cake sharing model, agents would make decisions that account for what part of the cake related to the two goals set in every simulation would be achieved. This model seems to present well the conflict of interest between objectives and indicates the actual situations in which managers, executives and other executives seek a balance between sometimes conflicting demands such as increasing revenue and at the same time spending time on social responsibility tasks. The model thus presents a situation in which objectives compete with each other in a situation of choosing a strategic goal and direction under conditions of limited resources and conflicting interests between objectives.

4. Simulation Procedure for Strategic Goal Setting and Discussion

The simulation process is conducted within the NetLogo modeling environment. It begins with the initialization of the simulation system and the definition of the operational environment in which agents will act. The next stage involves the integration of a generative AI system, in this case ChatGPT, which partially processes source data to support strategic goal selection. This source data consists of the CD Projekt company's financial and non-financial annual report for 2024, obtained from its official website. Following data integration, ChatGPT is prompted to analyze the input in the context of current market trends and industry forecasts. The AI system is given a standard instruction: *"Based on the company's financial and non-financial reports, as well as market trends and industry forecasts, select the most appropriate strategic target from the indicated options. In doing so, take into account the company's declared Social Development Goals (SDGs) and determine which objective should be prioritized in the current context to ensure both business performance and social value creation."* Based on this analysis, ChatGPT selects one strategic goal expressed as a percentage level of target achievement which is then adopted for simulation purposes. Subsequently, the simulation model in NetLogo is parameterized in accordance with the AI selected strategic objective. The first test phase consists of a single simulation iteration, during which agents act in alignment with the selected strategic priority. Following this, the model proceeds through 500 iterations, in which the evolution of key performance indicators (KPIs) is tracked for all four strategic goals: revenue, costs, ROI, and social impact SDGs related. Each objective is scaled in percentage terms, where 100% represents full attainment of a given goal within a single cycle. For objectives aimed at increase (e.g., revenue, ROI, social impact), upward movement is considered positive, whereas for cost reduction, downward movement is preferred. Importantly, due to the resource-constrained design of the model each agent can only reach 100% progress in one objective per iteration, thus requiring trade-offs between two competing goals in every simulation

The parameters remain constant throughout all 500 iterations to ensure consistency in outcome tracking and to allow the accumulation of a robust data set. This structure facilitates the systematic analysis of how the prioritization of one dominant objective influences the achievement levels of other goal. By comparing performance outcomes under each scenario, the simulation enables the identification of potential bias or "goal discrimination" resulting from AI-guided decision making.

Finally, the results of the simulation are presented visually through a series of graphs, illustrating the dynamic interdependencies between objectives and highlighting how the system behaves under different prioritization strategies. This provides empirical grounding for verifying the research hypotheses and evaluating the long-term consequences of AI-influenced strategic goal-setting.

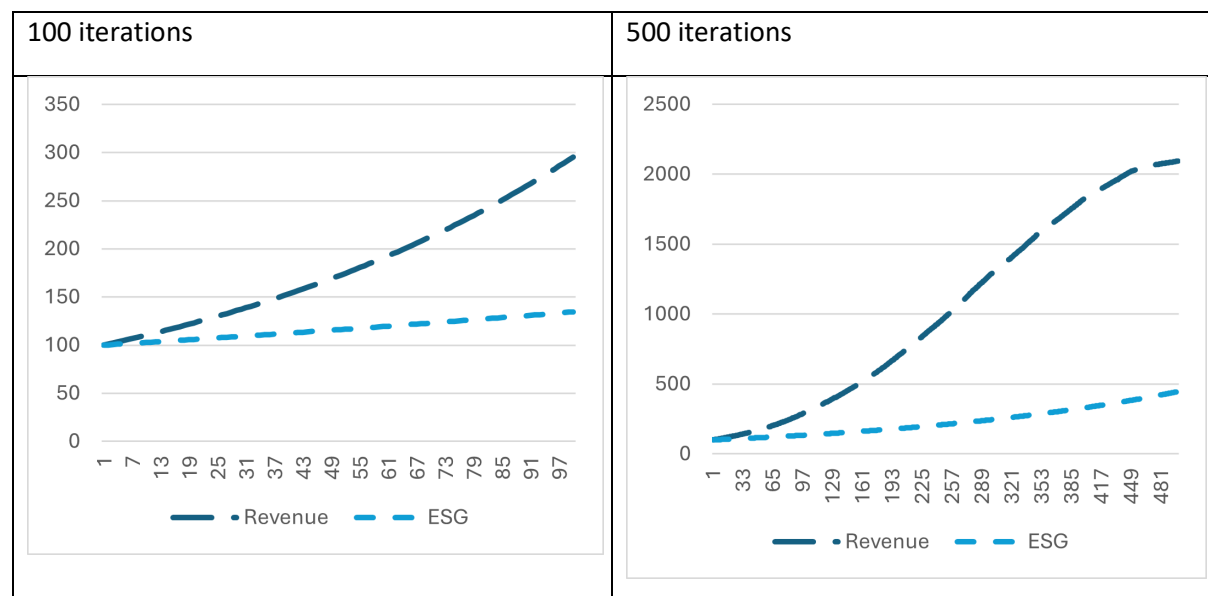


Source: Author's own work

Figure 1: Structure of the Simulation Process

The simulation model is illustrated in Figure 1. It comprises six main stages to explore how AI guided decisions affect strategic goal setting within a resource constrained environment. It is specifically applied to CD Projekt, using their financial and non-financial data for 2024. The model integrates financial performance metrics with sustainability oriented goals aligned with SDGs to evaluate the trade-offs inherent in AI-driven strategy selection.

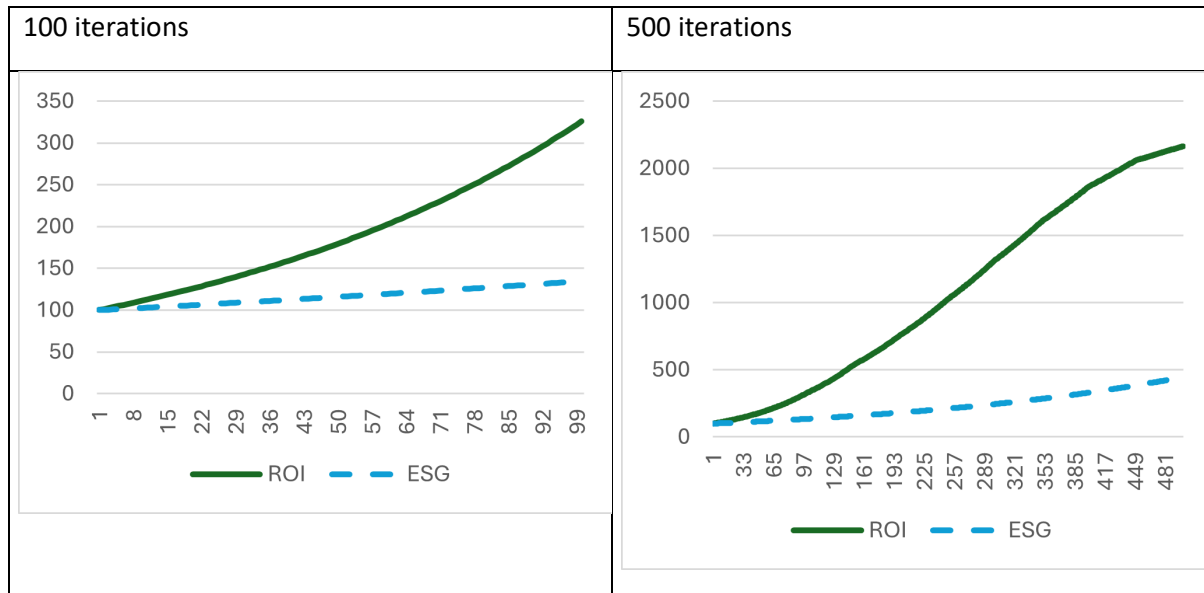
The simulations produced four distinct scenarios, each reflecting the system's preference for a specific strategic target. In every case, the prioritization of one objective resulted in the relative marginalization or discrimination of the remaining goal. Though the intensity of this effect varied across scenarios. Notably, even when the simulation was interrupted after 100 iterations and the intermediate results were fed back into ChatGPT, the AI did not recommend substantial adjustments to the chosen target and their relation. This suggests that, under stable input conditions, the generative AI consistently maintains its original prioritization strategy, reinforcing the imbalance among competing objectives.



Source: Author's own work

Figure 2: Simulation for the revenue growth target, 100 and 500 iterations

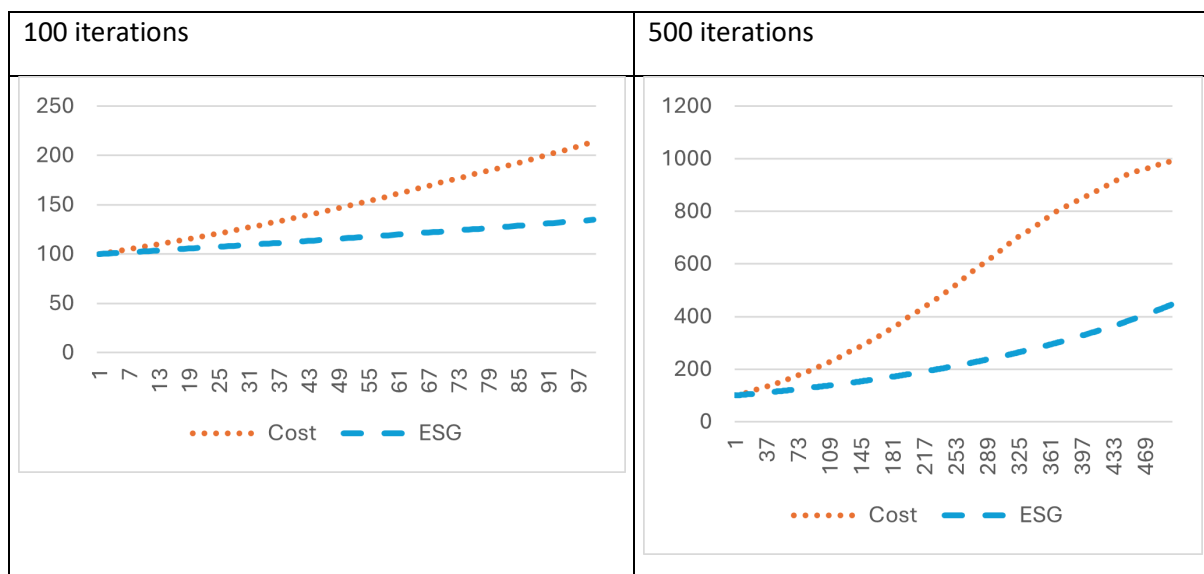
Revenue exhibits (Figure 2) a steep and accelerating upward trajectory, especially after iteration 100, ultimately exceeding 2000 units by the final iterations. This suggests that when revenue is prioritized as the strategic target, it dominates the simulation, compounding strongly over time. ESG performance, in contrast, increases at a much slower, linear-to-moderate exponential pace. Its value remains significantly lower throughout the simulation, never exceeding 500 units, and showing limited responsiveness despite being tracked in parallel. The divergence between the two lines becomes increasingly pronounced as the number of iterations progresses, visually illustrating the discriminatory effect: when revenue is prioritized as the dominant strategic goal, ESG-related performance is not proportionally developed and remains marginalized.



Source: Author's own work

Figure 2: Simulation for the ROI growth target, 100 and 500 iterations

ROI begins to rise steadily from its baseline value (~100) and follows a consistent upward trajectory, ending above 300. ESG performance also increases but at a far slower and almost linear rate, ending just above 120. The gap between ROI and ESG widens gradually over these 100 iterations. In the short term, prioritizing ROI leads to significantly stronger growth in financial return compared to ESG progress. ESG performance, although not flat, shows only marginal improvements, suggesting a subordinate role when ROI is the dominant goal.



Source: author's own work

Figure 2: Simulation for the Cost reduce target, 100 and 500 iterations

Costs increase exponentially, surpassing 1000 by the final iterations. This likely reflects sustained emphasis on cost as a strategic variable. Meanwhile ESG performance improves steadily, reaching over 400, but the growth remains significantly slower compared to the escalation of costs. The disparity becomes more visible over time, indicating that the longer the AI prioritizes cost as the dominant goal, the greater the lag in ESG performance. Over the full simulation period, the emphasis on decreasing cost leads to an increasingly disproportionate outcome. While ESG objectives show some progress, they are clearly deprioritized.

Across all simulation scenarios, ESG performance consistently remains the least developed metric when paired with any dominant financial goal. Despite minor improvements, ESG never surpasses 25% of the dominant goal's value by the end of the simulation. This confirms both hypotheses:

H1: There is a clear trade-off—maximizing a financial goal leads to underperformance in ESG.

H2: ChatGPT-based AI decision-making exhibits consistent bias toward financial metrics, systematically discriminating against social objectives in strategic goal-setting.

Table 1: Regression for variables Dependent Variable: ESG, Independent Variables: Revenue, Cost, ROI

Variable	Coefficient	Std. Error	t-Statistic	P-value
const	101.12	0.17	608.74	0.000
Revenue	−0.0676	0.0019	−36.39	0.000
Cost	+0.0953	0.0023	41.68	0.000
ROI	+0.0125	0.0004	32.58	0.000

Source: Author's own work

R^2 equals 0.966 what means that the model explains 96.6% of the variance in ESG values, which is very high result. All variables are highly statistically significant ($p < 0.001$). Revenue has a negative and significant impact on ESG. This confirms that prioritizing revenue is strongly associated with lower ESG gains a key sign of ESG discrimination when profit dominates strategy. Cost decrease as a strategic goal has a strong effect on ESG. This suggests that some cost goal realization may result with worse ESG performance. ROI is positively associated with ESG, but its magnitude is small. While statistically significant, its practical influence is limited.

H1 confirmed: When one financial goal dominates, ESG suffers or advances less rapidly.

H2 confirmed: AI prioritization leads to biased decision-making, especially against ESG, notably when revenue is favored.

5. Summary

The study used ChatGPT as a generative artificial intelligence system to simulate the selection and prioritization of strategic targets. While financial and non-financial reports from a Warsaw Stock Exchange-listed company CD Projekt serve as data sources, the recommendation of target preferences proposed by OpenAI ChatGPT based on proprietary algorithms and market trend analysis remains partly unverifiable. Even asked, the LLM listed just three internet sources that seemed to be inefficient in explanations of the internet based market analysis made by ChatGPT. These were explaining only a part of its conclusions and final recommendations and were rooted in main www site of the company and stocks exchange official reports and publications. The OpenAI was not creative in that field as it was not looking for additional or unobvious sources. This introduces an inherent opacity into the decision-making process, particularly concerning how AI balances competing strategic objectives.

Using the NetLogo environment and the cake-sharing model, the study simulated the evolution of AI-recommended goals over 500 iterations, examining four distinct prioritization strategies: maximizing revenue, minimizing costs, increasing return on investment (ROI), and maximizing social objectives that were supposed as aligned with SDG principles. The simulations revealed consistent patterns of strategic discrimination, where the target selected by AI was advanced disproportionately at the expense of the other. Notably, even after pausing the simulation at iteration 100 and reintroducing the outcomes into ChatGPT for reassessment, no substantial adjustment in prioritization was proposed. This indicates a limited capacity of the AI to self-correct its decision trajectory, especially under stable input conditions.

The findings confirm Hypothesis H1: prioritizing a single goal—such as ROI or revenue—leads to a significant reduction in the advancement of non-prioritized goals, particularly ESG. Furthermore, the regression analysis based on all 500 iterations substantiates Hypothesis H2 by demonstrating that while ESG values do rise over

time, their rate of growth is significantly lower compared to financial indicators. Specifically, revenue was found to have a statistically significant negative impact on ESG performance, whereas cost and ROI had positive but asymmetric effects, with cost exerting a stronger influence.

These results underscore the risk that AI based decision tools can entrench financial performance at the expense of social objectives, particularly when ESG metrics are less quantifiable or slower to manifest in observable outcomes. In such contexts, AI may reinforce a narrow optimization logic, producing decisions that conflict with long-term sustainability goals.

Thus, it must be concluded that in AI-supported strategic planning, the prioritization of one objective inherently constrains the development of others, especially those linked to ESG. Managers and decision-makers should approach AI recommendations critically, equipped with a strong understanding of the algorithms and trade-off mechanisms involved. Only through algorithmic literacy and transparent model governance can organizations ensure that AI contributes to balanced, equitable, and responsible goal-setting.

Ethics declaration: Due to the fact that all the reports used in the research were available online on the official website of the company and the company is obliged to publish them it is no need to provide any permission to use them for the simulation. As it is also stated in the text that it is a simulation based on the reports and not an official company's strategic goals.

AI declaration: Selected sections of the paper such as the Abstract, Introduction, and Summary were reviewed with ChatGPT 5.0 to refine the language, improve clarity, and enhance readability through recommended word choices and adjustments of sentence structure.

References

- Agrawal, A., Gans, J., Goldfarb A. (2019) *Economic policy for artificial intelligence*, Innovation policy and the economy, Vol.19, Iss.1, pp.139-159.
- Bandara, K., Shi P., Bergmeir, C., Hewamalage H., Tran, Q., Seaman B. (2019) *Sales Demand Forecast in E-commerce Using a Long Short-Term Memory Neural Network Methodology*, Neural Information Processing, pp.462 - 474
- Chen J., Lu X., Du Y., Rejtig M., Bagley R., Horn M., Wilensky U. (2024) Learning Agent-based Modeling with LLM Companions: Experiences of Novices and Experts Using ChatGPT & NetLogo Chat, International Conference on Human Factors in Computing Systems, DOI: <https://doi.org/10.1145/3613904.3642377>
- Fischer, H., Seidenstricker, S., Berger, T., Holopainen, T. (2022) *Artificial intelligence in B2B sales: Impact on the sales process*, Artificial Intelligence and Social Computing, Vol.28, Iss.28, pp.135-142.
- Frank D., Autor D., Bessen J.E., Brynjolfsson E., Cebrián M., Deming D., Feldman M., Groh M., Lobo J., Moro E., Wang D., Youn H., Rahwan I., 2019, *Toward understanding the impact of artificial intelligence on labor*, Proceedings of the National Academy of Sciences of the United States of America, DOI: <https://doi.org/10.1073/pnas.1900949116>
- Frey, C.B., Osborne M.A. (2017) *The Future of Employment: How Susceptible Are Jobs to Computerisation?*, Technological Forecasting and Social Change vol.114, pp.254–280
- Frey, C.B., Osborne, M.A. (2013) *The Future of Employment: How Susceptible Are Jobs To Computerisation*, Oxford Martin School Working Paper, [/Users/michaelosborne/Documents/Research/future_of_employment_paper/original/.texpadtmp/future_of_employment_original.dvi](/Users/michaelosborne/Documents/Research/future_of_employment_paper/original/.texpadtmp/future_of_employment_original.dvi)
- Heydari Fard, S. (2022) *Strategic injustice, dynamic network formation, and social movements*, Synthese, Vol.200, Iss.5 art. No.392
- Hildebrand, C., Bergner, A. (2019) *AI-driven sales automation: Using chatbots to boost sales*. NIM Marketing Intelligence Review, Vol.11, Iss.2, pp.36-41.
- Home - CD PROJEKT <https://www.cdprojekt.com/en/> (2025.05.30)
- <https://ccl.northwestern.edu/netlogo/> (2025.05.20)
- Huang, Ming-Hui and Roland T. Rust. (2018) *Artificial Intelligence in Service*, Journal of Service Research Vol.21 (2018): pp.155 - 172.
- Khalimonchuk I.V., Pozovna I. (2024), *The role of machine learning and artificial intelligence in optimizing costs and increasing revenues of technological companies*, Economic sustainability and business practices, DOI: DOI:10.21272/esbp.2024.3-04
- Kirchdorfer, L., Blümel, R., Kampik, T. et al., 2025, Discovering multi-agent systems for resource-centric business process simulation. *Process Sci* 2, 4 . DOI: <https://doi.org/10.1007/s44311-025-00009-5>
- Martínez, J., Llinas, B., Botello, J.G., Padilla, J.J., Frydenlund, E., (2024) *Enhancing GPT-3.5's Proficiency in Netlogo Through Few-Shot Prompting and Retrieval-Augmented Generation*. 2024 Winter Simulation Conference, WSC, IEEE, pp.666-677
- Mehendale, A., HR, N.S. (2018) *Application of Artificial Intelligence (AI) for Effective and Adaptive Sales Forecasting*, Journal of Contemporary Management Research, Vol.12, Iss.2.

- Paschen, J., Paschen, U., Pala, E., Kietzmann, J. (2021) *Artificial intelligence (AI) and value co-creation in B2B sales: Activities, actors and resources*. Australasian Marketing Journal, Vol. 29, Iss.3, pp.243-251.
- Sulis E., Taveter K, 2022, Agent – Based Business Process Simulation. A Primer with Applications and Examples, Springer,
- Tissue, S. Wilensky, U. (2004) *Netlogo: A simple environment for modeling complexity*, International conference on complex systems, May, Vol. 21, pp.16-21
- Trivedi, S., Patel, N. (2020) *The Role of Automation and Artificial Intelligence in Increasing the Sales Volume: Evidence from M, S, and, MM Regressions*, June 20, 2020. DOI: <http://dx.doi.org/10.2139/ssrn.4180379>

Combining Representation, Participation and Expertise for Effective Nonprofit Governance

Gina Rossi

Department of Economics and Statistics, University of Udine, Italy

gina.rossi@uniud.it

Abstract: Interest in the effective governance of nonprofit organisations stems from the nature of their mission: to fulfil societal needs and serve the public good. Due to the specificities of the sector, effective governance of nonprofits encompasses community representation on boards and the adoption of participatory mechanisms in strategy planning and activity design. However, the growing pressure to conform to managerialist norms over the past few decades has increased the importance of professional requirements aimed at ensuring that decisions, processes and actions are performed with the highest level of excellence. Adopting a democratic perspective, this paper explores how nonprofit organisations implement representational and participatory mechanisms to achieve effective governance. It highlights critical issues in the fair selection of representative board members and stakeholder engagement processes. Additionally, adopting a “rationality agenda” perspective, it considers whether effective governance also requires board members with the relevant knowledge and experience to address the organisation’s key challenges. To this aim, this study conducts a multiple case analysis of three large Italian foundations of banking origin (FBOs). According to the law, these organisations manage their endowments for the purpose of grant-making in the exclusive interest of their local communities. Community representation on the board is required by law in FBOs, and self-regulation defines mechanisms for stakeholder engagement and professional requirements of board members. To increase the reliability of the findings, data was collected through document analysis and semi-structured interviews with key informants familiar with the organisations’ governance practices. The findings show that FBOs use several representational and participatory mechanisms to develop an in-depth understanding of the communities they serve, the problems they face, and the solutions that can be implemented. Furthermore, great emphasis is placed on the professional knowledge and experience of board members in the foundation’s areas of intervention, ensuring they possess the necessary skills to identify community needs and maximise the organisation’s societal impact.

Keywords: Effective governance, Nonprofit organisations, Representation, Participation, Expertise, Board

1. Introduction

The study of effective governance has gained renewed interest in nonprofit research due to several scandals involving a minority of organisations that resulted in reputational damage to the entire sector. Despite the elusiveness of the concept, nonprofit research considers governance effective when it is capable of producing the desired results and is structured to maximise a nonprofit’s contribution to society (Kugel and Mercado, 2024; Lee, 2021). As effective governance typically depends on internal structures and procedures (Ortega-Rodríguez et al, 2024), this study aims to explore the characteristics of effective governance in nonprofit organisations.

According to studies from the field (Moggi et al, 2022; Piscitelli and Geobey, 2020), community representation within boards and the adoption of participatory mechanisms in planning strategies and setting activities are seen as promising democratic practices through which effective governance can be realised. However, as nonprofits operate in an ever-changing and increasingly complex environment, effective governance requires decisions to be based on knowledge, expertise, and experience relevant to the organisation’s key challenges (Harris, Petrovits and Yetman, 2017). Therefore, using the lenses of both the democratic (Eikenberry, 2009) and managerialist (Meyer, Buber and Aghamanoukjan, 2013) perspectives, this study poses the following research questions:

RQ1: What representational and participatory mechanisms do nonprofits adopt to achieve effective governance?

RQ2: Are board members required to have knowledge and experience relevant to the organisation’s key challenges?

To answer these research questions, this paper employs a multiple case study methodology, as case-based studies are well established in nonprofit governance research (Stewart, 2012). Specifically, it analyses the case of three large Italian foundations of banking origin (FBOs), as community representation on the board is required by law and self-regulation defines mechanisms for stakeholder engagement and board professional qualifications (Leardini, Rossi and Moggi, 2014; Rossi et al, 2015). Data were collected through semi-structured interviews with key informants from the organisations and analysed alongside documents from FBOs to increase the reliability of the findings.

The remainder of the paper is structured as follows. The next section provides the theoretical background to the study, focusing on both the democratic and managerialist perspectives. Section 3 outlines the contextual background and the main characteristics of FBOs that are most relevant to the study. Section 4 summarises the research methodology, and Section 5 presents the main findings. The final section discusses these findings and offers some concluding remarks.

2. Theoretical Background

Well-known governance theories in the nonprofit sector emphasise the close link between effective governance, board composition, and decision-making (Kugel and Mercado, 2024). According to neo-institutional theory (Scott, 1995), environmental pressures affect the characteristics and functioning of the board, compelling it to adhere to societal norms and expectations in order to gain organisational legitimacy. This, in turn, can affect the procurement of resources and support from stakeholders. In recent decades, the expectation that the nonprofit sector should become more efficient and effective has resulted in the adoption of a managerialist perspective, which emphasises the importance of professionalism and technical knowledge in defining goals and planning activities (Willner and Heller, 2024). However, the specific nature of the sector requires adherence to democratic values, such as community member representation on boards and participation in decision-making processes. Representative and engaging boards demonstrate a commitment to their constituencies, thereby engendering legitimacy for nonprofit organisations (Egholm, Heyse and Mourey, 2020). Integrating the democratic and managerialist perspectives allows for a better understanding of the many factors that can contribute to the effectiveness of nonprofit boards.

2.1 The Democratic Perspective

According to the democratic perspective (Eikenberry, 2009), the board's primary role is to represent the interests of the community, ensuring that the organisation is responsive to them and offering meaningful opportunities for democratic participation. Thus, democracy entails giving the community a voice in, and power over, decision-making processes.

From this perspective, effective governance can benefit from adopting representational and participatory mechanisms (Moggi et al, 2022; Schubert and Willems, 2020). Representation refers to how the board embodies the community's views, speaks on its behalf and stands up for its interests. Participation, on the other hand, involves inclusive governance practices that engage the community in board-level decision-making. Viewing representation and participation as interconnected aspects of the same phenomenon, Guo and Musso (2007) proposed a comprehensive conceptual framework, based on several forms of representation. Formal representation refers to the mechanisms used to select board members, such as elections, co-optation and other appointment procedures. These arrangements contribute to effective governance by preventing boards from becoming "self-perpetuating cliques" (Iecovich, 2005). Descriptive representation is achieved when the socio-economic and demographic characteristics of board members reflect those of the community they serve. This increases diversity on the board and improves governance by providing access to a wider range of perspectives (Fredette and Sessler Bernstein, 2021; Zhang and Guo, 2021). Descriptive representation is also based on the residence of board members within the territory in which the nonprofit operates. As they are closer to the community they serve and share its concerns, resident board members are expected to enhance an organisation's responsiveness (Leardini et al, 2017). Participatory representation occurs when community members are involved in decision-making processes through consultations, partnerships, or constituent-led boards. This significantly enhances the effectiveness of governance by fostering accountability, improving performance, and facilitating stakeholder engagement (Petrovits and Yetman, 2023). Together, these three forms of representation contribute to effective governance by enabling a nonprofit organisation to stand for and act for its community in a manner that is responsive to its needs and interests.

2.2 The Managerialist Perspective

Moving from a democratic to a "rationality agenda" perspective (Meyer, Buber and Aghamanoukjan, 2013), effective governance entails the capacity to make decisions, processes and actions with the highest level of excellence (Ortega-Rodríguez et al, 2024).

Over the past few decades, nonprofits have increasingly been expected to be "business-like" entities and to conform to managerialist norms. Managerialism is generally conceptualised as the dominance of management practices and ideas that emphasise efficiency and effectiveness in steering an organisation (Meyer, Buber and Aghamanoukjan, 2013). According to this perspective, the best way to ensure efficiency and effectiveness is to implement a rational cycle of goal definition, activity planning and action performance based on professionalism

and technical knowledge. Decisions made by expert boards, whose knowledge and expertise is relevant to the organisation's key challenges, improve organisational performance and help nonprofits achieve their goals (Lambert and Lapsley, 2023). Therefore, effective governance requires more than merely representing and engaging community interests. It also depends on the personal resources of board members, acquired and developed through education, training, and occupational experience. These include professional skills that are essential for the activities of the board and experience in areas that are relevant to the organisation's field of intervention (Adediran, 2022). This knowledge and these skills enable quicker and more accurate decisions that are better aligned with the organisation's resources and capabilities, and better focused on its overall strategy (Johnson, Schnatterly and Hill, 2013).

3. Contextual Background

FBOs are a particular type of community-owned foundation that was established by law in the early 1990s as part of a reform of the Italian credit system (Jassaud, 2014). They are private entities that act in the public interest and are legally required to use income from asset management to support local community development. In this manner, they perpetuate the philanthropic and community-based initiatives that were formerly undertaken by savings banks for over a century and a half.

Compared with most Italian nonprofits, FBOs are well-endowed, grant-making institutions with significant financial resources. Currently, 86 FBOs are operating in Italy and are distributed variably across the country. With a total book value of net assets amounting to €41.2 billion (average value: €479 million), they awarded grants totalling €1.05 billion in 2023 (ACRI, 2024). FBOs promote community welfare by supporting third-sector organisations, institutions, businesses, and individuals engaged in caring for the local community. The main fields of intervention include welfare, art and culture, innovation, sustainability, education, and scientific research.

The governance structure of FBOs is established by law and involves separate bodies for direction, administration, and control. The board of trustees is responsible for setting the organisation's priorities, objectives and long-term plans for asset management and grant-making activities. The board of directors is responsible for defining short-term programmes to be implemented by the management. Finally, a control body monitors the foundation's proper functioning.

The importance of effective governance is emphasised by the guidelines set out in the Charter of Foundations, a voluntary yet binding code of conduct to which all foundations adhere (Leardini, Rossi and Moggi, 2014). Previous studies (Leardini et al, 2017; Moggi et al, 2022; Rossi et al, 2015) have shown that FBOs pay particular attention to representation and participation issues due to their origins and community-oriented mission. At the same time, however, they require the adequate professional expertise to manage their assets and use the income generated to fund philanthropic projects. This has led them to develop governance mechanisms that combine community representation and participation with professionalism. This enables their boards to become symbols of local identities and crucibles of expertise (Iecovich, 2005). As a result, several governance mechanisms have been formalised within the statutes, primarily relating to the appointment, characteristics, and professional requirements of board members.

4. Method

This paper employed a multiple case study methodology (Stewart, 2012) and focused on three case studies in the domain of large-sized Italian FBOs. Table 1 summarises their main characteristics.

Table 1: Main characteristics of the FBOs in the study as of 2023

FBO	Net assets (million €)	Grants disbursed (million €)	Main areas of intervention	No. of trustees			No. of directors		
				Tot.	M	F	Tot.	M	F
Alpha	1,023	27.4	Welfare, arts and culture, scientific research	10	7	3	5	3	2
Beta	1,272	31.1	Volunteering and philanthropy, environment, education	26	17	9	6	5	1
Gamma	574	12	Scientific research, welfare, arts and culture	15	10	5	5	3	2

These were selected due to their attention to issues of representation, participation and managerialism, as evidenced by their statutes and codes of ethics, and for their willingness to participate in interviews.

According to the research protocol, data were collected through 15 semi-structured interviews and document analysis. The interviewees were experts familiar with the organisation's governance practices (see Table 2). Gaining multiple perspectives on the same phenomenon was the reason behind the decision to interview different individuals at each foundation. The interviews lasted approximately 45 minutes on average and were audio-recorded and transcribed. The document analysis included statutes, codes of ethics, strategic plans, financial reports and annual reports, as well as internal guidelines for institutional activities and the appointment of governing bodies.

Table 2: Interviewees per FBO and role

FBO	Interviewee	Role
Alpha	INT_A1	Chairman
	INT_A2	Board of directors member
	INT_A3	Executive director
	INT_A4	Responsible for the institutional activity
Beta	INT_B1	Deputy chairman
	INT_B2	Board of trustees member
	INT_B3	Board of trustees member
	INT_B4	Board of trustees member
	INT_B5	Executive director
Gamma	INT_G1	Deputy chairman
	INT_G2	Board of trustees member
	INT_G3	Board of trustees member
	INT_G4	Board of trustees member
	INT_G5	Executive director

Information from both the interviews and documents was coded according to previous research on nonprofit representation, participation, and professionalism.

Table 3 summarises the main categories and subcategories considered in the analysis and links them to the research questions. It also provides examples of keywords that were identified as codes within the interviews and documents.

Table 3: Main categories, subcategories, and codes

RQ	Main categories	Subcategories	Codes
RQ1: What representational and participatory mechanisms do nonprofits adopt to achieve effective governance?	Representation mechanisms	Formal representation	Appointment, election, nomination, designation, co-optation
		Descriptive representation	Gender, age, residence, territory
	Participatory mechanisms		Participation, engagement, involvement, dialogue, consultation, cooperation, interaction, listening
RQ2: Are board members required to have knowledge and experience relevant to the organisation's key challenges?	Professional requirements		Experience, expertise, skills, knowledge, professionalism

Specifically, the categories adopted in previous studies focusing on FBOs (Leardini et al, 2017; Moggi et al, 2022; Rossi et al, 2015) were used to identify governance mechanisms from a democratic perspective. Statutory provisions regarding the appointment of board members (e.g. direct designation by community representatives, selection from a list of candidates proposed by community representatives, and co-optation by the outgoing board) were analysed to assess formal representation. Requirements regarding the personal characteristics (e.g.

age and gender) and residence of board members were used to measure descriptive representation. Finally, participatory representation was evaluated by identifying the mechanisms that facilitate the engagement of community representatives in the foundation's decision-making process.

From a managerialist perspective, the analysis focused on the adoption of mechanisms that emphasise the professional skills, knowledge and experience of board members in order to adhere to efficiency norms and the business model (Meyer, Buber and Aghamanoukjan, 2013; Ortega-Rodríguez et al, 2024).

5. Findings

5.1 Findings from the Democratic Perspective

Effective governance is pursued through a combination of mechanisms aimed at ensuring the representation and participation of local community representatives within governing bodies.

Formal representation is governed by statutes and only affects the board of trustees. According to their statutes and the internal guidelines outlining the appointment process for governing bodies, more than two thirds of Beta's and Gamma's trustees must be directly designated by community representatives. In contrast, Alpha's trustees are selected by the outgoing board from a list of candidates proposed by community representatives. The remaining members are co-opted. As outlined by the interviewees, "good appointment mechanisms are essential for the effective governance of the foundation, which in turn is crucial for its impact on the local community" (INT_B2). "Democratic appointment mechanisms allow for a balanced composition of the board of trustees" (INT_A3), despite them sometimes "being used to legitimise politically motivated candidacies" (INT_G3).

In terms of descriptive representation, institutional documents do not specify the socio-demographic characteristics that board members should possess. The only exception is the need to ensure gender equality. "Boards that are gender- and age-diverse are desirable as they are viewed positively by the public. Nevertheless, they might not make things better" (INT_B2). Therefore, "they could all be women, rather than all men, if those women and men were all exceptional" (INT_B4). By contrast, the statutes impose strict residence requirements on members of the board of trustees, stipulating that they must have lived in the geographical area in which the foundation operates for at least three years. Although "residence is not the only value, but one value among others" (INT_G1), "the link between the person and the territory can help identify the problems to be addressed" (INT_B5).

While formal and descriptive representation arrangements strictly adhere to legal requirements, FBOs place great emphasis on self-regulating participatory mechanisms. As declared in Alpha's code of ethics, "interaction with the local community is an essential value that is pursued by listening to and interpreting carefully its requests". Similarly, the code of ethics of Beta states that "to fulfil its mission, the foundation [...] works with a network of social and institutional actors to address and solve the territory's needs through dialogue and involvement". In the same way, article 3 of Gamma's statute declares that "the foundation promotes appropriate forms of participation and consultation of the various entities operating in the territory". This is further outlined in the strategic plan, which states that "the priority objective is to play a decisive role in the territory's economic and social development. This will be achieved by constructing a participatory model that enables community representatives to become involved in co-programming, co-planning, and the definition of shared objectives".

The three FBOs under study promote dialogue and engagement in decision-making processes in order to improve understanding of community's needs and inform the long-term strategies. The participatory mechanisms and the boards concerned with them vary among the foundations. In Alpha, "stakeholder involvement is a key concern for the board of directors" (INT_A1). When designing the strategic plan, the board organises themed meetings with key stakeholders to share priorities and define courses of action. For example, "we held meetings on inclusion and disability with representatives from Caritas, public entities, hospitals, social cooperatives, and voluntary organisations. Together, we discussed priorities, needs and networking opportunities" (INT_A4). "We involved these actors because they could contribute the most information and expertise" (INT_A2). "Extended sharing is also necessary to bring forces together. With diminishing returns and increasing community needs, this way of working has made it easier for us to pursue our mission" (INT_A1). In Beta, the board of trustees may set up temporary advisory committees involving community representatives. For example, "the art commission involved directors of permanent theatres and opera houses" (INT_B3). "The approach is to listen to those best able to represent the needs of a given sector, discuss these needs further, and develop ideas by drawing on the expertise of everyone involved in the decision-making process" (INT_B4).

Gamma has set up working groups to facilitate structured dialogue with stakeholders in preparation for co-design in areas that have been identified as relevant. “In the past, formal meetings were held at the start of programming, after which the foundation made its own decisions. Now, we have more engaging mechanisms based on debate and meetings where the whole community is invited to participate” (INT_G5).

However, the involvement of community representatives in decision-making has some critical aspects. They often lack long-term programmes and focus on satisfy short-term needs. Instead, the foundation should promote social investments that will benefit the community in the long term. Additionally, “it is important to avoid assuming that local community representatives, particularly public entities, necessarily have a better understanding of needs than the foundation does” (INT_A3).

5.2 Findings from the Managerialist Perspective

The statutes of the FBOs prescribe that all board members must possess the professional skills, knowledge and experience necessary to take effective action within the sectors of interest to the foundation, regardless of which board they sit on. These requirements are specified in the appointment guidelines (Table 3).

Table 3: Professional requirements, as stated in the appointment guidelines

FBO	Board of trustees	Board of directors
Alpha	Members of the board of trustees must have high professional standards and relevant specialised knowledge to support the foundation's operations, acquired through management, administration or control roles in public or private organisations, professional activities requiring registration, or working as ministers of religion, university professors or scientific researchers	In addition to the requirements set for trustees, directors must have gained relevant and proven operational experience in their professional or managerial activity, or in the entrepreneurial or academic field
Beta	Trustees must have proven expertise in cultural, scientific, entrepreneurial or administrative fields, or in liberal professions or social initiatives. They should be able to promote the foundation's objectives effectively	Specialised knowledge in areas of intervention or functions relevant to the foundation's activities, or to the financial and securities sectors. They should also have operational experience gained in professional, entrepreneurial, academic, managerial or administrative roles within public or private entities
Gamma	Board of trustees members must have appropriate cultural and professional qualifications and expertise in one of the areas in which the foundation operates, and at least three years' experience in one of the following roles: self-employed professional; high school or university professor; board member or manager in public or private entities relevant to the foundation's areas of activity	Appropriate cultural and professional qualifications and expertise in one of the areas in which the foundation operates, and at least three years' experience in one of the following roles: legal, economic or social professional; economics or law university professor; board member or manager in public or private entities relevant to the foundation's areas of activity

As outlined by the interviewees, it is important that “people is appointed for their expertise” (INT_G4) and that “the board has the right qualities to help the foundation achieve its mission” (INT_B2). “Expert board members help the foundation to allocate its resources effectively, e.g. they can assess proposed projects more efficiently, saving the need for ad hoc external committees” (INT_G2). The issue of competency mainly concerns the board of trustees. For this reason, “the foundation insists on the importance of trustees having the professionalism to read the needs of the community. However, sometimes people are proposed based solely on their political experience, which is not useful for the foundation” (INT_A3). This hinders the board of trustees’ ability to formulate strategies, meaning they end up being defined by the board of directors and then submitted to the board of trustees for mere formal approval.

6. Discussion and Conclusion

In answer to RQ1, the findings show that FBOs employ a wide range of representational and participatory mechanisms to identify the issues affecting their communities and the solutions to be implemented to solve them.

Formal and descriptive representation concerns only the board of trustees due to its connecting function between the organisation and its environment. According to previous research results (Leardini et al, 2017; Moggi et al, 2022; Rossi et al, 2015), appointment procedures are primarily based on democratic voting to ensure that board members are well aware of community needs. Conversely, similarity of socio-demographic characteristics is not considered relevant, in contrast with previous studies highlighting the importance of having boards that resemble who they represent (Zhang and Guo, 2021). Instead, living within the territory in which the foundation operates is confirmed as essential, both in helping to identify problems to be addressed and in fostering community trust in the effectiveness of governing bodies (Leardini et al, 2017).

As emerged in previous nonprofit research (Leardini et al, 2017; Moggi et al, 2022; Zhang and Guo, 2021), participation of community representatives in decision-making processes is integral to effective governance of FBOs, irrespective of which governing body is involved. It stresses the need to avoid someone saying: “Board members are great. However, they do what they have in their minds!” (INT_B1). Several participatory mechanisms are employed to improve outcomes by aligning organisational decisions with community needs (Petrovits and Yetman, 2023). Local stakeholders are involved from the very beginning of the decision-making processes because of their familiarity with the problems to be solved and their relevant skills. This is consistent with FBOs’ mission, which is to promote the social and economic development of their territories, and helps them avoid the risk of becoming self-referential when pursuing the welfare of the community (Jassaud, 2014; Leardini, Rossi and Moggi, 2014).

However, representation and participation alone are not a guarantee of effective governance. Representative boards sometimes struggle to deal with the complexity of FBOs’ strategies and decision-making processes, which entail the effective and efficient handling of multiple factors (e.g. conflicting stakeholders’ needs, limited financial resources, project feasibility).

Therefore, in answer to RQ2, the findings confirm that effective governance requires board members to possess the professional qualities appropriate to their roles and functions. According to a managerial perspective (Adediran, 2022; Lambert and Lapsley, 2023; Meyer, Buber and Aghamanoukjan, 2013), great emphasis is placed on the specialised knowledge and operational experience of board members, to ensure that they have the necessary skills to do the right things (effectiveness) and things right (efficiency).

Responding to environmental pressures to conform to both democratic values and managerialism, the case of Italian FBOs offers insights on how nonprofit governance can help an organization to produce the desired results and maximise its contribution to society. Since only a limited number of people can become board members, effective governance should find the right balance between community representation and professionalism to best serve the social mission. This balance would prevent a double mistake. On the one hand, to encourage an elitist and undemocratic governance, which risks being self-referential in defining community welfare and deciding how to pursue it. On the other hand, to take for granted that representative members always have better knowledge of the community’s needs, as this could lead to a highly subjective distribution of individual preferences that is not useful for supporting decisions.

Ethics declaration: Ethical clearance was not required for this research.

AI declaration: AI tools were not used to create this paper.

References

- ACRI-Associazione Casse di Risparmio Italiane (Association of Italian Foundations and Savings Banks) (2024) *Ventinovesimo rapporto sulle fondazioni di origine bancaria*, Rome.
- Adediran, A.O. (2022) “Nonprofit Board Composition”, *Ohio State Law Journal*, Vol 89, No. 2, pp 357–421.
- Egholm, L., Heyse, L. and Mourey, D. (2020) “Civil society organizations: the site of legitimizing the common good—a literature review”, *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, Vol 31. No. 1, pp 1–18.
- Eikenberry, A.M. (2009) “Refusing the market: a democratic discourse for voluntary and nonprofit organizations”, *Nonprofit and Voluntary Sector Quarterly*, Vol 38, No. 4, pp 582–596.
- Fredette, C. and Sessler Bernstein, R. (2021) “Governance effectiveness: The interaction of ethno-racial diversity and social capital”, *Nonprofit and Voluntary Sector Quarterly*, Vol 50, No. 4, pp 816–841.
- Guo, C. and Musso, J.A. (2007) “Representation in nonprofit and voluntary organizations: A conceptual framework”, *Nonprofit and Voluntary Sector Quarterly*, Vol 36, No. 2, pp 308–326.
- Harris, E., Petrovits, C. and Yetman, M.H. (2017) “Why bad things happen to good organizations: The link between governance and asset diversions in public charities”, *Journal of Business Ethics*, Vol 146, No. 1, pp 149–166.

- Iecovich, E. (2005) "The Profile of Board Membership in Israeli Voluntary Organizations", *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, Vol 16, No. 2, pp 161–180.
- Jassaud, N. (2014) "Reforming the corporate governance of Italian Banks", IMF Working Paper, WP/14/181.
- Johnson, S.G., Schnatterly, K. and Hill, A.D. (2013) "Board composition beyond independence: Social capital, human capital, and demographics", *Journal of Management*, Vol 39, No. 1, pp 232–262.
- Kugel, J. and Mercado, J.M. (2024) "Good governance in not-for-profit organizations: A review of the literature on boards of directors", *Journal of Governmental & Nonprofit Accounting*, Vol 13, No. 1, pp 56–82.
- Lambert, V. and Lapsley, I. (2023) "Charities, altruism and becoming business-like: Tensions & contradictions", *Qualitative Research in Accounting & Management*, Vol 20, No. 4, pp 569–592.
- Leardini, C., Rossi, G. and Moggi, S. (2014) *Board governance in bank foundations: The Italian experience*. Springer-Verlag.
- Leardini, C., Rossi, G., Moggi, S. and Zardini, A. (2017) "When the law shapes nonprofit boards: The key role of local stakeholders", *Nonprofit and Voluntary Sector Quarterly*, Vol 46, No. 1, pp 47–70.
- Lee, Y.J. (2021) "Nonprofit arts Organizations' pursuit of public interests: The role of board diversity". *Nonprofit Policy Forum*, Vol 12, No. 4, pp. 563–587.
- Meyer, M., Buber, R. and Aghamanoukjan, A. (2013) "In search of legitimacy: Managerialism and legitimation in civil society organizations", *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations*, Vol 24, pp 167–193.
- Moggi, S., Zardini, A., Rossi, G. and Leardini, C. (2022) "Governance mechanisms fostering a legitimate representation in nonprofit organizations", *International Journal of Public Administration*, Vol 45, No. 1, pp 1081–1091.
- Ortega-Rodríguez, C., Martín-Montes, L., Licerán-Gutiérrez, A. and Moreno-Albarracín, A.L. (2024) "Nonprofit good governance mechanisms: A systematic literature review", *Nonprofit Management and Leadership*, Vol 34, No. 4, pp 927–957.
- Petrovits, C. and Yetman, M. (2023) "Governance of nonprofit organizations" (pp. 192–213). In *Research Handbook on Nonprofit Accounting*. Edward Elgar Publishing.
- Piscitelli, A. and Geobey, S. (2020) "Representative board governance: What role do board directors have in representing the interest of their constituents?", *Canadian Journal of Nonprofit and Social Economy Research*, Vol 11, No. 1, pp 76–87.
- Rossi, G., Leardini, C., Moggi, S. and Campedelli, B. (2015) "Towards community engagement in the governance of non-profit organisations", *Voluntary Sector Review*, Vol 6, No. 1, pp. 21–39.
- Schubert, P. and Willems, J. (2020) "In the name of the stakeholder: An assessment of representation surpluses and deficits by nonprofit leaders", *Nonprofit Management and Leadership*, Vol. 31, No. 4, pp 639–664.
- Scott, W.R. (1995) *Institutions and organizations*. Sage.
- Stewart, J. (2012) "Multiple-case study methods in governance-related research", *Public Management Review*, Vol 14, No. 1, pp 67–82.
- Willner, L. and Heller, S.M. (2024) "The Impact of Managerialism on Nonprofit Organizations Serving People Experiencing Houselessness in the United States", *Social Sciences*, Vol 13, No. 9, p 436.
- Zhang, Z. and Guo, C. (2021) "No advocacy without representation? Nonprofit representational mix and nonprofit advocacy", *Nonprofit Management and Leadership*, Vol 32, No. 2, pp 219–239.

Analysing the Use of Online Communication Software in Companies in the Czech Republic

František Smrčka, Hana Vojáčková, Zdeňka Dostálová and Jakub Novotný

Department of Technical Studies, College of Polytechnics Jihlava, Czech Republic

frantisek.smrcka@vspj.cz

hana.vojackova@vspj.cz

zdenka.dostalova@vspj.cz

jakub.novotny@vspj.cz

Abstract: The use of online communication software has become essential for modern companies, a trend significantly accelerated by the covid-19 pandemic which required many employees to work remotely. This paper maps the current use of these tools in Czech companies, analysing how they facilitate team interaction and improve organizational performance. Based on a 2024 survey of approximately 400 companies, the study examines the key features influencing software selection, such as accessibility, security, integration, and cost. The results highlight the dominance of certain platforms, particularly in large organizations, and reveal distinct usage patterns based on company size. The findings provide practical insights for managers and underscore the need to include training on these tools in university curricula for management and ICT.

Keywords: Analysis, Online communication, Software tool, Company

1. Introduction

In recent years, online communication software has become an integral part of the corporate environment. Its importance grew significantly during the covid-19 pandemic, when most employees were forced to switch to working from home and find new ways to communicate effectively with their colleagues. This situation has accelerated the adoption of digital tools, which today play a key role in ensuring team collaboration, flexibility and overall performance of organisations. The aim of the paper is to map the current state of the use of online communication software in Czech companies and analyze how individual tools contribute to effective team interaction and employee engagement. Today, online communication not only enables instant problem solving and increased productivity but also reduces costs by allowing remote working and virtual meetings. In addition, regular online meetings promote employee engagement and strengthen team cohesion. The paper focuses on the key features that companies consider when choosing a communication tool—availability, speed, multimedia support, group communication, interactivity, security, integration with other tools and price. User-friendliness and ease of use also play an important role. The research part of the paper is based on a questionnaire survey conducted in 2024 among approximately 400 Czech companies of various industries. The paper concludes with an overview of the advantages and disadvantages of each software solution and offers recommendations for their effective use in practice.

2. Theoretical Background

Online communication software platforms serve as a vital tool of information management. Information management, as a discipline, provides a methodological context for understanding the role of communication technologies in organizations. The term *information management* was first introduced in 1966 at a conference organized by R. S. Taylor, initially focusing on the economics of technical information processing (Vodáček and Rosický, 1997). By the late 1970s and 1980s, it evolved to address the economic efficiency of information and communication technology (ICT) projects (Vodáček and Rosický, 1997). According to Vodáček and Rosický, information management is a discipline that integrates system science, management, and informational tools, permeating the entire organization (Vodáček and Rosický, 1997).

As defined by Doucek, information management employs a distinct methodology and conceptual apparatus, leveraging system approaches to study management methods and their application in IT management within companies (Doucek, 2010). This discipline interweaves system science, management, and business informatics, with management functions—such as those outlined by Henry Fayol—playing a critical role. Among these, the organizing function is particularly relevant, as it relates to the relationship between organizational structure and information flow, a concept explored by early theorists like March, Simons, Thompson, and notably, Jay Galbraith.

Galbraith's seminal work, *Organization Design: An Information Processing View*, posits that the greater the task uncertainty, the more information must be processed among decision-makers to achieve desired performance levels (Galbraith, 1974). In large organizations, effective management relies on coordinating specialist groups and resources through partial subtasks. As uncertainty increases, so does the need for enhanced information processing capabilities. Galbraith proposes two primary strategies to address this challenge:

Reduce the need for information processing: Achieved through the creation of slack resources or self-contained tasks.

Increase information processing capacity: Accomplished by investing in vertical information systems or fostering lateral relations.

Galbraith's ideas have been further developed in later works, such as his collaborations with Kazanjian and his book on designing organizations (Galbraith, 1986; Galbraith, 2014). His concepts also resonate in W. R. Scott's work, which identifies three dimensions of technology affecting organizational structure: complexity, uncertainty, and interdependence (Scott, 1992). Scott emphasizes that organizational structures serve as mechanisms for processing information—subduing, summarizing, and simplifying it (Sor, 2004). Automation of processes, as Scott notes, reduces the information processing demands on organizational structures, aligning with the capabilities of modern ICT.

Recent studies, such as those by Sor (2004) and Dubey (2021), continue to validate Galbraith's framework, highlighting its relevance in empirical analyses of organizational flexibility and data analytics capabilities (Sor, 2004; Dubey, 2021).

Online communication software platforms, such as Slack, Microsoft Teams, or Discord, complement Galbraith's framework by enhancing organizations' information processing capabilities. These tools streamline communication, facilitate collaboration, and integrate with other productivity platforms, aligning with the principles of information management. They enable real-time messaging, file sharing, and task management, which reduce the complexity and uncertainty in organizational workflows.

By providing instant communication and project management tools, online communication software improves managerial efficiency. For example, Slack's workflow automation and Trello's Kanban boards allow managers to assign tasks, track progress, and allocate resources effectively. A study published on ScienceDirect (Afridi et al., 2023) underscores the impact of digital communication tools on project performance, emphasizing the importance of user-friendly interfaces for seamless integration into daily operations.

These tools support Galbraith's strategy of increasing information processing capacity by enabling vertical information systems (e.g., centralized dashboards) and lateral relations (e.g., cross-team channels). This reduces the need for hierarchical communication, allowing for faster decision-making and more agile management practices.

By enabling virtual meetings and remote collaboration, online communication software minimizes transportation demands, further supporting Galbraith's approach to reducing information processing needs. According to Global Workplace Analytics, remote work can save 30 billion vehicle miles annually in the USA, reducing CO2 emissions and fuel consumption (Global Workspace Analytics, 2021).

Galbraith's view of organizational structures as information processing mechanisms is particularly relevant in the context of modern ICT. The integration of online communication software with vertical information systems can replace traditional organizational structures, enabling greater flexibility in design and redesign. As Scott suggests, automation reduces the need for complex structures by streamlining information flow (Sor, 2004). This raises an empirical question: What is the current situation with the use of modern communication tools in the Czech Republic?

While Galbraith's framework remains robust, as validated by recent studies (e.g., Dubey, 2021; Sor, 2004), it assumes high task uncertainty in larger organizations, which may not always apply to smaller Czech firms with simpler structures. Online tools like MS Teams address this by scaling information processing, but their effectiveness depends on user adoption and training.

3. Review of Selected Communication Platforms

3.1 Discord

Besides its popularity in software development and gaming communities, Discord is being increasingly used in education since the ability to communicate is critical for enhancing the learning experience. Its popularity in the context of online education in the Czech Republic is mentioned in Smrčka et al. (2023). Craig (2022) links the importance of integrated messaging applications such as Discord with the rising numbers of digitally mediated courses. The Discord application allows educators and students to readily communicate learning experiences within asynchronous and synchronous environments by sending messages, images, links, audio, and video. Craig (2022) conducted a systematic review to understand the advantages and disadvantages of using the Discord application in higher education courses. The paper summarises the findings of eight empirical studies in the field of global higher education. Benefits of using Discord included ease of access, user-friendliness, useful communication and interaction, and increased social presence leading to enhanced student learning outcomes. Challenges included the increased potential for distraction and technology issues, both of which can inhibit engagement. (Craig, 2022).

Another point widely discussed by researchers is the fact that the shift in the teaching and learning landscape from conventional classes to e-learning was called for by the covid-19 pandemic. The online learning and distance learning platforms that are massively adopted due to this shift are especially MS Teams, Zoom US, and Google Classroom. Numerous papers comment on the fact that the aforementioned require a monetary subscription to unlock the platform's full potential, which proved detrimental to its accessibility in education during the pandemic, i.e., not all students and/or educational institutions had the available means. Uong et al. (2022) seek to affirm the capability of Discord as an alternative online learning platform that is not only efficient in its own right but also comes at no expense. In their experiment, a group of English teachers who had been teaching online via various free platforms were offered to switch to Discord for a fixed amount of time. They received instructions and support from the research team concerning the platform along the way and were asked to participate in a survey afterward. With the use of SPSS for statistical data analysis, Uong et al. pointed out that Discord achieved a high compatibility level for both parties in use, namely the teachers and the students. (Uong et al., 2022)

3.2 Slack

Slack is a modern communication platform for teams that is seeing wide and rapid adoption by software development teams. Not only does Slack facilitate team messaging and archiving, it also supports a wide range of integrations with external services and specific integrations called *bots*. Lin et al. (2016) found that Slack and its integrations (bots) are playing an increasingly significant role in software development, replacing email in some cases and disrupting software development processes. To understand how Slack impacts development team dynamics, they designed an exploratory study to investigate how developers use Slack and how they benefit from it. The paper finds that developers use Slack for personal, team-wide and community-wide purposes. The research also reveals that developers use and create diverse integrations (bots) to support their work. The study by Lin et al. (2016) was viewed by the authors as an initial step towards understanding the role of Slack in supporting software engineering.

Johnson (2018) characterizes slack as a cloud-based digital workspace and information management system used to manage productivity and improve team efficiency. The author mentions a survey of Slack administrators which found, for example, that 32% of respondents said that Slack had increased their productivity, reducing internal email by 48.6% and meetings by 25.1%. Further, 79% of respondents felt that Slack helped to improve the culture of their teams, with 88.6% of administrators indicating they felt more connected to their teams. In terms of information management, 80.4% of respondents cited improved transparency within the team environment, while 62.4% of survey respondents believed that Slack made it easier for them to locate information (Slack Survey Results, 2017, in Johnson, 2018).

Focusing on the free version of the product, Ferreira et al. (2021) review Slack as a communication platform. Among the many useful features of Slack, they point out those related to accessibility, streamlined communication, content organization, and platform integration. Slack is found broadly accessible, in that members can access their workspaces via the web, a desktop plugin, or a mobile application, and compared to other products, it was the least likely to be blocked by an institutional firewall. The paper lists further benefits of the platform. They state that Slack provides members with a number of options to organise content. Initially, this is done by channel, and more granularly via posts and cloud-based document storage. The

platform enables streamlined communication that goes beyond email. It enables both broad communication via real-time chat and direct, private messaging. Slack also archives all content posted to public domains (i.e., not direct message), making it easily searchable, barring limitations described below. Finally, Slack integrates with hundreds of native and external applications, acting as a central location for content from project-related platforms such as Google Drive, Trello and SurveyMonkey. (Ferreira et al., 2021)

In the experimental part of their paper, Ferreira et al. (2021) were testing the accessibility of Slack by all team members, including those from organizations with various levels of security. Their team had varied access with HipChat and Glip, which were said to offer features similar to Slack's. Their results showed that team members at academic institutions were able to seamlessly create accounts with HipChat and Glip, but users at hospital libraries were not always successful due to firewalls. Of HipChat, Glip, and Slack, Slack was the only tool that was accessible to all team members. (Ferreira et al., 2021)

3.3 Skype

Until recently, Skype was an Internet communications platform that allowed users to connect via voice calls and video calls, and also provided a messaging service. Launched in 2003, it used VoIP (Voice over Internet Protocol) technology and attracted hundreds of millions of users worldwide who had access to its basic features for free. For those looking for additional features such as landline calling or enhanced communication options, Skype offered a premium version at a reasonable price. The platform was particularly popular among individuals for keeping in touch with family and friends and among businesses for conducting meetings remotely.

Microsoft discontinued Skype as of 5 May 2025. This affected both free and paid users. Skype users can now switch to Microsoft Teams, where many of the same features are available. (Lewis, 2016)

3.4 Microsoft Teams

One of the market leaders, powered by its connection to the Microsoft 365 suite, the cloud-based Microsoft Teams collaboration platform has attracted the attention of researchers. As e.g. Schumann (2020) states, its potential is driven, among other things, by the fact that today's organizations can utilize such a platform when they link work across organizational units in the form of shared projects, leveraging specialized knowledge from different areas of the organization to meet specific quality criteria within a defined timeframe and at a set cost. Project managers are integral to success and often act as knowledge centers both within projects and in relation to the rest of the organization, even over time. For that reason, they are increasingly using technology to support knowledge sharing and to promote digitalisation in their daily work, often considering aspects of remote working. In the view of project managers in their chosen research setting, such technology largely enables knowledge sharing activities in everyday work, both presenting new opportunities for more effective implementation and leading to additional challenges. (Schumann, 2020)

Schumann finds that the introduction or increased use of technology seems to change not only the way knowledge is shared, but also the way individuals work with respect to what knowledge, when and how they share. However, whether an individual project manager perceives such a change as positive or negative depends on a number of factors, such as technical proficiency, length of use, and personal preferences regarding structure and organization of work. Nevertheless, the technology supports the daily knowledge sharing of project managers to the extent that all those who have fully migrated to the technology report using it daily and in a range of knowledge sharing activities. (Schumann, 2020)

4. Results

4.1 Methodology

At the end of 2024, a survey was conducted on the use of online communication platforms in Czech companies. The survey was conducted by students of the College of Polytechnics Jihlava as part of their study activities under the supervision of the authors of this paper. The survey was carried out through contact persons at companies with which the students cooperate (as part of student practical placements or temporary jobs) or on the basis of personal connections. This approach was chosen to ensure access to relevant respondents and to obtain practical data from the real business environment. The survey method allowed for the rapid collection of information from a diverse range of companies, but due to the non-probability sampling of respondents, the results cannot be generalized to the entire group of companies in the Czech Republic.

The questionnaire was distributed electronically and contained questions focused on the types of online communication systems used, the frequency of their use, perceived advantages and disadvantages, and basic company characteristics (size, industry). It combined multiple-choice questions for quantitative data collection (e.g., software prevalence, usage frequency) with open-ended questions to capture qualitative insights into the reasoning behind user satisfaction and criticism. A total of 432 completed questionnaires were obtained, leaving 363 valid respondents after removing duplicate and incomplete responses. Respondents represented companies of various sizes (from small businesses with less than 10 employees to large companies with more than 250 employees) and industries, primarily in the information technology, manufacturing and services sectors.

Data was analysed using descriptive statistics, including calculation of frequencies and percentages.

4.2 Findings

The results are presented in graphs and tables that illustrate the representation of companies by size, industry, and level of use of the online communication software. The chart below shows the representation of companies by number of employees.

Table 1: Representation of companies by number of employees

Company size	Number of companies
Up to 5 employees	60
5 to 10 employees	45
11 to 25 employees	40
26 to 50 employees	45
51 to 100 employees	48
100 or more employees	125
Total	363

Table 2: Use of online communication software in companies by number of employees

Company size	Yes	No	Not found	Number of companies
Up to 5 employees	36	24		60
5 to 10 employees	34	11		45
11 to 25 employees	28	12		40
26 to 50 employees	31	14		45
51 to 100 employees	40	8		48
100 or more employees	112	10	3	125
Total	281	79	3	363

Approximately 77% of companies reported using communication software. Four per cent of companies use multiple communications software simultaneously. *Figure 1* shows that MS Teams software was the most common, with 54% of companies using it. The next most popular tools were Discord and Skype, used by 19% and 13% of companies respectively.

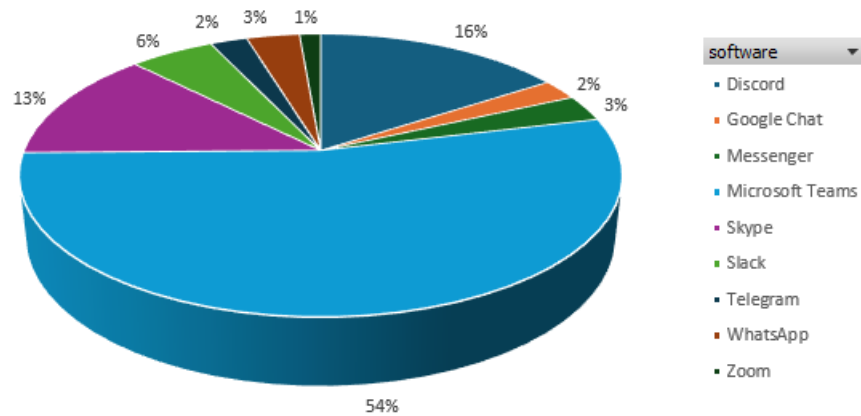


Figure 1: Share of communication software types in all companies

The results for communications software types represented in companies with over 100 employees show a slightly different situation, with MS Teams being used by 71% of these companies (see Figure 2).

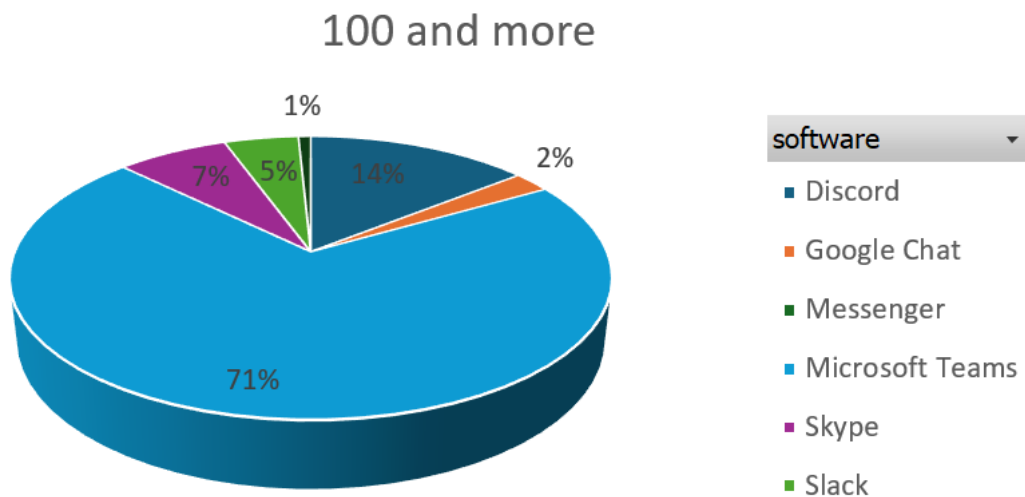


Figure 2: Share of communication software types in companies with 100 or more employees

In the segment of companies with up to 100 employees (see Figure 3), MS Teams was present in 41% of the companies.

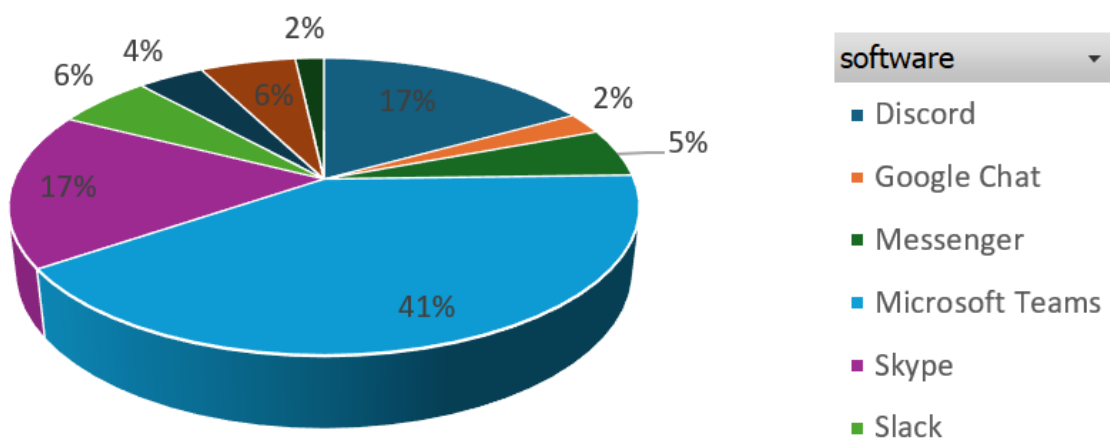


Figure 3: Share of communication software in companies with less than 100 employees

Evaluation of the individual relevant communication software types based on the questionnaire results

Discord

According to the respondents, the advantages of Discord software include: efficient communication, intuitive control, wide accessibility, real-time communication, video conferencing, screen sharing, integration with other tools, division into channels and servers, teamwork organisation, speed, clarity, stability and the existence of a free version. Disadvantages include limited integration with enterprise software, technical challenges in connecting to video calls, security and privacy risks, low speed, hardware intensity, small upload size, and limited image upload. Furthermore, some users rate the interface as unclear and criticize the impersonality of the communication.

Skype

The advantages of the software include ease of use, ease of control, suitability for beginners, free version existence and available free features, the fact that Skype works on multiple devices, provides group video calls, screen sharing, reliability and security, and calendar integration. Respondents consider the drawbacks to be low video and audio quality, frequent connectivity issues, limited features in the free version, outdated interface and technology, low clarity for larger teams, high connection and data requirements, and lack of advanced teamwork features.

Slack

Benefits of the software include fast real-time communication, integration with other tools and applications, organization into channels and private messages, file sharing and history search, multi-platform functionality, security and clarity, flexibility and customization to meet team needs, and a pleasant and simple environment.

Disadvantages of the software include higher price for advanced features, limited features in the free version, information and notification overload, difficult training for new users, limits to suitability for large teams without a paid version, and limited storage space.

MS Teams

Benefits include Microsoft 365/Office 365 integration, fast and efficient real-time communication, group calls, video conferencing and screen sharing, organization into channels, clarity and ease of use, real-time document collaboration, file sharing and message history, security, encryption, stability, multi-platform availability (PC, mobile phone), and suitability for hybrid work and large teams. Respondents consider the disadvantages to be high performance and connectivity requirements, frequent technical problems and outages, overwhelm with information and notifications, complexity for new users, need for training, limited features in the free version, impersonal communication, loss of social connections, compatibility and stability issues, higher price and licensing costs, low visibility with multiple teams and channels, security and privacy concerns.

In addition to the four most used online software types, companies also use Google Chat, Messenger, Telegram, WhatsApp and Zoom.

5. Discussion

The results of our survey, conducted in late 2024, indicate a high adoption rate of online communication software among Czech companies, with 77% of respondents confirming their use. This widespread adoption, significantly accelerated by the covid-19 pandemic, highlights the transition towards digitally mediated collaboration. The central finding of our research is the clear dominance of Microsoft Teams, which is utilized by 54% of all surveyed companies. The prevalence of MS Teams becomes even more pronounced when analyzed by company size, reaching 71% in organizations with over 100 employees, compared to 41% in smaller enterprises. This finding strongly aligns with the information processing theory proposed by Galbraith. Large organizations inherently face greater task uncertainty and complexity, thus requiring a higher capacity for information processing to maintain performance. MS Teams, with its deep integration into the Microsoft 365 ecosystem, serves as a powerful vertical information system that enhances this capacity. The platform facilitates lateral relations through cross-departmental channels and real-time document collaboration, directly addressing Galbraith's strategies for managing organizational complexity. The advantages reported by users—such as integration with other tools, real-time collaboration, and security—are precisely the features that enable large organizations to streamline information flow and improve coordination. The reported disadvantages, such as higher costs and the need for training, represent a trade-off that large enterprises are evidently willing to make for these advanced capabilities.

In contrast, smaller companies exhibit a more diverse preference in communication tools. The lower market share of MS Teams (41%) in this segment suggests that factors like cost, ease of use, and less complex integration needs play a more significant role. This explains the notable presence of platforms like Discord (16%) and Slack (6% overall). Discord's appeal lies in its robust free version and intuitive interface, making it an accessible option for teams with limited budgets. However, its limited integration with corporate software and perceived security risks makes it less suitable for larger, more structured organizations. Similarly, while Slack is praised for its flexibility and user-friendly environment, its advanced features are locked behind a paywall, posing a barrier for some smaller businesses.

5.1 Requirements for Online Software

Based on the results of the questionnaire survey, we can define the basic requirements for online communication software. It must enable effective real-time communication, including the rapid sharing of messages, files and information between team members. It should support video conferencing and screen sharing to enable remote meetings and presentations. Operation must be intuitive and simple so that even beginners can use it easily without extensive training. The tool should be available for free or at low cost, ideally with a functional free version. It must be multiplatform, i.e., available on computers, mobile phones and tablets. Integration with other tools such as calendars, email clients or office applications (e.g., Microsoft 365) is required. It should allow communication to be organised into channels or teams, providing clarity and structure. Security and stability are key, including data encryption and reliable connectivity. The tool should support real-time collaboration on documents, which increases the efficiency of teamwork.

Respondents consider the limited possibilities of integration with company systems to be a disadvantage of online software. For new users, the environment tends to be complex and challenging to master, requiring training. Another disadvantage is the requirement for a high-performance device and a stable Internet connection, which can be a problem when working remotely. Being overwhelmed by notifications and information can reduce concentration and productivity. Security risks and limited customisation options are additional weaknesses, especially in corporate environments. In addition, the higher price of premium versions can be a barrier for smaller teams or organisations.

6. Conclusion

The results of the survey confirm that communication software plays a key role in corporate communication across different sizes of companies in the Czech Republic. The majority of companies actively use communication software, with MS Teams having the largest presence, used by almost half of the companies surveyed.

At the same time, larger companies with more than 100 employees were found to have even higher levels of use of this software, indicating its importance for internal coordination and communication. Although the general trend is that the larger the company, the more often it uses communication software, this tendency is slightly contradicted by smaller companies with 5 to 10 employees.

The findings have both practical and theoretical implications. For managers, this research provides a data-driven overview of the current software landscape in the Czech Republic, which can inform their strategic decisions when selecting or implementing communication platforms. For educators, the study underscores the importance of incorporating practical training on modern communication and collaboration tools into university curricula for management and ICT courses. From a theoretical perspective, our results empirically validate Jay Galbraith's information processing view of organization design, demonstrating its continued relevance in the age of digital transformation. The observed patterns show how organizations invest in information processing capacity to manage complexity, just as the theory predicts. Another limitation naturally lies in the fact that the data represents a snapshot from late 2024 and is geographically confined to the Czech Republic. Furthermore, the findings are based on self-reported data from the respondents.

In conclusion, the findings suggest that the adoption of communication software directly reflects organizational needs, aligning with Galbraith's information processing theory discussed earlier. For large companies, facing greater complexity and uncertainty, these tools are a strategic necessity to enhance information processing capacity and maintain performance. In contrast, the adoption in smaller companies is more directly influenced by specific operational factors, cost-effectiveness, and ease of use, reflecting a different scale of organizational and communication challenges. These findings can serve as a basis for further research on the effectiveness of communication platforms in different types of businesses.

Ethics declaration: Ethical clearance was not required for the research.

AI declaration: No AI tools were used for the creation of the paper contents. DeepL was used for assistance in proofreading and improving the clarity of the English language.

References

- Afridi, K., Turi, J. A., Zaufishan, B. and Rosak-Szyrocka, J. (2023) "Impact of digital communications on project efficiency through ease of use and top management support". Online. Heliyon. 2023, roč. 9, č. 7. ISSN 2405-8440. Available at: <https://doi.org/10.1016/j.heliyon.2023.e17941>. [cit. 2025-06-12].
- Almomani, G. (2024) "Exploring digital technology use in socially and technologically complex contexts: the case of Discord", [online], *Business and Management thesis and dissertation collection*. Business and Management thesis and dissertation collection, Edinburg Research Archive, Available at: <http://dx.doi.org/10.7488/era/4881>.
- Craig, C. and Robin, K. (2022) "Examining the discord application in higher education: A systematic review of the literature", *Journal of Digital Life and Learning* 2.2: 52-66.
- Doucek, P. (2010) *Informační management*, Professional Publishing, Praha, ISBN 987-80-7431-010-2.
- Dubey, R. et al. (2021) "Empirical investigation of data analytics capability and organizational flexibility." *International Journal of Production Research*, 59:1, 110-128.
- Ferreira, F.V., Capp, E. and Nienov, O.H. (2021) "Skype", Nienov, Otto Henrique; Capp, Edison (org.). *Estratégias didáticas para atividades remotas*. Porto Alegre: Universidade Federal do Rio Grande do Sul, Programa de Pós-Graduação em Ciências da Saúde: Ginecologia e Obstetrícia, 2021. p. 191-204.
- Galbraith, J. R. and Kazanjian, J. K. (1986) *Strategy Implementation: Structure, Systems and Process*, 2nd Edition, West Publishing Co., St. Paul.
- Galbraith, J.R. (1974) "Organization design: An information processing view." *Interfaces*, Vol. 4, No. 3. Available at: <https://doi.org/10.1287/inte.4.3.28>.
- Galbraith, J.R. (2014) *Designing Organizations: Strategy, Structure, and Process at the Business Unit and Enterprise Levels*, John Wiley & Sons.
- Global Workspace Analytics (2021) "Latest Work-at-Home/Telecommuting/Remote Work Statistics" [online]. Available at: <https://globalworkplaceanalytics.com/telecommuting-statistics/>.
- Johnson, H.A. (2018) "Slack", *Journal of the Medical Library Association: JMLA*, 106(1), p.148.
- Lewis, A., Richard, P., Sharp, P. and Maximo, R.Y. (2016) *Skype pro firmy na útěku*, Sams Publishing, ISBN 0134289269.
- Lin, B., Zagalsky, A., Storey, M.A. and Serebrenik, A. (2016) "Why developers are slacking off: Understanding how software teams use slack", In *Proceedings of the 19th acm conference on computer supported cooperative work and social computing companion* (pp. 333-336).
- Scott, W. R. (1992) *Organizations – Rational, Natural, and Open Systems*, Prentice-Hall, ISBN 0-13-8636291-5.
- Schumann, E.V. (2020) *Technology enabling project managers' knowledge sharing: the case of Microsoft Teams* (Dissertation). Available at: <https://urn.kb.se/resolve?urn=urn:nbn:se:lnu:diva-97566>
- Slack survey results. (2017) Online. Slack. 2017. Dostupné z: https://a.slack-edge.com/7b00/img/survey/slack_survey_results.pdf.
- Smrčka, F., Dostálová, Z. and Vojáčková, H. (2023) "Analysing online tools used during covid-19 pandemic and the potential of their use for standard teaching", In *INTED2023 Proceedings* (1511-1520). Valencia, Spain: 17th International Technology, Education and Development Conference. doi: 10.21125/inted.2023.0433
- Sor, R. (2004) "Information technology and organisational structure." *Management Decision*, 42, 1/2, p. 316-329.
- Uong, T.U., Duy, Khoi, N. and Huu, N. (2022) "Teachers' feedback on using Discord as an online learning platform." *International Journal of TESOL & Education* 2.4: 84-104.
- Vodáček, L. and Rosický, A. (1997) *Informační management – pojetí, poslání a aplikace*, Management Press, Praha, ISBN 80-85943-35-2.

Unveiling Corporate Social Responsibility in Global Fashion: Insights from Supply Chain Management

Nikola Soukupova and Michaela Kotkova Striteska

Faculty of Economics and Administration, University of Pardubice, Czech Republic

nikola.soukupova@upce.cz

michaela.kotkovastriteska@upce.cz

Abstract: The global fashion industry is one of the largest contributors to environmental degradation and ethical concerns, yet consumer awareness regarding fast fashion and sweatshop labor remains relatively low. This limited awareness is reflected in the scarcity of research focused on Corporate social responsibility (CSR) implementation within fashion supply chains. Addressing this gap, the present study examines the attributes, tools, and challenges of CSR implementation in the supply chains of the world's ten most valuable fashion brands in 2022. This research identifies key drivers influencing fashion companies to adopt CSR practices across their supply chains, distinguishing between external pressures—such as regulatory requirements, media scrutiny, and consumer expectations—and internal motivations, including brand differentiation, competitive advantage, and risk mitigation. The study further explores the divergent CSR approaches taken by luxury brands, which emphasize exclusivity and craftsmanship, versus fast fashion firms, which prioritize cost efficiency and public image enhancement. Our findings indicate that while CSR initiatives yield significant benefits, including enhanced brand reputation, increased customer loyalty, and supply chain resilience, companies face substantial barriers in their implementation. These include fragmented regulatory landscapes, inconsistencies in supplier compliance, and risks of greenwashing, where firms engage in misleading sustainability claims without substantive environmental or social impact. Additionally, the complexity of global supply chains poses challenges in enforcing uniform CSR standards across diverse regions with varying economic and legal conditions. The insights presented in this study provide valuable guidance for fashion industry leaders, top management, and policymakers striving to enhance CSR strategies. By fostering a more transparent and accountable approach to sustainability, fashion brands can align corporate objectives with broader environmental and social responsibilities. The study underscores the necessity of genuine, long-term CSR commitments rather than superficial measures aimed at reputation management. Our conclusions offer practical recommendations for strengthening CSR governance and improving sustainable supply chain practices in the fashion sector.

Keywords: Corporate social responsibility, Responsible behaviour, Fast fashion, Sweatshop, Supply chain management, Stakeholders

1. Introduction

Prior to 2000, the fashion industry operated on a predictable seasonal cycle, with designers planning collections months in advance based on anticipated trends. However, in the early 2000s, the imitation of high-fashion designs and the rapid emergence of fast fashion characterized by accelerated production cycles and significantly lower price points transformed the industry (The Sustainable Living Guide, 2021). Globalization facilitated the outsourcing of production to developing countries, where exploitative practices such as child labor, unsafe working conditions, and sweatshops became prevalent. As public awareness of these unethical practices grew, the notion of “ethical production” emerged, prompting companies to implement radical changes in their supply chain management to sustain their market competitiveness (Corban, 2018).

Building on existing research and addressing the persistent gap in understanding CSR implementation within fashion industry supply chains, this study examines the tools, benefits, and barriers associated with CSR from a supply chain management perspective. Utilizing a qualitative approach informed by grounded theory (Corbin & Strauss, 2007), the investigation focuses on the ten most valuable global fashion brands of 2022. Secondary data including information from 52 websites, 3 case studies, 37 articles, 10 magazines, 5 documentaries, and 12 press releases (with 4 interviews) were synthesized using an inductive-deductive methodology to generate a comprehensive diagram of CSR attributes. The article adds to both theoretical understanding and practical application. The study contributes to current research by identifying the attributes of CSR implementation in fashion industry supply chains and provides important insights for successful CSR implementation in the supply chain.

The study highlights the benefits of CSR adoption, such as improved brand reputation, customer loyalty, and risk mitigation related to negative public perceptions. CSR also fosters sustainable practices, particularly in environmental sustainability and resource management. However, barriers like legal inconsistencies, managing supplier behavior, and the conflict between fast fashion trends and sustainability goals remain. Greenwashing undermines the effectiveness of CSR efforts. These findings offer a comprehensive understanding of CSR complexities and provide valuable insights for researchers and practitioners in the fashion industry. The paper

is divided into the following sections. Section 2 provides theoretical background and research questions, section 3 presents the data and methodology, section 4 shows the results and discusses the findings. The final section concludes this paper, including implications, limitations, and future research.

2. Theory, Literature Review and Research Questions

2.1 Definition of CSR in Supply Chain Management

Vishwanathan et al. (2020) define CSR as corporate activities that benefit society and generate profit by enhancing reputation, stakeholder cooperation, risk reduction, and innovation. CSR builds sustainable competitive advantage through differentiation, leading to abnormal future profitability. Jo and Harjoto (2012) describe CSR as above-standard service to people, communities, and the environment, beyond legal requirements. Investing in reputation creates lasting differences in company performance in competitive environments (Cabral, 2012; Ioann and Hawn, 2019).

The supply chain is the network connecting a company and its suppliers, covering all activities transforming raw materials into final products (Handfield & Nichols, 1999). Optimizing supply chains reduces costs, increases profitability, speeds production, and maintains global competitiveness (Kenton, 2021). Responsible Supply Chain Management (RSCM) is integral to CSR strategies. In today's global market, enforcing socially and environmentally responsible practices across complex supply networks is difficult due to weak legislation and jurisdiction. A supply chain is fully responsible only if all entities embed CSR in their cultures. Corporations with large market shares have greater influence to ensure responsibility throughout the chain (Opijnen & Oldenziel, 2010).

2.2 Atributs of Implementation of CSR in Supply Chain Management and Research Questions

The implementation of CSR is a complex, multifaceted, and time-intensive process (Steinerova & Makovski, 2008). Ideally, the foundations of CSR should permeate corporate culture in the form of socially responsible values, visions, strategies, and processes. A decisive factor in this process is leadership. Without clear commitment from top management, CSR often remains a symbolic practice rather than a strategic priority. Research highlights that responsible and transformational leadership provides vision, allocates resources, and motivates employees to adopt socially responsible behavior (Maak & Pless, 2006; Khan et al., 2018). In contrast, weak leadership or short-term profit orientation can undermine CSR implementation and lead to practices of greenwashing.

Companies that embed CSR principles into their core practices tend to act more naturally in alignment with responsible conduct. Effective CSR management within the supply chain requires the involvement of key stakeholders, whose representation should be diverse and purpose-driven. The CSR team should be composed of representatives from various company departments, working collaboratively to develop an action plan (Loskot, 2021). The successful implementation of CSR is also facilitated by the support of top management and the company's ownership (Kunz, 2012). Continuous evaluation of corporate analyses is essential, serving as the basis for the development of current action plans and transparent CSR reports (Kasparová & Kunz, 2013). The use of ethical codes is often highly effective in addressing ethical dilemmas. Desirable ethical motives, behaviors, and standards of conduct among actors in the supply chain are better regulated and monitored (Hospodarska komora, 2021). In addition to these **tools**, companies utilize various approaches to socially responsible behavior, including publications, awards, product labeling, open days, press releases, anti-corruption policies, and initiatives to educate and raise awareness among employees and customers on environmental protection (Fletcher, 2014; Steinerova, 2008). Therefore will be our 1st research question:

Q1: What tools do fashion industry companies (FIC) use to introduce responsible practices into their business activities?

The adoption of CSR concept offers numerous advantages that are essential for a company to maintain its position in a competitively globalized market. A significant **benefit** of CSR is its positive impact on the company's image. The practice of socially responsible behavior enhances the company's reputation, which has become increasingly important to consumers over the past decade (Catch Foundation, 2021). Economically responsible companies provide customers with high-quality, safe products and services. Beyond customer appeal, CSR makes the company more attractive to current and potential employees, investors, and business partners (Hlavacek, 2008). For some companies, socially responsible behavior has become an innovative form of promotion; however, it is crucial to distinguish this from greenwashing (Vysekalo, 2009). The environmental sector of CSR focuses on energy efficiency techniques and methods for reducing the ecological footprint, thereby

building long-term sustainability for the company. A responsible approach to environmental issues not only reduces operational costs but also positively impacts the environment (Kunz, 2012). Maintaining the CSR concept enhances the company's transparency to external stakeholders, which strengthens the company's credibility. The social dimension of CSR ensures equal employment opportunities and conditions for all workers, employee welfare, work-life balance, and the elimination of child and forced labor throughout the entire supply chain (Steinerova et al., 2008). This approach increases employee loyalty and productivity, enabling the company to attract and retain high-quality employees, investors, and business partners (CSR Compass, 2010). Within the benefits of CSR implementation will be our research question:

Q2: What are the benefits to FIC of implementing CSR across the supply chain?

Companies face numerous **barriers** on the path to successful CSR implementation. The globalization of the market has integrated businesses into complex and extensive supply chains, making it difficult for socially responsible companies to enforce and monitor CSR principles and standards throughout the entire chain (Opijnen & Oldenziel, 2010). A significant drawback is the high cost associated with implementing socially responsible strategies, which small businesses often cannot afford (Catch Foundation, 2021). The increasing pressure for environmentally friendly practices, combined with customers' ecological preferences, poses substantial challenges for companies that are not socially responsible. Some companies falsely claim the benefits of CSR without actual commitment—this practice is known as greenwashing (Corporate Financial Institute, 2021). Companies whose CSR strategies do not yield immediate results may fall victim to public scrutiny, which often dismisses them under the assumption of greenwashing, thereby undermining the company's history and reputation (Catch Foundation, 2021). Other obstacles to successful CSR implementation include organizational constraints, such as the influence of corporate culture, rigid hierarchical command structures, vertical division of labor, and unclear priorities, as well as unethical behavior by managers or company owners (Lohr & Steinmann, 1995). Within this problematic is a research question:

Q3: What barriers cause complications for FIC to implement CSR across the supply chain?

As part of our analysis, we will focus on examining the causes that are essential for understanding the entire issue of CSR implementation. The reasons that led fashion firms to implement CSR can be divided into internal or external. External causes are caused by external influences, for example in the form of public accusations or scandals. Internal causes are caused by influence from within the company. These causes provide key explanations for the reasons that led companies to implement CSR and have a direct impact on the selection and effectiveness of the tools used in CSR strategy implementation. Understanding these causes is crucial for developing a comprehensive approach to CSR and ensuring that the implementation tools effectively support long-term socially responsible behavior.

Q4: What causes FIC to implement CSR across the supply chain?

2.3 Current Situation in Global Fashion

The textile industry's environmental pillar is increasingly challenged by the rise of *fast fashion*. Since the 1990s, shopping has become a form of entertainment, and demand for ever-changing trends is growing. Fast fashion offers affordable, trend-driven clothing via efficient supply chains linking producers and retailers. Companies like Zara, H&M, Primark, and Mango benefit from this model, gaining competitive advantage. In contrast, firms committed to environmental responsibility tend to avoid this approach (Corporate Finance Institute, 2021).

However, fast fashion has severe environmental and social consequences. Low prices and rapid trend cycles lead to massive waste: 80 billion garments are consumed annually, and 2,625 kg of clothing are discarded every second (Cervinkova, 2021). Toxic dyes and chemicals cause significant air and water pollution (Fletcher, 2014). Global shipping of garments further increases CO₂ emissions. Fast fashion also fuels exploitative labor practices. Many garments are produced in sweatshops where workers, often including children, work up to 16 hours daily in hazardous conditions. About 93% of these facilities do not pay a living wage (Minney, 2017), with average daily earnings below €3. The COVID-19 pandemic further reduced wages by 21% (Cervinkova, 2021) and recent ILO data (2022) show that wage recovery remains slow in major textile-exporting countries. Despite these issues, the apparel industry is projected to grow from \$1.9 trillion in 2019 to \$3.3 trillion by 2030 (Statista, 2023), reflecting ongoing consumer demand.

At the policy level, the UN Sustainable Development Goals (2015) (e.g., SDG 12, SDG 13) provide voluntary guidance, while the EU Green Deal and the EU Strategy for Sustainable and Circular Textiles (2022) introduce binding measures aimed at reducing waste and extending product lifecycles. Yet, individuals can help mitigate

fast fashion's impact. Actions include reducing clothing purchases, extending garment lifespans, and recycling or upcycling. Conscious consumers can seek sustainably produced goods labeled Fair-trade, Cruelty-free, or Eco-friendly. Ultimately, meaningful change depends on informed, responsible choices (Fletcher, 2014).

3. Data and Method

The mentioned attributes were analyzed on a sample of companies in the fashion industry, since it poses significant global challenges. Fast fashion generates an estimated 92 million tons of textile waste annually worldwide and is expected to rise to 134 million tons per year by 2030 (Earth, 2021). The rapidly developing manufacturing process contributes to almost 10% of global carbon emissions and nearly 20% of global water consumption (UNECE, 2018). In addition to these environmental impacts, the industry is also associated with sweatshops. The implementation of CSR in the corporate activities of fashion brands can help mitigate these negative effects. The research sample consisted of the ten most valuable fashion brands in the world in 2022 (see Table 1). These rankings were compiled based on brand market value in 2020 and 2021. The criteria for including these brands in the sample included financial performance, prestige, and overall impact on the fashion industry. The research, the results of which were published in the fashion magazine *The VOU*, used data obtained from Statista.com, a trusted source of market trends and analysis. This approach allowed the researchers to obtain objective and relevant data to analyze the motivations and trends in CSR implementation in the supply chains of major fashion brands (The VOU, 2022)

Table 1: Top 10 most valuable fashion brands in 2022. Source: Own processing based on thevou.com 2022

Ranked	Fashion brand	Country	Market value 2020 in billion \$	Market value 2021 in billion \$
1.	NIKE	USA	34,8	30,5
2.	GUCCI	Italy	17,6	15,6
3.	Louis Vuitton	France	16,5	14,8
4.	Adidas	Germany	16,5	14,3
5.	Chanel	France	13,7	13,2
6.	ZARA	Spain	14,5	13,1
7.	UNIQLO	Japan	12,8	13,1
8.	H&M	Sweden	13,8	12,4
9.	Cartier	France	15	12
10.	Hermès	France	11,9	11,6

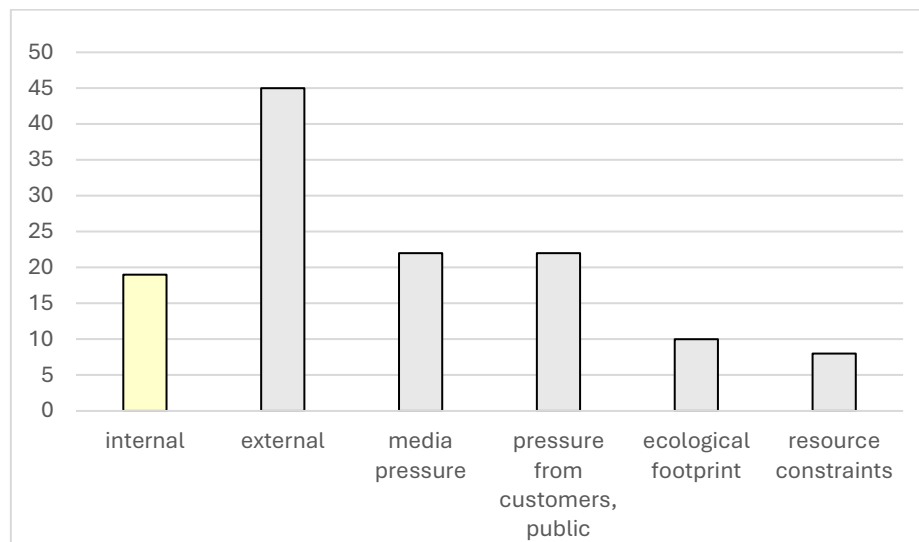
The paper is based on qualitative research that is informed by the principles of grounded theory (Corbin and Strauss, 2007). Grounded theory is characterised primarily by the interdependence of analysis and data collection. The analysis of firms is based on secondary data collected from corporate websites (Whiteside et al., 2012). Websites are a key medium in corporate communication strategies (Wheeler and Elkington, 2001) and are therefore a useful source of information. Thus, companies use their websites as a tool to communicate their sustainability, circular economy and environmental, social and governance activities (Da Giau et al., 2016). The study further uses data collection through keyword search 3 case studies, 37 articles, 10 magazines, 5 documentaries, 12 press releases including interviews and 4 books. These sources also correlate with the types of data analysed on the basis of grounded theory (Corbin and Strauss, 2007). The following terms were searched in the available sources: code of ethics, CSR report, CSR team, action plan, consumer turnaround, education and awareness, community investment, green approach, internal/external audits, solidarity behaviour, relations with international NGOs, certification/exclusivity and workforce equality. If a company in the research sample has experienced any modification of a given tool, it is indicated in the table with a cross, otherwise with a comma. Tools that were not mentioned by the companies of the research sample (indicated by a comma) were not found by the research. This finding does not necessarily mean that the companies do not use the tools, just that they were not found in the available sources.

4. Results and Discussion

4.1 Causes of Implementation of CSR

Figure 1 shows how external factors especially public accusations and scandals linked to fast fashion and sweatshops pressured Nike, Adidas, Zara, Uniqlo, and H&M. Media, NGOs, and consumers demanded ethical supply chains, leading to sales declines and forcing firms to respond. Nike initially denied allegations but mounting pressure in the 1990s led management to admit mistakes and reform its supply chain, aligning with Loskot's (2021) view that CSR adoption protects reputation. H&M and Uniqlo followed similar paths, while Adidas also faced internal pressure as employees left due to its reluctance to adopt CSR (Adamek, 2021).

Luxury brands such as Gucci, Louis Vuitton, Chanel, Cartier, and Hermès were mainly driven by internal motives, using CSR to build exclusivity, differentiation, and reputation. Still, Gucci and Hermès customers reported CSR shaped purchasing decisions, while Chanel, LV, and Gucci faced activist pressure over animal testing and materials. Varying legal standards hinder uniform adoption. Another driver is resource scarcity and environmental damage tied to fast fashion, forcing firms to act within the environmental pillar. As MIDAS PR Group (2016) notes, firms traditionally prioritized profit. Initially, CSR was seen as an economic tool, but like Nike, more companies have recognized its broader importance. In line with stakeholder theory (Freeman, 2010), businesses should be accountable not only to shareholders but all stakeholders.



Source: Own processing

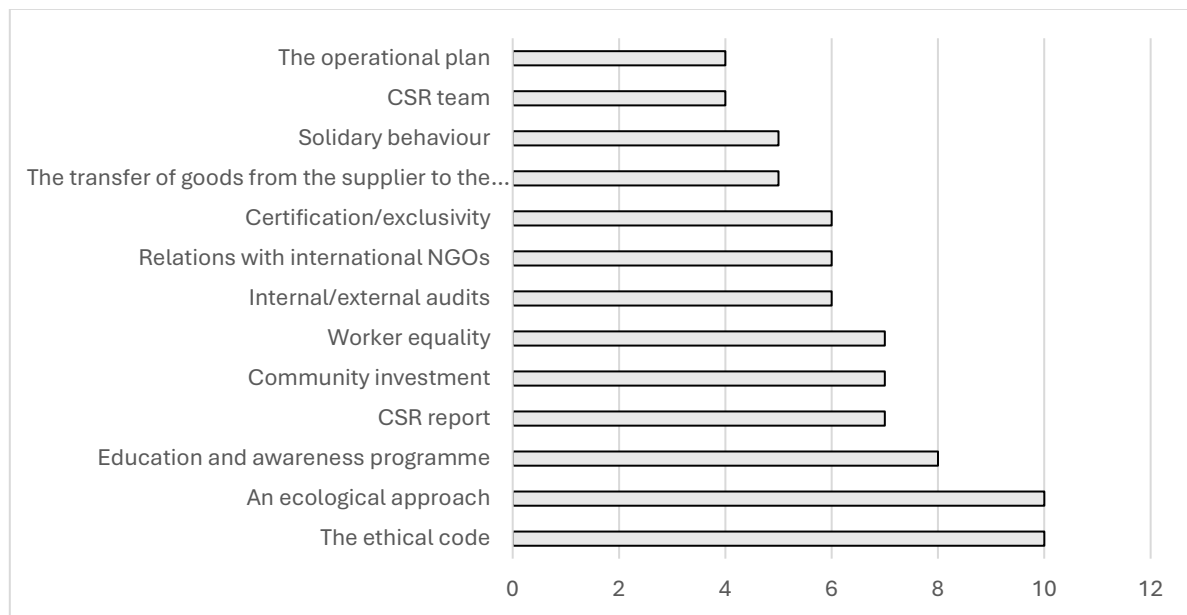
Figure 1: Causes of implementation of CSR

4.2 Tools of Implementation of CSR

The research revealed that the most common CSR tools across supply chains are code of ethics, ecological approaches, training programs, CSR reports, and community investment (see Figure 2). All surveyed companies applied these tools or their variants, confirming the Chamber of Commerce's (2021) claim that they standardize professional conduct in complex supply chains. Surprisingly, only 7 of 10 companies publish CSR reports, despite all claiming ecological approaches. This contradicts Kašparová and Kunz (2013), who argue that reports should be standard and include detailed evaluations. Many fashion reports lack supplier-level data, where the most serious issues occur; only Nike and Adidas disclosed full supplier information. CSR teams and action plans were identified in just 4 firms, suggesting that many brands prioritize public image over implementation.

The absence of CSR teams at Gucci, Louis Vuitton, Chanel, Uniqlo, H&M, and Hermès is notable. For exclusive brands, this may reflect tighter supplier control and quality standards, but for fast fashion firms it undermines credibility. Ecological strategies and training programs remain widespread. These findings support Steinerová (2008), whose framework includes awards, shared marketing, and stakeholder engagement. Worker equity and community investment are applied by 7 companies; such investments strengthen vulnerable communities (Netinbag, 2022). Audits, NGO ties, and certification are used by 6 firms. Zara and Uniqlo use none, while H&M and Louis Vuitton employ only one or two, indicating reluctance to acknowledge negative impacts.

Overall, a clear pattern emerges. Luxury brands rely on controlled suppliers and traditional standards, publishing fewer reports or plans. Fast fashion emphasizes ecological claims but avoids deeper tools, while sportswear companies such as Nike and Adidas adopt the most advanced practices. Thus, CSR implementation depth is shaped by business model: exclusivity favors control, fast fashion cost and speed, and sportswear stakeholder and NGO pressure.



Source: Own processing

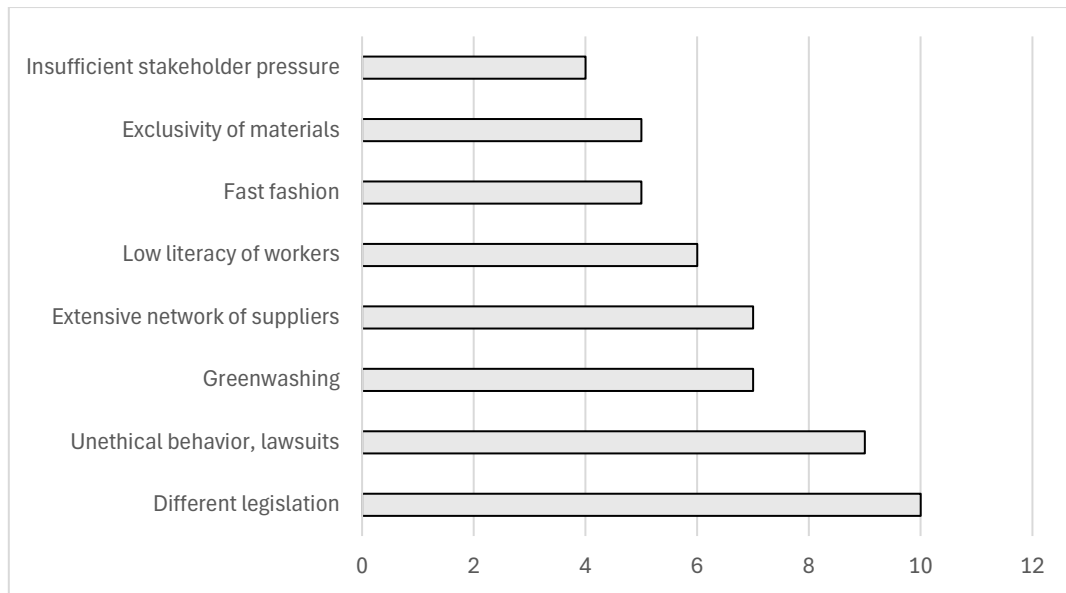
Figure 2: Tools of implementation of CSR

4.3 Barriers to CSR Implementation

Figure 3 shows that legal differences between countries are the main barrier to CSR implementation across all surveyed companies. As Hrnčir and Chvosta (2021) note, contractual relations must align with legislation while allowing enforcement and minimizing disputes. This reflects a downside of globalization, where differing legal and cultural norms intersect.

Luxury brands (Gucci, LV, Chanel, Cartier, Hermès) face major CSR challenges in animal testing and sourcing, while for Nike, Adidas, Zara, Uniqlo, and H&M, environmental protection is central. Global outsourcing has produced long supplier chains and sweatshop risks, identified in 7 of 10 firms. This was not detected at LV, Cartier, and Hermès due to stricter supplier selection. Low worker literacy perpetuates poverty and weakens supplier accountability, a barrier found in 6 firms (Minney, 2017).

Fast fashion poses another barrier, confirmed for 5 firms (Cervinkova, 2021; Corporate Finance Institute, 2021; Fletcher, 2014). Constant trend demand makes reducing environmental impacts difficult; cheap production often involves toxic processes and sweatshops. Exclusive brands avoid fast fashion but face ethical criticism over animal-derived materials. Supplier misconduct also results in greenwashing: in 7 firms, CSR claims were exaggerated or misleading. No such behavior was observed at Chanel, Cartier, or Hermès. Louis Vuitton was falsely accused due to counterfeit goods, while Gucci despite claiming 100% CSR compliance in Italy relies on over 3,000 unverifiable suppliers. CSR implementation remains inconsistent due to weak stakeholder pressure. For Gucci and LV, status outweighs ethics, while H&M's shareholders, mainly Nordic banks, fail to demand standards.



Source: Own processing

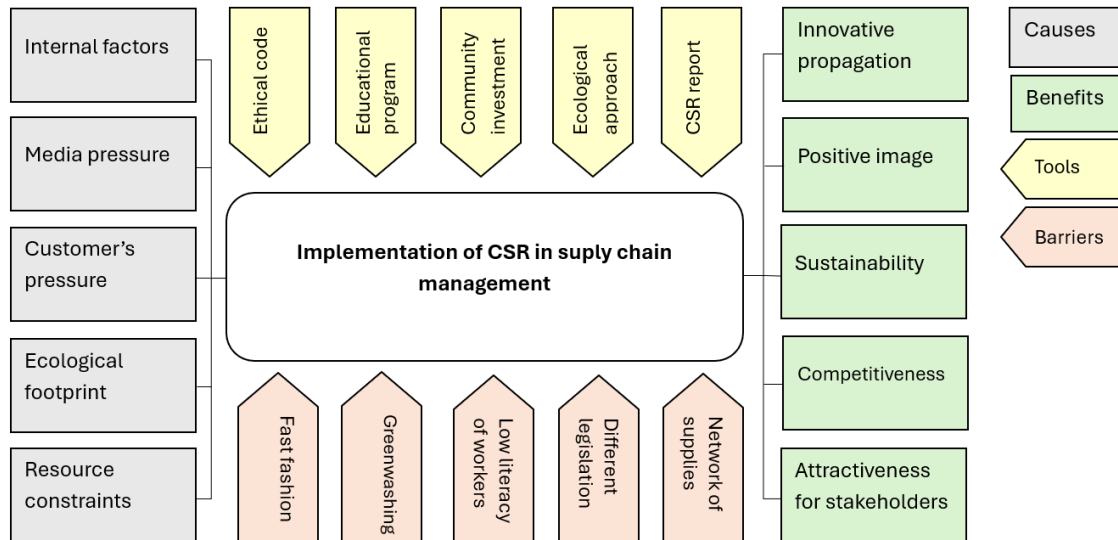
Figure 3: Barriers of implementation of CSR

Comparing barriers, fast fashion faces the harshest obstacles mass production, short cycles, greenwashing. Luxury brands encounter ethical controversies tied to materials and reputation. Sportswear firms face long supply chains and sweatshops but mitigate some risks through stronger stakeholder monitoring. Overall, legal fragmentation and cost pressures are universal, but other barriers vary by business model, linking CSR challenges to strategic positioning and stakeholder expectations.

5. Conclusions and Implications

5.1 Summary of Findings

Figure 4 illustrates the CSR implementation process in fashion supply chains, showing motivating factors and challenges. On the left, key reasons for adopting CSR include external pressure from media, customers, and NGOs due to negative publicity around fast fashion and sweatshops. Internal pressures, such as management's aim to protect brand reputation and market position, are also important. Luxury brands focus on exclusivity and differentiation, while fast fashion companies respond mainly to public scrutiny. The right side shows benefits of CSR adoption: improved brand reputation, increased customer loyalty, and reduced risks from negative perceptions. For some, CSR also drives more sustainable and innovative practices, especially in environmental sustainability and resource management. The middle part presents common CSR tools codes of conduct, environmental approaches, training programs, and CSR reports, that help monitor compliance and promote transparency. However, the bottom section highlights major barriers: legal and regulatory differences across countries, supplier management challenges, and ongoing fast fashion demand undermining sustainability. Greenwashing was identified as a critical issue, with some companies misleading the public about their CSR efforts, limiting the effectiveness of these initiatives.



Source: Own processing

Figure 4: Schema of CSR Implementation

5.2 Implications

This study has both theoretical and practical implications. Theoretically, it contributes to CSR literature in the fashion industry, especially regarding global supply chains. It deepens understanding of internal and external factors influencing CSR and confirms that protecting corporate reputation is a key motivator. These results support stakeholder theory, which highlights a firm's responsibility to all stakeholders, not just shareholders. Practically, the findings are valuable for fashion leaders and policymakers, helping them adapt CSR strategies to address challenges like environmental sustainability and ethical labor conditions. The study also offers guidance on CSR tools such as codes of conduct, reporting, and community investment, promoting transparency and effective supply chain management. Beyond corporate action, consumer behavior plays a critical role in mitigating fast fashion's negative impact. Consumers can reduce harm by buying fewer clothes, extending garment life, or recycling through methods like resewing. Choosing sustainably produced products identified by labels such as Fair-trade, Cruelty-free, or Eco-friendly further supports positive change. Ultimately, consumer awareness of fast fashion's harms and conscious purchasing decisions are essential for transforming the industry (Fletcher, 2014). The combined effect of corporate responsibility and responsible consumer choices can foster a more sustainable and ethical fashion ecosystem.

5.3 Limitations and Future Research

This study offers valuable insights but has limitations. It focuses on the ten most valuable fashion brands in 2022, which may not represent smaller or start-up brands that might have different CSR practices. The qualitative research relies mainly on secondary data, which can be biased or incomplete, especially regarding supply chain transparency. The complexity of multi-tiered global supply chains, especially in fast fashion, makes it difficult to obtain full and accurate data on all suppliers, so some practices may be missing. Geographic and legal differences across regions also limit how CSR is implemented and enforced. Future research should broaden the scope to include smaller, sustainable, and emerging brands with innovative CSR approaches. Longitudinal studies could track how CSR strategies evolve under changing pressures like regulations, consumer expectations, and environmental crises. Investigating new CSR tools and technologies, such as blockchain, may provide solutions for better transparency and accountability in global supply chains. Additionally, further research should examine the impact of regional legal frameworks on CSR implementation, focusing on variations in enforcement worldwide.

Acknowledgements

This paper was supported by the Student Grant Competition of the University of Pardubice SGS_2025_018.

Ethics declaration: Ethical clearance was not required for this research, as it was based exclusively on secondary data sources and did not involve human participants or sensitive personal data.

AI declaration: AI tools (ChatGPT by OpenAI) were used to assist with the stylistic refinement and language polishing of the English text. The content and structure of the paper were entirely developed by the author.

References

- Adamek, P. (2021). *Implementation of CSR: Motivation for socially responsible behavior* [online]. Department of Business Economics and Management, Silesian University.
- Cabral, L. M. B. (2012). *Living up to expectations: Corporate reputation and sustainable competitive advantage*. Leonard N. Stern School of Business, Department of Economics, New York University. Retrieved from [insert URL]
- Catch Foundation. (2021). *Advantages and disadvantages of corporate social responsibility (CSR)*. Medium. <https://medium.com/@catchfoundationngo/advantages-and-disadvantages-of-corporate-social-responsibility-csr-e0fb217a0e13>
- Cervinkova, E. (2021). *What is fast fashion and why is it a problem?* Gulu. <https://www.gulu.cz/co-je-to-fast-fashion>
- Corbin, J. M., & Strauss, A. L. (2007). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (3rd ed.). Thousand Oaks, CA: Sage.
- Corporate Finance Institute. (2021a). *Greenwashing*. Corporate Finance Institute. <https://corporatefinanceinstitute.com/resources/knowledge/other/greenwashing/>
- Corporate Finance Institute. (2021b). *What is fast fashion?* Corporate Finance Institute. <https://corporatefinanceinstitute.com/resources/knowledge/other/fast-fashion/>
- CSR Compass. (2010). *Responsible supply chain management*. CSR Compass. <https://www.csrcompass.com/responsible-supply-chain-management>
- Da Giau, A., Macchion, L., Caniato, F., Caridi, M., Danese, P., Rinaldi, R., & Vinelli, A. (2016). Sustainability practices and web-based communication: An analysis of the Italian fashion industry. *Journal of Fashion Marketing and Management*, 20(3), 313–330.
- Earth.Org. (2021). *7 fast fashion companies responsible for environmental pollution*. Earth.Org. <https://earth.org/fast-fashion-companies/>
- European Commission. (2019). *The European Green Deal*. Brussels: European Commission. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52019DC0640>
- European Commission. (2022). *EU Strategy for Sustainable and Circular Textiles*. Brussels: European Commission. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022DC0141>
- Fletcher, K. (2014). *Sustainable fashion and textiles: Design journeys* (2nd ed.). London, UK: Earthscan, an imprint of Routledge/Taylor & Francis Group.
- Handfield, R. B., & Nichols, E. L. (1999). *Introduction to supply chain management*. New Jersey, NJ: Prentice-Hall.
- Hlavacek, J. (2008). *Corporate social responsibility (CSR): Proklamace nebo ekonomicka nutnost?* Retrieved January 20, 2022, from <https://docplayer.cz/18301629-Corporate-social-responsibility-csr-proklamace-nebo-ekonomicka-nutnost.html>
- Hospodarska komora Ceske republiky. (2021). *Ethical code of the Czech Republic*. <https://www.etickykodexCR.pdf>
- International Labour Organization. (2022). *Wages and working conditions in the garment sector: Post-pandemic developments*. ILO. <https://www.ilo.org>
- Ioannou, I., & Hawn, O. (n.d.). *Strategic CSR and firm performance: The role of prospector and growth strategies*. In *Oxford handbook of corporate social responsibility: Psychological and organizational perspectives*. Oxford University Press. <https://www.sciencedirect.com/science/article/pii/S0148619521000497#bib0240>
- Jo, H., & Harjoto, M. A. (2012). The causal effect of corporate governance on corporate social responsibility. *Journal of Business Ethics*, 106(1), 53–72.
- Kasparova, K., & Kunz, V. (2013). *Modern approaches to corporate social responsibility and CSR reporting*. Prague, Czech Republic: Grada.
- Kenton, W. (2021). *Supply chain*. Investopedia. <https://www.investopedia.com/terms/s/supplychain.asp>
- Khan, H. U. R., Ali, M., Olya, H. G., Zulqarnain, M., & Khan, Z. R. (2018). Transformational leadership, corporate social responsibility, organizational innovation, and organizational performance: Symmetrical and asymmetrical analytical approaches. *Corporate Social Responsibility and Environmental Management*, 25(6), 1270–1283.
- Kunz, V. (2012). *Corporate social responsibility of companies*. Grada Publishing.
- Lohr, A., & Steinmann, H. (1995). *Foundations of business ethics*. (G. Tomek, Trans.; 1st ed.). Victoria Publishing.
- Loskot, S. (2021). *Implementation of the CSR concept*. Loskot Consulting. https://www.stanislawloskot.cz/files/4_csr_2021.pdf
- Maak, T., & Pless, N. M. (2006). Responsible leadership in a stakeholder society—a relational perspective. *Journal of business ethics*, 66(1), 99–115.
- Minney, S. (2017). *Slave to fashion*. New Internationalist Publications Ltd.
- Opijnen, M. V., & Oldenziel, J. (2010). *Responsible supply chain management: Potential success factors and challenges for addressing prevailing human rights and other CSR issues in supply chains of EU-based companies*. Amsterdam, Netherlands: CREM.
- Statista. (2023). *Apparel market value worldwide from 2019 to 2030*. Statista Research Department. <https://www.statista.com>

- Steinerova, M., Vaclavikova, A., & Mervart, R. (2008). *Corporate social responsibility: A guide not only for small and medium-sized enterprises*. Business Leaders Forum. https://csr-online.cz/wpcontent/uploads/2018/09/BLF_pruvodce_CSR.pdf
- Sustainability. (2021). *Top 10 sustainable clothing brands*. Sustainability Magazine. <https://sustainabilitymag.com/top10/top-10-sustainable-clothing-brands>
- The VOUE. (2022). *Top fashion brands in the world in 2022*. The VOUE. <https://thevou.com/fashion/top-fashion-brands/>
- United Nations Economic Commission for Europe. (2018). *Fashion and the SDGs: What role for the UN?* UNECE. https://unece.org/fileadmin/DAM/RCM_Website/RFSD_2018_Side_event_sustainable_fashion.pdf
- United Nations. (2015). *Transforming our world: The 2030 Agenda for Sustainable Development*. United Nations General Assembly. <https://sdgs.un.org/2030agenda>
- Vishwanathan, P., van Oosterhout, H., Heugens, P. P., Duran, P., & Van Essen, M. (2020). Strategic CSR: A concept building meta-analysis. *Journal of Management studies*, 57(2), 314-350.
- Wheeler, D., & Elkington, J. (2001). The end of the corporate environmental report? Or the advent of cybernetic sustainability reporting and communication. *Business Strategy and the Environment*, 10(1), 1-14.
- Whiteside, M., Mills, J., & McCalman, J. (2012). Using secondary data for grounded theory analysis. *Australian Social Work*, 65(5), 504-516.

The Governance of Good Quality Intellectual Capital Formation and its Efficiency Indicators in Various Branches of Science

Inese Spica, Sarmite Jegere, Kalevs Kants, Lada Kalinina and Paula Jegere

Scientific Institution Business Competence Centre, Riga, Latvia

inese.spica@gmail.com

sarmite.jegere@inbox.lv

kalev.kants@gmail.com

ms.lada.kalinina@gmail.com

jegerepaula@inbox.lv

Abstract: The governance of good quality intellectual capital formation at scientific institutions is highly topical. The object of the research is the governance of good quality intellectual capital formation at scientific institutions in various branches of science while the subject of the research is the comparative analysis of the efficiency indicators of good quality intellectual capital formation at scientific institutions in various branches of science in Latvia. The objective of the research is the governance of good quality intellectual capital formation at scientific institutions along with comparative analysis of the efficiency indicators of good quality intellectual capital formation at scientific institutions in various branches of science in Latvia in the period from 2013 to 2018. The following tasks were set to reach the objective: (1) to study the governance of good quality intellectual capital formation at scientific institutions in various branches of science; (2) to calculate the main indicators thereof; and, (3) to carry out the comparative analysis of indicators characterising the efficiency of good quality intellectual capital formation at scientific institutions in various branches of science in Latvia. Research methods used in the paper are as follow: content analysis, economic analysis, and economic experiment.

Keywords: Governance, Intellectual capital, Scientific branches, Efficiency indicators, Latvia

1. Introduction

Nowadays different scientific institutions (SIs) have high levels of intellectual capital although their outcomes of the governance of good quality intellectual capital (GQIC) formation are not measured. Since the main functions of GQIC governance are analysis, planning, management, and control, specific economic indicators are needed to assess the performance of each function. Qualitative data is required for the calculation of economic indicators. For this purpose, the results of the international evaluation of scientific institutions (IESI) can be used.

Every six years, the Ministry of Education and Science of the Republic of Latvia (MoES) shall organise the IESI registered in Latvia. The last IESI took place for the period from 2013 to 2018. In order to establish the dynamics of the efficiency indicators of academic staff involved in the formation of GQIC at SIs in Latvia (MoES, 2021), the authors used the output data of findings across the set of SIs evaluations in the period from 2013 to 2018 offered by "Technopolis-group" (TG). It provides an opportunity for the authors to calculate the GQIC indicators at Latvian SIs and to compare their dynamics during the period from 2013 to 2018.

Data of the comparative analysis will help to develop support and motivation programs to increase the efficiency of involvement of academic staff in the GQIC formation. In addition, the comparative analysis will show whether the score on the research quality at Latvian SIs in the IESI by TG coincides with the place of the relevant Latvian SI in the ratings of the GQIC indicators, and whether the score on the research quality of the Latvian SI also reflects the efficiency of the involvement of the academic staff of the Latvian SI of in the GQIC formation.

Hypothesis: The score of the research quality of SIs shows the efficiency of the GQIC formation in Latvian SIs.

2. Theoretical Background

The authors rely on the research on understanding, adapting, and applying intellectual capital (IC) in universities (Mercado-Salgado et al, 2016); and the research on the role of human capital in educational-training process at a university (Contu, 2017) which presented different aspects of IC. Spica et al (2017a) state that IC is an economic category, the spiritual value created by the human potential, and it can be accumulated and converted into the value of other types of capital. By investigating certain information about the management of education, we can increase the capacity and significance of the country's total economic capital movement.

Scientific articles, monographs, and national and international patents form the totality of IC of each SI. Rondeau et al (2022) remind that peer reviewed publications remain a traditional form of academic productivity. From

this set of elements forming IC, scientific monographs are conventionally considered GQIC. Such scientific monographs provide an opportunity to determine the national competitiveness of various scientists, SIs, and branches of science in Latvia.

Spica et al (2017a; 2017b) have worked out four indicators of the efficiency of the IC formation in a higher education establishment (HEE): (1) the efficiency of the involvement of academic staff in the IC formation per year in percentage (AIK); (2) the efficiency of the involvement of academic staff with a Doctorate degree in the IC formation per year in percentage (DIK); (3) the efficiency of the involvement of students in the IC formation per year in percentage (SIK); (4) mutual efficiency of the involvement of members of the academic staff with Doctorate degrees and the academic staff without Doctorate degrees in the IC formation per year in times (DE).

In order to calculate the AIK, DIK, SIK, and DE of a HEE, Spica et al (2017a; 2017b) developed four formulas:

(1) $AIK = (ZPS:AS) \times 100$; (2) $DIK = (ZPS:DS) \times 100$; (3) $SIK = (ZPS:SS) \times 100$; (4) $DE = DIK:AIK$; where: ZPS represents the number of scientific publications of HEE scientific publications per year; AS represents the number of academic staff in full-time jobs per year; DS represents the number of academic staff in full-time jobs holding Doctorate degrees per year; and, SS represents the number of students per year.

3. Methodology

In their study, the authors will conduct a comparative analysis of SIs involved in the GQIC formation in various branches of science in Latvia. It will comprise evaluation of SIs in six branches of science: 1)Engineering and Computer Sciences (E&CS); 2)Natural Sciences (NS); 3)Medical and Health Sciences (M&HS); 4)Agriculture, Forestry, and Veterinary Sciences (A&F&VS); 5)Social Sciences (SS); 6)Humanities and Art Sciences (H&AS).

For the purposes of the study, the authors modified the above formulas. Namely, they calculated GQIC efficiency indicators for total numbers of full time equivalent (FTE) of academic and research personnel (KIK), for FTE academic staff (AIK), for FTE academic research personnel (PIK) and for PhDs completed at the SI (SIK). In addition, all of the above GQIC efficiency indicators were calculated for total number of self-reported outputs of scientific monographs (MS). The authors calculated mutual efficiency indicators (PE) regarding involvement of FTE academic research personnel (PS) and the FTE academic staff (AS) in the GQIC formation in times.

In the present research, the authors have used the following data from the IESI: output data on the number of FTE academic staff (AS), the number of FTE academic research personnel (PS), the total number of FTE academic and research personnel (KS), the number of PhDs completed (SS), the number of scientific monographs (MS) in the period from 2013 to 2018 per SI in Latvia. The authors revised the above MS for one year. TG analysed 62 SIs of Latvia.

In this study, one MS is accepted as one unit of GQIC. Next, using the modified formulas 1; 2; 3; and 4, the authors calculated KIK, AIK, PIK, SIK, and PE. Then, according to the results obtained through the author's calculations, a corresponding place in rating was assigned to each SI of Latvia per year and each of the above indicators KIK, AIK, PIK and SIK.

Each place in rating was then assessed with an appropriate score, where the lowest score is 1 point, and the highest score is 5 points. This assessment system enables comparing the quantitative efficiency indicators of SIs in various scientific branches in Latvia calculated by the authors with the IESI overall assessment criterion - the research quality of the SI. The relevant Panel of the TG was a score of the research quality of each SI using the scale where score 5 means an outstanding level of research, score 4 means a very good level of research, score 3 means a good level of research, score 2 means an adequate level of research, and score 1 means a poor level of research (MoES, 2021).

Next, a unified overview of all six branches of science in Latvia was created. Here, all SIs were arranged according to the rank obtained in their branch of science. Furthermore, indicators of the efficiency of the involvement of academic staff of each SI in the GQIC formation were added. The authors then selected one SI with the highest efficiency indicator of the involvement of academic staff in the formation of GQIC from the unified review of the branches of science in Latvia, accepted it as the basic indicator, and equated it to 100%. Subsequently, the authors calculated the proportion of the efficiency of the involvement of academic staff of each SI in the base indicator.

In the next step, a rating scale of the results obtained was created on five-point system, where the highest score is five points, and the lowest score is one point. The new efficiency rating system for the involvement of academic staff of SIs in the GQIC formation created by the authors provides for granting one point for the

obtained efficiency indicators from 1% to 20%, 2 points - for the obtained efficiency indicators from 21% to 40%, 3 points - for the obtained efficiency indicators from 41% to 60%, 4 points - for the obtained efficiency indicators from 61% to 80%, and 5 points - for the obtained efficiency indicators from 81% to 100%.

Afterwards, the authors compared the results of their own estimates of SI quantitative indicators to the relevant Panel of the TG's results of qualitative indicators and calculated the difference between the indicators and the changes. For this purpose, for each SI, the authors calculated the score of indicators recording efficiency of GQIC and average score of each scientific sector. Then, authors compared these scores with scores of the research quality of each SI developed by Panel of the TG.

4. Results

To calculate the efficiency of the involvement of academic staff in the GQIC formation, the authors used formulas that were elaborated and approbated already before and then modified by the authors:

$$AIK = (MS : AS) \times 100 \quad (1)$$

$$PIK = (MS : PS) \times 100 \quad (2)$$

$$KIK = (MS : KS) \times 100 \quad (3)$$

$$SIK = (MS : SS) \times 100 \quad (4)$$

$$PE = PIK : AIK \quad (5)$$

Table 1: Performance indicators of the involvement of academic staff of SIs in the GQIC formation in a year and the comparative analysis thereof in various branches of science in Latvia in the period from 2013 to 2018

AIK rating	E&CS AIK (%)	E&CS AIK (%) of base indicator	E&CS AIK (%) of base indicator	NS AIK (%)	NS AIK (%) of base indicator	NS AIK score	M&HS AIK (%)	M&HS AIK (%) of base indicator	M&HS AIK score	A&F&VS AIK (%)	A&F&VS AIK (%) of base indicator	A&F&VS AIK score	SS AIK (%)	SS AIK (%) of base indicator	SS AIK score	H&AS AIK (%)	H&AS AIK (%) of base indicator	H&AS AIK score
1	142	100	5	14	10	1	43	30	2	3	2	1	137	96	5	124	87	5
2	88	62	4	10	7	1	21	15	1				91	64	4	54	38	2
3	8	6	1	7	5	1	5	4	1				79	56	3	44	31	2
4	8	6	1	4	3	1	4	3	1				51	36	2	24	17	1
5	7	5	1										22	15	1	21	15	1
6	6	4	1										14	10	1	10	7	1
7	6	4	1										10	7	1	7	5	1
8	4	3	1										9	6	1	2	1	1
9	3	2	1										9	6	1	2	1	1

AIK ra- ting	E& CS AIK (%)	E& CS AIK (%) of ba- se in- di- ca- tor	E& CS AIK sco- re	NS AIK (%)	NS AIK (%) of ba- se in- di- ca- tor	NS AIK sco- re	M& HS AIK (%)	M& HS AIK (%) of ba- se in- di- ca- tor	M& HS AIK sco- re	A& F& VS AIK (%)	A& F& VS AIK (%) of ba- se in- di- ca- tor	A& F& VS AIK sco- re	SS AIK (%)	SS AIK (%) of ba- se in- di- ca- tor	SS AIK sco- re	H& AS AIK (%)	H& AS AIK (%) of ba- se in- di- ca- tor	H& AS AIK sco- re
10	3	2	1										9	6	1			
11	0	0	0										8	6	1			
12													3	2	1			
Ave- rage	6	4	1	8	6	1	18	13	1	13	9	1	16	11	1	24	17	1

According to Table 1 the highest AIK indicator in the GQIC formation in a year is 142% and was accepted by the authors as the basic indicator or 100%. The above indicator has been achieved by a SI representing the E&CS. Consequently, the efficiency indicator of SIs of other branches of science in Latvia were attributed to this higher efficiency indicator in order to determine their proportion as a percentage. Then, according to the new rating system developed by the authors, each SI was assigned a certain number of points.

Table 2: Performance indicators of the involvement of academic research personnel of SIs in the GQIC formation in a year and the comparative analysis thereof in various branches of science in Latvia in the period from 2013 to 2018

PIK ra- ting	E& CS PIK (%)	E& CS PIK (%) of ba- se in- di- ca- tor	E& CS PIK sco- re	NS PIK (%)	NS PIK (%) of ba- se in- di- ca- tor	NS PIK sco- re	M& HS PIK (%)	M& HS PIK (%) of ba- se in- di- ca- tor	M& HS PIK sco- re	A& F& VS PIK (%)	A& F& VS PIK (%) of ba- se in- di- ca- tor	A& F& VS PIK sco- re	SS PIK (%)	SS PIK (%) of ba- se in- di- ca- tor	SS PIK sco- re	H& AS PIK (%)	H& AS PIK (%) of ba- se in- di- ca- tor	H& AS PIK sco- re
1	142	22	2	5	1	1	641	100	5	5	1	1	290	45	3	335	52	3
2	44	7	1	2	0	0	39	6	1	3	0	0	167	26	2	198	31	2
3	16	2	1	1	0	0	33	5	1	3	0	0	79	12	1	112	17	1
4	11	2	1	1	0	0	18	3	1	2	0	0	79	12	1	67	10	1
5	5	1	1				12	2	1	2	0	0	45	7	1	59	9	1

PIK ra- ting	E& CS PIK (%)	E& CS PIK (%) of ba- se in- di- ca- tor	E& CS PIK sco- re	NS PIK (%)	NS PIK (%) of ba- se in- di- ca- tor	NS PIK sco- re	M& HS PIK (%)	M& HS PIK (%) of ba- se in- di- ca- tor	M& HS PIK sco- re	A& F& VS PIK (%)	A& F& VS PIK (%) of ba- se in- di- ca- tor	A& F& VS PIK sco- re	SS PIK (%)	SS PIK (%) of ba- se in- di- ca- tor	SS PIK sco- re	H& AS PIK (%)	H& AS PIK (%) of ba- se in- di- ca- tor	H& AS PIK sco- re
6	5	1	1				4	1	1				24	4	1	30	5	1
7	3	0	0				0	0	0				24	4	1	26	4	1
8	3	0	0										20	3	1	20	3	1
9	2	0	0										19	3	1	16	2	1
10	2	0	0										16	2	1	15	2	1
11	2	0	0										16	2	1	4	1	1
12	2	0	0										14	2	1			
13	1	0	0										8	1	1			
14													4	1	1			
Ave- rage	4	1	1	1	0	0	6	1	1	3	0	0	28	4	1	41	6	1

Having compared the numbers collected in Table 2 the authors conclude that the highest PIK indicator of 641% is for a SI representing the M&HS, and the lowest PIK indicator of 0% is for a SI in the M&HS. It follows that only one SI gets the highest score of 5 points, two SIs get 3 points, three SIs get 2 points, thirty-three SIs get 1 point, and the rest of SIs gets 0 points.

Table 3: Performance indicators of the involvement of PhDs completed at SIs in the GQIC formation in a year and the comparative analysis thereof in various branches of science in Latvia in the period from 2013 to 2018

SIK ra- ting	E& CS SIK (%)	E& CS SIK (%) of ba- se in- di- ca- tor	E& CS SIK sco- re	NS SIK (%)	NS SIK (%) of ba- se in- di- ca- tor	NS SIK sco- re	M& HS SIK (%)	M& HS SIK (%) of ba- se in- di- ca- tor	M& HS SIK sco- re	A& F& VS SIK (%)	A& F& VS SIK (%) of ba- se in- di- ca- tor	A& F& VS SIK sco- re	SS SIK (%)	SS SIK (%) of ba- se in- di- ca- tor	SS SIK sco- re	H& AS SIK (%)	H& AS SIK (%) of ba- se in- di- ca- tor	H& AS SIK sco- re
1	39	14	1	17	6	1	17	6	1	25	9	1	92	34	2	274	100	5
2	26	9	1	17	6	1	16	6	1	15	5	1	83	30	2	178	65	4
3	14	5	1	6	2	1	13	5	1	14	5	1	61	22	2	132	48	3
4	6	2	1	2	1	1	11	4	1	8	3	1	50	18	1	54	20	1
5	4	1	1				8	3	1	4	1	1	28	10	1	33	12	1
6	4	1	1				5	2	1				27	10	1	30	11	1
7	4	1	1				1	0	0				20	7	1	25	9	1
8	3	1	1										15	5	1	24	9	1
9	3	1	1										10	4	1	16	6	1
10	2	1	1										8	3	1	6	2	1
11	2	1	1										5	2	1			
12	1	0	0										3	1	1			
Ave- rage	5	2	1	3	1	1	8	3	1	9	3	1	12	4	1	54	20	1

In Table 3, according to the SIK indicators, the first place and highest score is taken by a SI in the H&AS, while the lowest SIK indicator of 1% is received by a SI representing the E&CS and a SI in the M&HS. It follows from Table 3 that none of SIs in the E&CS, the NS, the M&HS, and the A&F&VS gets 5 points, 4 points, 3 points, or 2 points.

According to Table 4, the highest KIK indicator is 641% and it represents a SI in the M&HS. In the six branches of science no SI gets 4 points, 3 points, or 2 points, but thirty-one SIs get 1 point, and twenty-two more SIs get 0 points. It follows that the total academic staff of SIs in various branches of science in Latvia in the period from 2013 to 2018 did not compete in the GQIC formation in the national scientific environment.

Table 4: Performance indicators of the involvement of total academic staff of SIs in the GQIC formation in a year and the comparative analysis thereof in various branches of science in Latvia in the period from 2013 to 2018

KIK rating	E&CS KIK (%)	E&CS KIK (%)	E&CS KIK score	NS KIK (%)	NS KIK (%) of base indicator	NS KIK score	M&HS KIK (%)	M&HS KIK (%) of base indicator	M&HS KIK score	A&F&VS KIK (%)	A&F&VS KIK (%) of base indicator	A&F&VS KIK score	SS KIK (%)	SS KIK (%) of base indicator	SS KIK score	H&AS KIK (%)	H&AS KIK (%) of base indicator	H&AS KIK score
1	71	11	1	4	1	1	641	100	5	3	0	0	93	15	1	91	14	1
2	29	5	1	2	0	0	33	5	1	3	0	0	42	7	1	28	4	1
3	5	1	1	1	0	0	21	3	1	2	0	0	40	6	1	21	3	1
4	4	1	1	1	0	0	8	1	1	2	0	0	24	4	1	18	3	1
5	3	0	0				4	1	1	2	0	0	19	3	1	15	2	1
6	2	0	0				2	0	0				12	2	1	14	2	1
7	2	0	0				0	0	0				9	1	1	9	1	1
8	2	0	0										8	1	1	6	1	1
9	2	0	0										6	1	1	4	1	1
10	2	0	0										6	1	1	2	0	0
11	1	0	0										6	1	1	2	0	0
12	1	0	0										5	1	1			
13	0	0	0										4	1	1			
14													2	0	0			
Average	2	0	0	1	0	0	5	1	1	2	0	0	10	2	1	15	2	1

In Table 5, the PE indicators rest in the range from 0,2 to 11,6 in respect of SIs in Latvia. The highest PE is held by a SI in the H&AS while the lowest PE belongs to two SIs in the E&CS and two SIs in the NS.

The highest average rate of the PE indicators is 1,8 in the SS; the second highest average rate of the PE indicators is 1,7 in the H&AS. It follows that academic research personnel of SIs in the SS and the H&AS is more efficient in the GQIC formation than their academic staff. The lowest average rate of the PE indicators is 0,2 in the NS and the A&F&VS. It means that academic staff of the above branches of science is more efficient in the GQIC formation than academic research personnel at SIs in the NS and the A&F&VS.

The comparison of QTG scores by TG to the new total quantity KIK scores calculated by the authors leads to conclusion that the difference between them forms 1 to 4 points in total. The assessment of the QTG scores and the new KIK scores of each SI in various branches of science in Latvia results in a deduction that new KIK scores were lower, except for the one SI in the E&CS, one SI in the M&HS, and three SIs in the SS, where QTG, KIK scores coincided.

Table 5: Performance indicators of the mutual efficiency indicators regarding involvement of total academic research personnel and total academic staff of SIs in the GQIC formation in times per year, scores of quality research by TG (QTG), new total quantity KIK scores of SIs, and the comparative analysis thereof in various branches of science in Latvia in the period from 2013 to 2018

KIK ra- ting	E& CS PE	E& CS QT G sco- re	E& CS KIK sco- re	NS PE	NS QT G sco- re	NS KIK sco- re	M& HS PE	M& HS QT G sco- re	M& HS KIK sco- re	A& F& VS PE	A& F& VS QT G sco- re	A& F& VS KIK sco- re	SS PE	SS QT G sco- re	SS KIK sco- re	H& AS PE	H& AS QT G sco- re	H& AS KIK sco- re
1	1,0	1	1	0,4	3	1	0	2	5	0	4	0	2,1	2	1	2,7	3	1
2	0,5	3	1	0,2	3	0	0	3	1	0	2	0	0,9	3	1	1,1	2	1
3	1,5	3	1	0,2	4	0	0,9	4	1	1,8	3	0	1,0	1	1	8,4	4	1
4	2,6	2	1	0,4	2	0	0,6	4	1	0	3	0	0	1	1	5,2	3	1
5	0,9	2	0				3,8	1	1	0	4	0	7,6	2	1	0	4	1
6	0,4	3	0				0,9	3	0				0,3	3	1	0,5	3	1
7	0,4	3	0				0	4	0				1,7	3	1	6,6	4	1
8	1,5	2	0										4,5	3	1	4,5	2	1
9	0	3	0										2,1	3	1	0	4	1
10	0	2	0										1,8	2	1	6,8	3	0
11	0,7	3	0										2,4	3	1	11,6	4	0
12	0,2	3	0										1,6	1	1			
13	5,5	1	0										0	4	1			
14													2,7	2	0			
Ave- rage	0,6	-	0	0,2	-	0	0,4	-	1	0,2	-	0	1,8	-	1	1,7	-	1

Following the results summarised in Tables 6, the authors conclude that for all AIK, PIK, SIK, KIK indicators with score 1, the total margins of PIK indicators and total average margins of SIK indicators are the highest ones. They are followed by the total margins of KIK indicators and total average margins of PIK indicators. The total margins for all indicators with score 5, belong to KIK, AIK, PIK, and SIK indicators. The total margins for all scores from 1 to 5, were found only in AIK and SIK indicators.

Table 6: Summary of performance indicators of the involvement of total academic staff of SIs in the GQIC formation in a year and the comparative analysis of their total margins of AIK, PIK, SIK, and KIK indicators in various branches of science in Latvia in the period from 2013 to 2018

Scores	Total margins of AIK (%)	Total margins of PIK (%)	Total margins of SIK (%)	Total margins of KIK (%)	Total average margins of AIK (%)	Total average margins of PIK (%)	Total average margins of SIK (%)	Total average margins of KIK (%)
0	0 - 0	0 - 2	1 - 1	0 - 3	-	1 - 3	-	1 - 2
1	2 - 24	4 - 112	2 - 54	4 - 93	6 - 24	4 - 41	3 - 54	5 - 15
2	43 - 54	142 - 198	61 - 92	-	-	-	-	-
3	79 - 79	290 - 335	132 - 132	-	-	-	-	-
4	88 - 91	-	178 - 178	-	-	-	-	-
5	124 - 142	641 - 641	274 - 274	641 - 641	-	-	-	-

Economic indicators are needed to ensure the GQIC governance in order to measure the efficiency of the involvement of academic staff of SIs in the GQIC formation. Thus, the annual total efficiency indicator margins and total average efficiency indicator margins of all SIs in various branches of science in Latvia summarised in Table 6 and their conformity with a specific IESI on five-point scale may serve as the basis for improvement of GQIC governance in the future.

5. Conclusions

The study of the authors did not result in confirming the hypothesis. The scores of SIs research quality do not show the efficiency of the GQIC formation in Latvian SIs. When comparing the QTG scores of TG group to the new KIK scores by the authors, it can be concluded that they differ by 1 to 4 points in total.

The study shows that new performance indicators KIK of the involvement of total academic staff of SIs in the GQIC formation in various branches of science in Latvia in the period from 2013 to 2018 were lower as presented by the results compiled by the relevant Panel of the TG except for the one SI in the M&HS, where the KIK score was higher for 3 points.

The authors are encouraged to supplement the methodology for international evaluation of scientific institutions with quantitative efficiency indicators AIK, PIK, SIK, KIK of the involvement of academic staff and PhDs completed at SIs in the GQIC formation per year in percentage and PE in times, and performance indicators of the comparative analysis thereof in various branches of science in the country developed by the authors.

The methodology developed by the authors included five phases: (1) according to formulas previously developed by the authors, the efficiency indicators of each SI were calculated for AIK, PIK, KIK, SIK; (2) efficiency indicators for AIK, PIK, KIK, SIK were ranked from the highest indicator to the lowest one, and each SI was given the rating in its branch of science; (3) the comparative analysis of the individual efficiency indicators of each SI was carried out for the AIK, PIK, KIK, SIK between all branches of science, and the highest efficiency indicators of the AIK, PIK, KIK, SIK as a whole in the science were found out; (4) the highest efficiency indicators for AIK, PIK, KIK, SIK were accepted as base indicator and

equated to 100%, and the proportion of the efficiency indicator of each SI in the base indicator was calculated; (5) according to the rating scale developed by the authors, each SI was awarded an appropriate score based on the previously calculated efficiency indicators of the proportion of AIK, PIK, KIK, SIK in the science as a whole.

The methodology provides an opportunity to identify more efficient SIs in the country and to distribute public funding to SIs representing various branches of science more efficiently in accordance with these results.

Efficiency indicators can serve as a basis for comparative analysis, planning, management, control, and future improvement of the SIs performance.

Ethical Declaration: The authors declares that there are no ethical issues related to the research presented in this paper.

AI Declaration: The authors declares that no significant AI tools or technologies were used in the conduct the research for this paper.

References

- Contu, E.G. (2017) "The Role of Intellectual Capital in Higher Education", Proceedings of the 9th European Conference on Intellectual Capital, Lisbon, Portugal, 6-7 April, pp. 66 -70.
- Latvijas Republikas Izglītības un zinātnes ministrija (2021) "International Evaluation of Scientific Institution Activity, Latvia", Report by the Technopolis group per period 2013.-2018 , Riga, 5 March
- Mercado-Salgado, P., Cernas-Ortiz, D.A. and Gil-Monte, P. (2016) "Intellectual Capital Model for Mexican Public Universities", Proceedings of the 8th European Conference on Intellectual Capital, 12-13 May, pp 172-177.
- Rondeau, K., Dillon, J., Mansour, N. and Daniels, J. (2022) "Managing Knowledge and Identity across the Boundary of Academic and Commercial Science", Proceedings of the 17th European Conference on Innovation and Entrepreneurship, Pafos, Cyprus, 15-16 September, pp. 432-440.
- Spica, I., Garleja, R., Berzina, B. and Spics, E. (2018) "The Involvement of Students in the Formation of Intellectual Capital in Latvia", Proceedings of the 19th European Conference on Knowledge Management, Padua, Italy, 6-7 September, pp. 811 -820.
- Spica, I., Garleja, R. and Berzina, B. (2017a) "Intellectual Capital as the Performance Indicator of the University Studies", Proceedings of the 9th European Conference on Intellectual Capital, Lisbon, Portugal, 6-7 April, pp. 312 -320.
- Spica, I., Garleja, R. and Berzina, B. (2017b) "The Efficiency of the Involvement of Academic Staff in the Formation of Intellectual Capital in Latvia", Poster of the 9th European Conference on Intellectual Capital, Lisbon, Portugal, 6-7 April.

Towards a Changing Role of Governance for a Sustainable World

Emőke Takács¹ and Toon Abcouwer²

¹ERI Hungary - European Research Institute Hungary, Budapest, Hungary

²ERI Hungary - European Research Institute Hungary, Amsterdam, The Netherlands

t.emoke@eri.net.in

abcouwer@gmail.com

Abstract: It is widely recognised that recent societal changes are notably disruptive. Living in a physically limited world forces us to consider environmental, climate, and sustainability concerns as we prepare for uncertain futures. Given current shifts in demographics, politics, and technology, along with the increasing focus on truth and misinformation, we face an urgent need to motivate individuals to contribute to a society where future generations can flourish. In our article, we explore the lighthouse metaphor, highlighting the concepts of value (the lighthouse) and motivation (the ship and the crew) within a constantly changing environment (the sea). Achieving excellence in this setting requires management and leadership to develop strategies for influencing governance. This is grounded in scientific research examining the three main forms of governance: control, cooperation, and autonomy. Focusing on environmental, climate, and sustainability issues, we observe a movement where, on one hand, rising demands are being placed on individuals (the Me) and organisations (the We) to help create a more sustainable world (the All), as outlined in the Me-We-All approach for circular resilience. Conversely, considering modern technological advances where technology is replacing tasks traditionally performed by people, we need to craft a new vision that enables employees to enter a flow state aligned with their skills and the challenges they face, thereby contributing to a more valuable future. To implement this principle, we advocate introducing an alternative vision of management and leadership. The article shows that adopting the concept of stewardship can help achieve this goal, which we differentiate from management and leadership as follows: Management focuses primarily on addressing current challenges with conventional methods, where the focus is on rationality. Leadership focuses on developing new strategies to address existing challenges, demanding creativity. Stewardship cares about the needs of 'Me-We-All' and develops skills to prepare for unexpected challenges, requiring resilience. The article aims to inspire discussion. We do not focus solely on scientific proof but seek to initiate a debate on the balance we must achieve among the management and leadership issues in contemporary society.

Keywords: Leadership, stewardship, governance, cooperation, autonomy

1. Introduction: Facing Challenges

It is widely acknowledged that recent societal developments are remarkably disruptive. Existing in a physically constrained world compels us to consider environmental, climate, and sustainability needs as we prepare for uncertain futures.

Facing these challenges has its origin in complexity. Today's challenges can be described as open, complex, dynamic, and networked (Dorst, 2015). Problems can emerge from anywhere (**open**), influenced by environmental, social, and economic factors, requiring us to prepare for uncertain futures. These challenges are rarely isolated—multiple issues often overlap (**complex**), highlighting the idea of intersectionality. Addressing one problem can lead to new disruptions, showing how challenges are constantly evolving (**dynamic**). Moreover, no stakeholder can solve these issues alone; solutions rely on collaboration across all relevant partners (**networked**). It is this approach to societal challenges that we use as starting point for this paper.

Considering these sustainability-oriented challenges, it is crucial to possess adequate problem-solving capabilities to identify and implement the appropriate interventions.

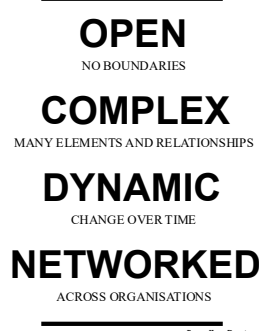


Figure 1: The character of societal challenges (Dorst, 2015)

The challenges can be associated with several views that need consideration. In the following paragraph, we will further examine the challenges in relation to the open, complex, dynamic, and networked viewpoints. But first we dive deeper into the relation between context, values and motivation.

2. The Lighthouse Metaphor

To better understand the complex reality, this article employs metaphors, as they play a crucial role in the conceptualisation of abstract ideas, highlighting certain characteristics while concealing others. In line with this, Lakoff and Johnson (2020, p. 476) stated that the concepts governing our thoughts are not merely matters of intellect. They also guide our everyday functioning, down to the most mundane details. Our concepts shape what we perceive, how we navigate the world, and how we relate to others. This necessitates and facilitates a change in mindsets.

However, before proceeding, we echo Andriessen's (2008) warning that metaphors can mislead us when taken literally.

To bring about a fundamental shift in mindsets, we utilise the **Lighthouse Metaphor** (Takács & Abcouwer, 2025) as a conceptual framework. In this model, the **Lighthouse** symbolises a **repository of values and foundational knowledge**, offering ethical orientation and stability amidst societal and organisational turbulence (Ezzat et al., 2016; França et al., 2024). The **Light Beam** represents the **flow of motivation and knowledge**, propelling individuals and organisations forward—without intrinsic motivation, even deeply held values and extensive knowledge remain inert (Deci & Ryan, 2012). The **Ship** stands for the individual or organisational entity navigating through complexity, where effective direction (value-driven strategy) and propulsion (motivation) are crucial (Csikszentmihalyi, 1997; McLeod, 2007). Supporting this navigation is the **Crew**, comprising the **knowledge network** (Brouwers et al., 2022; Martins et al., 2019), including mentors, collaborative teams, and structured knowledge management systems (Boisot, 2006), which collectively enable informed decision-making and resilient performance. Surrounding all of this is the **Ocean**—the external environment—characterised by continuous change (Chandler, 2014; World Economic Forum, 2024), uncertainty, and interconnectivity, demanding ongoing adaptation and learning (Rawat, 2018; Snowden & Boone, 2007; Taleb, 2010). In this context, knowledge management acts as a navigational aid, akin to a lighthouse guiding a ship through volatile waters. While prior sections have addressed the complexity of the external environment—described as open, complex, dynamic, and networked—this framework emphasises the essential role of **values and motivation** in ensuring meaningful, adaptive, and sustained organisational transformation.

3. Understanding the Challenge

When dealing with challenges (in line with Drost (2015)), like sailing on the ocean, we face complex circumstances; therefore, we must explore the nature of the challenge more deeply so we can navigate smoothly.

3.1 Complexity - The Ocean

3.1.1 The open characteristic

The contemporary sustainability-related challenges we face are shaped by significant shifts in demographics, politics, and technology (UN Department of Economic and Social Affairs, 2015; World Economic Forum, 2024). These shifts demonstrate that the onset of the challenges we encounter can arise from almost any source imaginable, resulting in a problem space characterised as open (Dorst, 2015). Thus, it is essential to utilise our skills in the most effective manner possible.

The efforts to tackle these challenges ultimately benefit a wide range of individuals, beginning with the self (Me), extending to our communities (We), and encompassing society as a whole (All) (Abcouwer et al., 2022).

3.1.2 The Complexity characteristic

It is visible that we are increasingly confronted with significant challenges (Beck, 1996; Folke et al., 2010). and that problems are seldom caused by a single issue. Instead, they arise from multiple, interconnected sources, referred to as intersectionality in literature (Runyan, 2018). Intersectionality offers a framework for analysing how various factors combine to influence complex problems, just as Adam Kahane (2004) emphasises the need to consider diverse perspectives and deeper systemic causes when 'Solving Tough Problems'.

However, the complexity of contemporary challenges raises critical questions about who is engaged in addressing these challenges—especially when the true nature of the problem remains unclear, as highlighted by the intersectionality approach (Kremer et al., 2019; Randel & Jaussi, 2019).

3.1.3 The dynamic characteristic

The open and complex nature of the challenges we face today is further intensified by the highly dynamic character of the contemporary world (Chandler, 2014; Dyer & Ericksen, 2008). Finding a clear solution is not straightforward due to the multiple layers of complexity involved (Kurtz & Snowden, 2003; Snowden & Boone, 2007). Truly open and complex issues demand the ability to develop solutions even in the absence of a full understanding of the problem itself. In such circumstances, our capacity for problem-solving and creativity becomes essential in charting a path toward ‘unknown futures’ (intentionally using a plural form to emphasise the diversity of possible outcomes).

An emphasis on sustainability has become an essential requirement. Alongside this shift in viewpoint, we are also beginning to acknowledge our collective responsibility in tackling global concerns. This sense of duty extends from the individual (Me), to our communities (We), and ultimately to all of humanity (All) (Abcouwer et al., 2022; Takács et al., 2024).

3.1.4 The networked characteristic

When acknowledging the importance of involving all relevant partners in the problem-solving process, a crucial question emerges how to organise this complex and critical collaboration effectively. In network-based settings, a central concern is determining the most suitable governance structure. Governance hinges on understanding who holds what responsibilities. Should responsibility lie predominantly at the top (control), be shared among network partners (cooperation), or be individually interpreted and fulfilled by each actor according to their own capacities (autonomy)? How to ensure that workers can actively contribute to solving problems while operating in a state of optimal engagement or “flow”. Interestingly, this question arises twice, possibly indicating its significance in the broader context of work and problem-solving dynamics. Ultimately, the answer encompasses various levels of impact: individual (Me), community or group (We), and society at large (All).

3.2 Values – The Lighthouse

The Millennium Declaration highlights our shared duty to uphold human dignity, equality, and fairness for a more peaceful and just world (United Nations, 2000). It promotes respect for social structures, individual rights, and global cooperation in tackling major issues. Key values include freedom from fear and injustice, equal rights and opportunities, fairness and social justice, respect for diversity and tolerance, care for nature, sustainable development, and shared responsibility for global peace and development. These values show the way on our trip and must be balanced to protect people (We) and the environment (All). A focus solely on economics misses the growing need for collective responsibility in shaping a better future.

3.3 Motivation - The Light Beam

According to Csikszentmihalyi (1997), organisational (We) success depends on individuals (Me). Leaders can't force success. They must create an environment that encourages it. Clear goals, good communication, feedback, and increasing challenges drive growth and teamwork (McLeod, 2007; Raineri, 2011). Leaders are responsible for aligning employee talents with suitable challenges, building trust at the organisation's core. Vision, he argues, reflects a company's deeper purpose and future direction, requiring investment to turn it into reality. Success extends beyond profit to encompass excellence that benefits everyone. This shift signifies a desire to create lasting value for humanity and the environment, rather than serving only personal or organisational interests. Genuine motivation arises from beaming goals and teamwork. When personal and collective goals align, people are more likely to experience "flow." Key traits that support this include optimism, integrity, ambition paired with perseverance, curiosity, and empathy (Csikszentmihalyi, 2003).

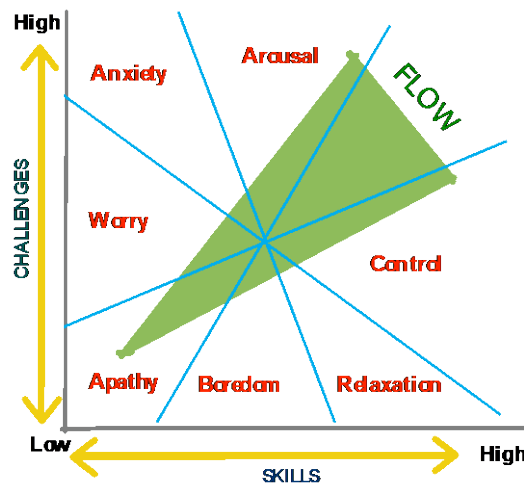


Figure 2: 'The map of everyday experience' by Csikszentmihalyi (2003)

Finally, looking at an oriental philosophy, the Ikigai (Sone et al., 2008) links individual (Me), organisational (We) and societal (All) motivations. Its purpose is to discover what we are good at, what brings us joy and what adds something to our larger community. When we balance passion, profession, vocation and mission, we can find the flow to reach our individual, organisational and societal goals in our complex world.

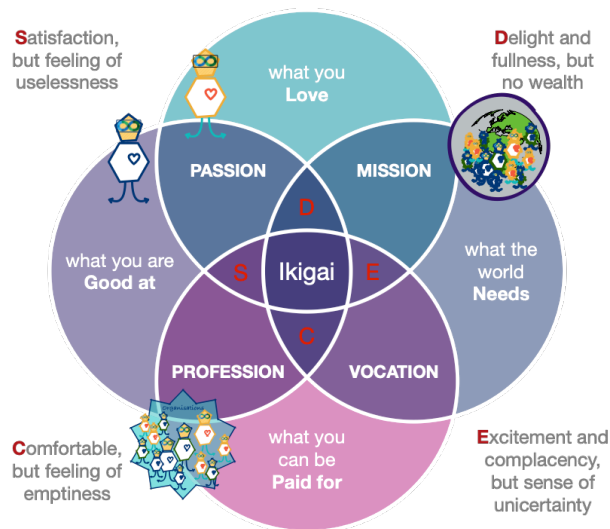


Figure 3: IKIGAI (based on Sone et al., 2008)

4. Dealing with Change – Navigating the Ship

4.1 The ACoR Model

When reasoning through the Adaptive Cycle of Resilience (ACoR) (Takács & Abcouwer, 2020), we can adopt multiple perspectives to understand the challenges an organisation faces. This includes analysing the objectives pursued within each quadrant of the model, understanding the process of moving between quadrants, and considering the role of human dynamics.

The ACoR framework outlines four organisational objectives. In the Equilibrium stage, the goal is to ensure stability and prepare for future challenges by focusing on efficiency and preventing problems. During the Challenge phase, when disruptions occur, creativity is key to developing new responses. In the New Combinations stage, the organisation selects the best solution for development, requiring strong leadership and management awareness. Finally, in the Operationalising phase, the focus shifts to effective implementation through collaboration and executing leadership decisions.

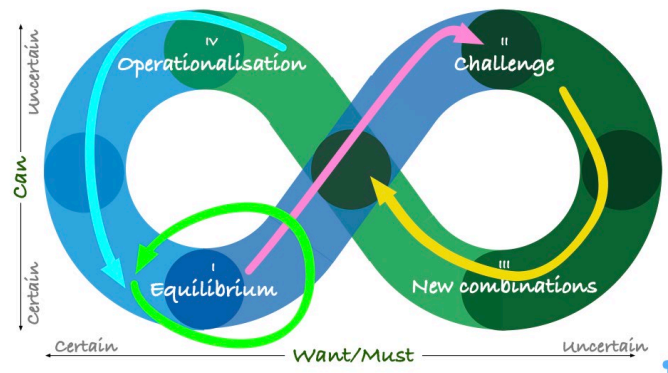


Figure 4: The ACoR model (based on Takács & Abcouwer, 2020)

4.1.1 Dynamics in the ACoR model

The power of the model lies in its dynamic nature. Organisations are not static but continuously move through the quadrants in response to internal and external developments. The transitions are marked by shifting attention and changing priorities, as described by a.o. Gunderson and Holling (2002), Takács and Abcouwer (2020) Holling (2001).

Movements within the ACoR:

From equilibrium to challenge – Release At a certain point, the complexity of the situation becomes unmanageable, often triggered by unexpected external events. The existing structure can no longer cope, leading to a so-called Gestalt switch—an abrupt shift in perception from confidence to insecurity. This phase is referred to as *Release*.

From challenge to new combinations – Reorganisation When management acknowledges uncertainty but fosters creativity, a sense of possibility and hope emerges. This outlook encourages a significant restructuring process, to envision a new path forward. This transformative period is known as *Reorganisation*.

From new combinations to operationalisation – Exploitation Choosing a definitive course of action signals a psychological shift—from hope to confidence in the chosen direction. This decision is influenced not only by rational evaluation but also by intuition and emotion. In literature, this transition is termed *Exploitation*.

From operationalisation to equilibrium – Conservation After implementing the chosen solutions, attention turns to refining processes, enhancing efficiency, and reintroducing structure. Bureaucratic routines are reinstated to stabilise the organisation in a new “business-as-usual” state. Importantly, this new equilibrium differs from the previous one. This phase is referred to as *Conservation*.

These cyclical transitions highlight that resilience is not about maintaining the status quo, but about the organisation’s ability to adapt, renew, and reinvent itself in the face of continuous change.

4.2 Solution Finding

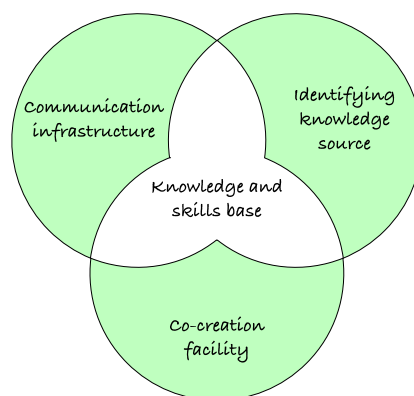


Figure 5: The I-solution model

To ensure access to the knowledge we require, we can rely on the I-solution approach (Takács & Abcouwer, 2020), which is founded on four fundamental components. First, the necessary knowledge (IK: identifying knowledge sources). Second, the need for communication (CI: communication infrastructure). Third, we collaborate with these partners to co-create interventions (CC: co-creation facility). Fourth, this process relies on a robust base of knowledge and skills (KBS: knowledge and skills base) that serves as a structured repository of competencies.

The interaction of these components depends on the nature of the challenge. Building on Gigerenzer's insights (Gigerenzer, 2015), we differentiate between three types of problem contexts: **certainty**, where we know in which direction to search for a solution; **risk**, where several plausible interventions are known, but it remains unclear which will be most effective; and **uncertainty**, where we lack any clear direction for finding a solution. This categorisation, alongside the distinction between well-defined and ill-defined problems, shapes our approach to navigating the solution space.

However, navigating the space between problems and solutions is not merely a technical issue of connecting knowledge; it also requires motivating partners to realise their full potential.

To categorise the problem-solving approaches, we split them up in three different ways of working that can be related to the (un)certainty of the challenge. The difference comes into practice in the sequence the three aspects of knowledge management.

4.2.1 Certainty

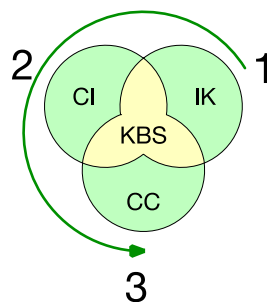


Figure 6: The I-solution model in certainty

When objectives are clear, we operate within a context of certainty to locate relevant knowledge and ensure its quality and integration into existing systems. Second, effective communication among specialists is necessary to share and validate this knowledge. Third, collaboration and co-creation are encouraged to generate solutions.

We recommend first assessing the nature of the problem, then categorising its characteristics, and finally implementing the appropriate countermeasures. In such cases, there is a clear demand for highly educated individuals who are fully equipped to tackle current challenges. The ultimate aim is mainly to restore the equilibrium state as efficiently as possible.

4.2.2 Risk

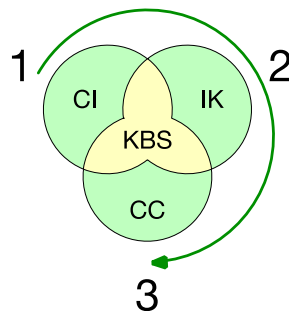


Figure 7: The I-solution model under risk

When we are unaware of the outcomes of various interventions, it is necessary to analyse the actual situation from a different perspective to select the most appropriate one. Communication plays a central role in this process, as it fosters consensus on the type of knowledge required and sets the stage for collaborative problem-solving. The aim is to facilitate the co-creation of solutions that address future challenges and ensure alignment between individual capabilities and organisational needs.

By identifying analogies with past situations, we can leverage successful previous solutions to inspire new ones. This approach emphasises entrepreneurial thinking and supports a process whereby problem analysis leads to jointly developed, innovative solutions.

4.2.3 Uncertainty

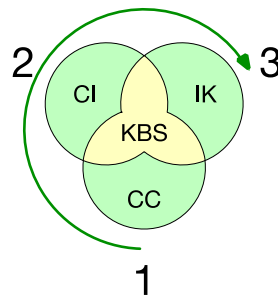


Figure 8: The I-solution model in uncertainty

When the very nature of the problem is unknown, we enter a state where traditional methods of problem-solving are no longer effective. In such circumstances, finding new countermeasures becomes essential. This involves conducting scenario analyses to identify opportunities that enable a flexible, contingency-based approach. A different way of working is required—one that draws on diverse competencies and prioritises adaptability.

In this context, the knowledge required to address the problem is not yet available, and experimentation may be the only feasible strategy. Continuous monitoring and communication are essential for adapting to emerging conditions and identifying the additional knowledge needed to formulate effective solutions.

These three approaches correspond to different types of uncertainty in the solution space. Pure types rarely exist in practice but a mix of all three. Linking challenges to solutions assumes that we share values, have insight into (un)certainty, and we are all motivated to contribute to the world.

5. Governance – The Captain and the Crew

In a world where the challenges primarily arise from external sources (increasingly related to environmental, climate, and sustainability issues), traditional methods of problem-solving are no longer adequate. Assigning the responsibility for addressing these challenges requires a different approach to governance. In the literature, a thorough analysis occurred to explore various principles of good governance (Chandler, 2014; Cumming et al., 2019). For this research, we adopted the approach suggested by de Geus (1989) and Keidel (1995) who developed a typology of governance based on three principles: control, cooperation, and autonomy.

5.1 Control, Cooperation and Autonomy: Finding a Balance

The control-, cooperation-, and autonomy-based view on governance differs fundamentally in how organisations perceive power, roles, individual agency, and organisational goals.

In control-based organisations, hierarchy and centralised authority are essential. The structure is rigid, with a distinction between leaders and followers. Power is concentrated at the top, and the emphasis lies on discipline, obedience, and efficiency. Decision-makers possess superior knowledge, freedom and equality are incompatible with effective organisation. The primary concern is stability and rationality, often at the expense of participation and diversity. The focus originates from the dominant coalition within the system.

In contrast, cooperation-based organisations emphasise shared responsibility and mutual respect with evenly distributed power, essential relationships across roles, and decentralised decision-making, involving all

stakeholders. Here, freedom and equality are not obstacles but enable effective coordination. Rather than imposing unity, cooperation-based models value variety and consultation. Leadership is fluid and situational, not fixed, and decision quality is enriched by drawing on the collective knowledge of all members. The organisation aims to balance individual needs with collective efficiency and rationality.

Lastly, autonomy-based organisations take decentralisation to its fullest extent, rooted in the belief that individuals possess the innate intelligence and responsibility to self-govern. There is no need for imposed hierarchy or top-down management; instead, self-organisation and intrinsic motivation guide behaviour. The organisation exists to support freedom, diversity, autonomy, and equality, rejecting traditional ideas of order based on discipline. Governance becomes an enabling process rather than directing, and the organisation's success is measured by the degree of personal and collective freedom it facilitates. Rationality and efficiency are not goals alone, but outcomes of a system built on individual liberty.

The descriptions of the perspectives on governance illustrate the differences in approaches to cooperative systems. For optimal performance, those closest to the actual reality can take some responsibility.

In a collaborative environment, co-creation relies on mutual incentives to achieve a positive way ahead together. In an autonomy setting, an individual aims to contribute to the common good by functioning at their best as an individual. This starting point relies on the belief that it is necessary to utilise people's qualities. Mutual trust exists, affirming that there is no fundamental difference between individual and societal interests.

The core premise of the sustainability focus in contemporary challenges is that we must contribute to a better and more sustainable future for both the current and future generations. When optimising interventions for an improved future, we not only define our objectives (which form the basis of a control-biased governance structure) but also enhance cooperation among all involved partners, emphasising the need for a cooperation bias. All partners are encouraged to contribute to the best of their abilities, seeking an optimal balance between their individual satisfaction and their contribution to the common good. The 'captain' values their abilities without judgment based on an absolute measure. Society at large appreciates individual contributions only when recognising differences based on specific abilities and competencies. Achieving a balance among the various biases identified also underpins the current focus on valuing Diversity, Equity, and Inclusion.

6. The role of Management, Leadership and Stewardship

When we consider the challenges faced by modern organisations and their networks from a timeline perspective, we can link them to the adaptive cycle of resilience discussed earlier. According to the complexity theory proposed by Snowden (2003; 2007), short-term challenges are often seen as simple or, at most, complicated problems. Objectives tend to be clear or predictable. In the lighthouse metaphor, the lighthouse offers a solid foundation for the future outlook we aim to achieve. The skills required from our crew to face these challenges are clear, and the sea, even when confronted with a familiar western storm, remains predictable and behaves in a well-known way. Forecasting and analogical reasoning are the main approaches to tackling the challenges ahead. **Management** mainly concentrates on resolving current challenges through traditional methods, with rationality as the central focus. Within the lighthouse metaphor, the ship and crew are strong and equipped to handle the new challenges we face. The problems, in terms of Snowden, are complicated or even complex, and we must rely on the creativity of all those involved in our partner network. The light beam guides the motivated partners in contributing to the solution-finding process for these issues, but we base our approach on the trust that we can manage it. It is **leadership** that we need to concentrate on when developing new strategies to tackle existing challenges. The primary focus in such a setting should be on stimulating creativity.

However, modern society presents us with challenges that we have never encountered before and for which we have no clear way to deal. We face complexity and even chaos in our daily practice. We are confronted with a situation where we must find solutions to challenges, we do not yet fully understand. In terms of the lighthouse metaphor, we are navigating a sea so wild that we cannot clearly see north, south, east, or west. The crew's needs are unclear, and we can only rely on their cooperation, trusting that their collaboration and creativity will help them find solutions for the entirely uncertain issues we face. As we lack clear objectives and the problems are highly ambiguous, leading the organisation through management or leadership does not necessarily aid in finding solutions. The only option is to focus on organising our problem-solving capabilities. Therefore, neither management nor leadership alone are sufficient. What we need is the ability of **stewardship**, which considers the need to balance 'Me', the individual, 'We', the cooperation, and 'All', the societal and future-oriented aspects of problem solving, built on developing a network of skills and competencies to prepare for unforeseen

challenges. Here, the main emphasis is on building resilience. Think of the challenges described in the adaptive cycle of resilience.

7. Concluding Remarks

This article aims to illuminate problem-solving approaches in modern times. Much of the literature on challenges and related problem-solving strategies assumes that either the problem space is clear or that the knowledge, skills, and abilities needed for effective interventions are obvious. From a sustainability perspective, this article highlights the ambiguity of traditional problem-solving methods. We seek to clarify the nature of the problem spaces we inhabit, the solution spaces available for exploration, and the processes we must navigate. Additionally, the governance required arises from the complex interactions between the problem, the solution, and the processes necessary to integrate these elements in a managed way. Using the lighthouse metaphor has helped us identify key elements such as direction, capabilities within the network of partners, and the complex disturbances we face. As our goal is to spark a discussion to help society better prepare for uncertain futures, we look forward to future debates in this area.

Ethics declaration: for this paper is no ethics clearance required

AI declaration: AI tools are used for improving the language.

References

- Abcouwer, A. W., Takács, E., Schilstra, T., & Banga, O. P. (2022). *The Me, We, All Approach - Circular Resilience*. A.A.A. & O. Beck, U. (1996). World risk society as cosmopolitan society. *Theory, Culture & Society*, 13(4), 1–32.
- Boisot, M. (2006). Moving to the edge of chaos: bureaucracy, IT and the challenge of complexity. *Journal of Information Technology*, 21(4), 239.
- Brouwers, K., van Lelyveld, W., Takács, E., & Abcouwer, T. (2022). Lifelong learning through knowledge-sharing & digital collaboration. 23rd European Conference on Knowledge Management Vol 1,
- Chandler, D. (2014). *Resilience : the governance of complexity*. Routledge.
- Csikszentmihalyi, M. (1997). *Finding flow : the psychology of engagement with everyday life* (1st ed.). BasicBooks.
- Csikszentmihalyi, M. (2003). *Good business : leadership, flow, and the making of meaning*. Viking.
- Cumming, D., Werth, J. C., & Zhang, Y. (2019). Governance in entrepreneurial ecosystems: venture capitalists vs. technology parks. *Small Business Economics*, 52(2), 455–484.
- de Geus, M. (1989). *Organisatietheorie in de politieke filosofie*. Eburon.
- Deci, E. L., & Ryan, R. M. (2012). Self-determination theory.
- Dorst, K. (2015). *Frame innovation: Create new thinking by design*. MIT press.
- Dyer, L., & Ericksen, J. (2008). *Complexity-Based Agile Enterprises: Putting Self-Organizing Emergence to Work* (CAHRS Working Paper Series, Issue.
- Ezzat, H., Agogue, M., Cassotti, M., Le Masson, P., & Weil, B. (2016, 2016–06–01). *Leadership-driven Ideation: The Cognitive Effects of Directive Feedbacks on Creativity* European Academy of Management - EURAM, Paris, France. <https://halshs.archives-ouvertes.fr/halshs-01298791>
- Folke, C., Carpenter, S. R., Walker, B., Scheffer, M., Chapin, T., & Rockström, J. (2010). Resilience thinking: integrating resilience, adaptability and transformability. *Ecology and Society*, 15(4), 20.
- França, G. E. d., Silva, H. d. F. N., & Mendonça, A. T. B. B. (2024). Sustainability in the age of information and knowledge: a systematic review. *RDBCI: Revista Digital de Biblioteconomia e Ciência da Informação*, 22, e024005.
- Gigerenzer, G. (2015). *Risk savvy: How to make good decisions*. Penguin.
- Gunderson, L. H., & Holling, C. S. (2002). *Panarchy : understanding transformations in human and natural systems*. Island Press.
- Holling, C. S. (2001). Understanding the Complexity of Economic, Ecological, and Social Systems. *Ecosystems*, 4(5), 390–405.
- Kahane, A. (2004). *Solving tough problems: An open way of talking, listening, and creating new realities*. Berrett-Koehler Publishers.
- Keidel, R. W. (1995). *Seeing organizational patterns : a new theory and language of organizational design*. Berrett-Koehler.
- Kremer, H., Villamor, I., & Aguinis, H. (2019). Innovation leadership: Best-practice recommendations for promoting employee creativity, voice, and knowledge sharing. *Business Horizons*, 62(1), 65–74.
- Kurtz, C. F., & Snowden, D. J. (2003). The new dynamics of strategy: Sense-making in a complex and complicated world. *IBM Systems Journal*, 42(3), 462–483.
- Lakoff, G., & Johnson, M. (2020). Conceptual metaphor in everyday language. In *Shaping entrepreneurship research* (pp. 475–504). Routledge.
- Martins, V. W. B., Rampasso, I. S., Anholon, R., Quelhas, O. L. G., & Leal Filho, W. (2019). Knowledge management in the context of sustainability: Literature review and opportunities for future research. *Journal of cleaner production*, 229, 489–500.
- McLeod, S. (2007). Maslow's hierarchy of needs. *Simply psychology*, 1.

- Raineri, A. B. (2011). Change management practices: impact on perceived change results [Management]. *Journal of Business Research*, 64(3), 266–272.
- Randel, A. E., & Jaussi, K. S. (2019). Giving Rise to Creative Leadership: Contextual Enablers and Redundancies. *Group & Organization Management*, 1059601119834089.
- Rawat, S. (2018). *Decision-Making under Certainty, Risk and Uncertainty*.
<http://www.businessmanagementideas.com/decision-making/decision-making-under-certainty-risk-and-uncertainty/3371>
- Runyan, A. S. (2018). What is intersectionality and why is it important? *Academe*, 104(6), 10–14.
- Snowden, & Boone. (2007). A leader's framework for decision making. A leader's framework for decision making [Management]. *Harv Bus Rev*, 85(11), 68–76, 149.
- Sone, T., Nakaya, N., Ohmori, K., Shimazu, T., Higashiguchi, M., Kakizaki, M., Kikuchi, N., Kuriyama, S., & Tsuji, I. (2008). Sense of life worth living (ikigai) and mortality in Japan: Ohsaki Study. *Psychosomatic Medicine*, 70(6), 709–715.
- Takács, E., & Abcouwer, A. W. (2020, 4–7 februari 2020). *Framework for Adaptive Change: Towards Sustainable Innovation* [Scientific paper]. International Conference on Innovation and Management, Sapporo.
- Takács, E., & Abcouwer, A. W. (2025). *Navigating with Knowledge: The Lighthouse Metaphor for understanding Context, Value, and Motivation* European Conference on Knowledge Management 2025, Lahti, Finland.
- Takács, E., Keményffy, O., & Abcouwer, T. (2024). *How Information in Education of Sustainability and Circularity can be a Driving Force in Society* European Conference on Information Systems Education Research, Paphos.
- Taleb, N. N. (2010). *The black swan : the impact of the highly improbable* (2. ed.). Random House Trade Paperbacks.
- UN Department of Economic and Social Affairs. (2015). *Transforming our World: The 2030 Agenda for Sustainable Development*. United Nations,. <https://sdgs.un.org/publications/transforming-our-world-2030-agenda-sustainable-development-17981>
- United Nations. (2000). *United Nations Millennium Declaration*. <https://www.ohchr.org/en/instruments-mechanisms/instruments/united-nations-millennium-declaration>
- World Economic Forum. (2024). *The Global Risks Report 2024 19th edition*. <https://www.weforum.org/publications/global-risks-report-2024/>

Integrating ESG-Driven Risk Intelligence: A Strategic Framework for Sustainable Financial Performance and CSR Alignment in Emerging Economies

Mohammad Talha¹, Syed Mohammad Faisal² and Ahmad Khalid Khan²

¹Department of Accounting and Finance, Prince Mohammad Bin Fahd University, Al-Khobar, Saudi Arabia,

²Department of Management, Applied College, Jazan University, Saudi Arabia

mtalha@pmu.edu.sa

dfaisal@jazanu.edu.sa

akkhan@jazanu.edu.sa

Abstract: By engaging in Environmental, Social, and Governance (ESG) measures, companies that want to become sustainable in terms of profitability in the face of the rapidly changing global agenda will have to include the said measures into their risk intelligence infrastructure. This article presents a comprehensive framework of linking ESG induced risk measurement to Corporate Social responsibilities (CSR) congruency, as well as in the developing world (Brazil, South Africa and India). SmartPLS is a quantitative study technique which is based on Structural Equation Modelling (SEM) and records information on a diversified group of professionals in various fields. This study provides a good source of information on the effectiveness of ESG-based risk information in capital deployment, strengthening stakeholder confidence, and organizational resiliency. The findings are an indication that having integrated policies on ESG risks made the companies more effective in dealing with operational and systemic risks and/or propelling corporate financial sustainability and reputational integrity. The deliberate merger of CSR into the ESG ecosystem system can foster ethical governance and foster a better creation of fair value. This article plays an important role in the sustainability finance discussion by providing meaningful implications on the future profitability of their business models to finance executives, corporate strategists, and legislature by increasing the future of the products and institutions in the volatile and high-return industries. It describes that goal is applied as a roadmap in order to find the way towards profitability. Besides this, the agenda highlights the critical importance of stakeholder involvement and inter-sector partnership in enhancing corporation-level ESG-based strategies. The ability of the companies to match the internal policies with external requirements enhances their capacity to predict the changes in regulations, investor preferences, and societal needs. Such alignment is especially necessary in new markets with institutional gaps, political risk, and socio-economic differences that increase risks. The inclusion of ESG risk intelligence assists not just in compliance but competitive advantage is also focused as this promotes transparency, innovation and long-term value creation. Sustainable business excellence is becoming a consideration of the capacity to balance between profitability and responsibility as organizations engage in a more interconnected economic environment. Therefore, this study seek to make a valuable contribution in terms of incorporating ESG-informed intelligence.

Keywords: Corporate social responsibility (CSR), Emerging economies, ESG integration, Risk intelligence, Sustainable finance

1. Introduction

A significant revolution is challenging how value is generated in capital markets content may have been edited for style and clarity (O'Brien, 2020). It is more than just market turbulence or quarterly results driving this shift. It is also driven by a subtle change in structure, one moving from transactional aims to loftier goals of corporate purpose. At the heart of this slight shift lies the convergence of the strategic center with Environmental, Social, and Governance (ESG) considerations. The moral code of modern capitalism is thus currently reinforced by domains that were once considered extraneous to moral uses and have the status of a strategic imperative. For the unstable governments, fragile ecosystems and tattered social webs that mark developing countries, the incorporation of ESG is a must – a basic necessity. This research resides in the field of vulnerability and potential, as an analytical tool but also as a philosophically strong and empirically verified framework for lasting change (Shiau et al., 2023).

This is an approach that is not abstractly idealistic. This integration is very well engineered to take on ESG-motivated risk analytics and to embed this operational and ethical framework in the CSR ambit. It challenges risk as an opportunity to be filled with vision, discipline and ideals rather than a threat to be avoided. The argument is that businesses must grow in a thoughtful, targeted way if they hope to compete in a world where the rules are never settled, politics are chaotic, and the environment is deteriorating (Bhalla, 2023). Where integrity is lost, profitability is not enough. The concept has to inform the usage of this emerging grammar. So, in the future, companies will not only need to make money but do so in a way that is strategically intelligent and ethically just. This implies they must think in soft and proactive rather than hard and reactive ways.

The study investigates the drivers of value creation in a holistic manner by capturing both the structural correctness of SEM and the analytical stringency of SmartPLS. That includes all those of how goal-setting and outcomes, measurement and significance, and measuring relationships fit together (Liu et al., 2020). ESG criteria are not fixed statements; like a dance, they are more dynamic tempi that play a role in how strategies are created, resources deployed and risks assessed. They are virtues that morally guide us to do better, to build our resistance. ESG frameworks are lively templates that transform grand ideas into concrete, doable actions. Yet strategy alone does not yield sovereignty. Enterprises will have to fight against gravity, exacerbated by practical issues like fuzzy thinking, institutional lethargy, and resource disparities (Sanneh, 2018).

However, the constraints are not definitively shown to be the main issue. Instead of becoming stuck, they become what I call evolutionary thresholds, places of possibility and necessity. Opposition becomes progress. We are only creative if we are not lacking anything. In this sense, barriers are not barriers to the realization of ESG ideals, and they are simply mechanisms to develop the most genuine and resilient forms of expression fully. The study demonstrates that strategy, performance, and constraint may coexist and mutually dynamically affect each other. It does so with scientific precision and artistic transparency. This reimagining transforms ESG from a laundry list of things to do into a choreographed dance, where structural truths, actions, and principles come into an active relationship with one another (Lakoff & Johnson, 2020).

ESG has moved beyond a cosmetic virtue for smart investors and an increasingly vocal set of stakeholders. Now, it has become a gauge to quantify the morality of an organization and to measure its legitimacy. It's both a statement and a demand, an assessment of the company's capacity to substantiate its suppositions through measurable, permanent terms, and a mirror of the company's beliefs (Aljouan, 2021). The theoretical model presents ESG as a multidimensional framework with related criteria, dependent tactics, measurable results, and enduring barriers. Each dimension is interconnected with the others through a complex fabric of cause and effect, and value moves in recursive cycles of trust, influence and capital, not linear lines. This circularity is especially potent in the developing world, as the consequences become material facts, not mere thoughts. The need for and the challenge of setting real ESG standards is exacerbated by the fact that governments are not transparent, resources are not evenly distributed, and developmental goals are urgent. However, in some cases, integrating ESG could have the greatest potential for changing things. It burnishes your reputation and reduces your risk. OMIC and social legitimation are required for operation (Bryer, 2016). Not only obedience but also the idea of dependability. The research works with complexity, recognizing that the enactment of ESG comprises a complex interplay between ambition and adaptability, values and infrastructures.

The basic concept of risk is being redefined in the discussion. Risk is something beyond the calculation of how much you might lose; it's now an integral part of design, where efficacy meets unpredictability, and resilience involves being able to regenerate intentionally, not merely to avoid failure (Suryanto et al., 2020). It is a summons to policymakers, CEOs and investors to look beyond the simple trade-off between growth at any cost and being responsible and embrace a different conception of value, one in which moral and economic motivations belong on the same side of a balance sheet, not pitted against each other. Looking at it from that standpoint, ESG is seen as not a standalone portion of the strategy of a company but as the vessel to express and talk about that strategy.

This study is important as an empirical addition to the growing body of ESG research and conceptually provides progress to nascent business ethics development. It champions sustainability not as a fad but as a seminal principle of rock-steady future-proofing. ESG is the talk and rationale of a new economic age. In this day and age, companies are no longer judged by how much money they make but by how they make it ethically (Chatzopoulou & de Kiewiet, 2021). Also in the mix are their global implications and their impact on balance sheets. It is this conception of finance as a wealth-preserving apparatus rather than a wealth-siphoning mechanism as envisaged at one's expense. Each decision and each investment we make contributed to the story of fair development. Seen in this light, the future of the organization does not hinge on the extent of the near-term success of principled design but on the duration of that success. In an age of instability, the moral man is the superior man. I mean, this is saying you need to be following a way, not a way only. A compass that allows companies and the people in them to get things done with honesty and a sense of resolution rather than through fear or hesitation. The ESG is made up of all of a company's assets, and not just the money (Freiberg et al., 2020).

2. Literature Review

The complex interplay of ESG criteria and financial performance unfolds as a story of enlightened capitalism, where ethical stewardship aligns with commercial success. Research (Burke, 2016) shows that businesses which

place sustainability at their core benefit from a financial premium, not just reputational enhancement. This dynamic is powerful for companies concerned about the environment and their role within it, as ESG initiatives link to environmental stewardship and creating value efficiently. Research (López-Toro et al., 2021) showed financial indicators like return on assets and Tobin's Q are hallmarks of effective ESG integration. This indicates that corporate resilience depends on good governance and environmental orientation.

A corporate emissions profile serves as both metric and instrument. A study (Onat et al., 2025) finds that greener, less carbon-emitting companies perform better financially in their ESG alignment. Saving the environment might not just be right, but good for business. This evidence suggests ESG engagement provides resilience to volatility, generating predictability that enhances investors' trust. But this raises a dialectical question: sustainability faces short-term economic constraints and needs strategic positioning. This apparent paradox, another research (Nielsen & Villadsen, 2023) shows that the ESG field is becoming more confusing.

2.1 ESG Criteria Have A Positive Influence on ESG Financial Performance

The inclusion of ESG dimensions in investment frameworks represents a revolution in capital allocation, blending economic rationality with ethical consciousness. Investors now seek assets founded on sustainability and stewardship. The study (Costanza et al., 2021) suggests that the plurality principle aligns with ecological integrity and social equity as principles for asset allocation. ESG knowledge and investing options have expanded, making investors more discerning. The attractiveness of ESG-aligned securities stems from their ability to uncover hidden risks and strengthen long-term soundness. These assets shield against regulatory disruptions and reputational damage while creating value during financial distress, as research has shown. A dialectical tension remains in this story, escalating in boardrooms and trade floors. ESG importance varies based on investing time horizon. The investigation (Karagiannopoulou et al., 2023) indicates that long-term investors, particularly in economies facing climate and political instability, view ESG as an important tool to manage risk and establish a long-term edge.

2.2 ESG Criteria have a Positive Influence on ESG Factors Investment Decisions

ESG activities within investment portfolios have altered financial decision-making, blending ethical foresight with fiduciary diligence. Capital now serves as an instrument to advance sustainability, social equality and governance integrity, amplifying their direct impact. ESG integration exposes hidden risks related to climate, reputation or regulations, (Gopal & Pitts, 2025) the study suggests. This enables investors to create portfolios that are both forward-looking and robust. This shift is backed by empirical evidence as (Arouri et al., 2025) demonstrated that ESG-compliant investments have consistently outperformed traditional investments long-term. ESG has become a strategic enabler of competitive differentiation, resilience and innovation. The study (Shmelev & Gilardi, 2025) indicates that companies following ESG rules develop new technologies and business practices, leading to flexible models. The market's response through increased ESG-aligned investments shows widespread recognition of sustainable finance benefits. However, several factors oppose this trend. Another study (Sheehan et al., 2024) shows that traditionalism, demonstrated by focus on quarterly results and established patterns, impedes full ESG adoption.

2.3 ESG Strategies Positively Influence ESG Factors Investment Decisions

The mainstreaming of Environmental, Social, and Governance considerations within corporate frameworks faces evident and subtle challenges. A major factor is lack of resources. People view sustainability as a long-term wish rather than necessity because they lack sufficient people and money. Inconsistency arises, compromising strategic clarity and impeding collective action due to fragmented understanding of ESG's logical roots and nascent expertise. Research has (Küfeoğlu, 2024) shown that ESG's conceptual ambiguity often results in performative adherence rather than transformative action, as businesses grapple with unclear concepts and shifting goalposts. A reactionary force exists behind these structural issues that spring from stunted governance and failed cultural evolution. Lack of institutional governance is slow to recognize new ethical norms, and companies remain trapped in a mindset valuing short-term over long-term returns, (Adams, 2017) the study says. This is an ideological argument, (Abdullah et al., 2018) not about practicality - it's about resisting change. But improvement shows as forward-looking companies form peer networks and rating systems, add ESG tasks to CEO hierarchies and find new ways to organize businesses for a clearer future.

2.4 ESG Barriers Negatively Influence ESG Strategies

The convergence of financial success with Environmental, Social, and Governance protocols exemplifies a union of ethical stewardship and economic profit, where one is not opposite to the other, but its concealed architect.

Research (Alexandra et al., 2024) supports that during market instability, companies following ESG principles are more stable, resilient, and attractive to investors. These companies reduce agency costs and increase market power through transparent governance, environmental foresight and social inclusion. This financial appeal changes how investors feel, as they invest in virtue rather than value. Research (Flaga-Gieruszyńska et al., 2024) suggests modern investors view ESG compliance as both a consideration and guide for sound decisions in companies balancing purpose and profit. Financial performance links higher organization value and ESG ratings. However, practical limitations exist. Another study (Ziolo et al., 2019) finds that full ESG implementation costs may be too expensive for small enterprises with low financial reserves, making sustainable financing transitions difficult.

2.5 ESG Financial Performance Positively Influences ESG Factors Investment Decisions.

Hypotheses Development

H1: ESG Criteria have a positive influence on ESG Financial Performance.

H2: ESG Criteria have a positive influence on ESG Factors Investment Decisions.

H3: ESG Strategies positively influence ESG Factors Investment Decisions.

H4: ESG Barriers negatively influence ESG Strategies.

H5: ESG Financial Performance positively influences ESG Factors Investment Decisions.

3. Research Methodology

This is a cross-sectional quantitative study on the impact of ESG criteria, strategies, barriers, and financial performance on ESG-based investment decisions by individuals and investment professionals in India. A purposive sample of investors who previously knew or had experience with ESG investments was gathered by 643 (91.8% response rate) valid responses from a total population of 700. A structured questionnaire was launched to collect primary data on multiple indicators for each of: ESG Criteria, ESG Strategies, ESG Barriers, ESG Financial Performance, and ESG Factors Affecting ID. Confirmatory factor analysis, which is used to evaluate reliability and validity, was performed using PLS-SEM in SmartPLS, a powerful tool for estimating complex models that involve multiple constructs and non-normal data. Ethical guidelines were adhered to i.e., voluntary participation, informed consent, confidentiality, and anonymity of responses.

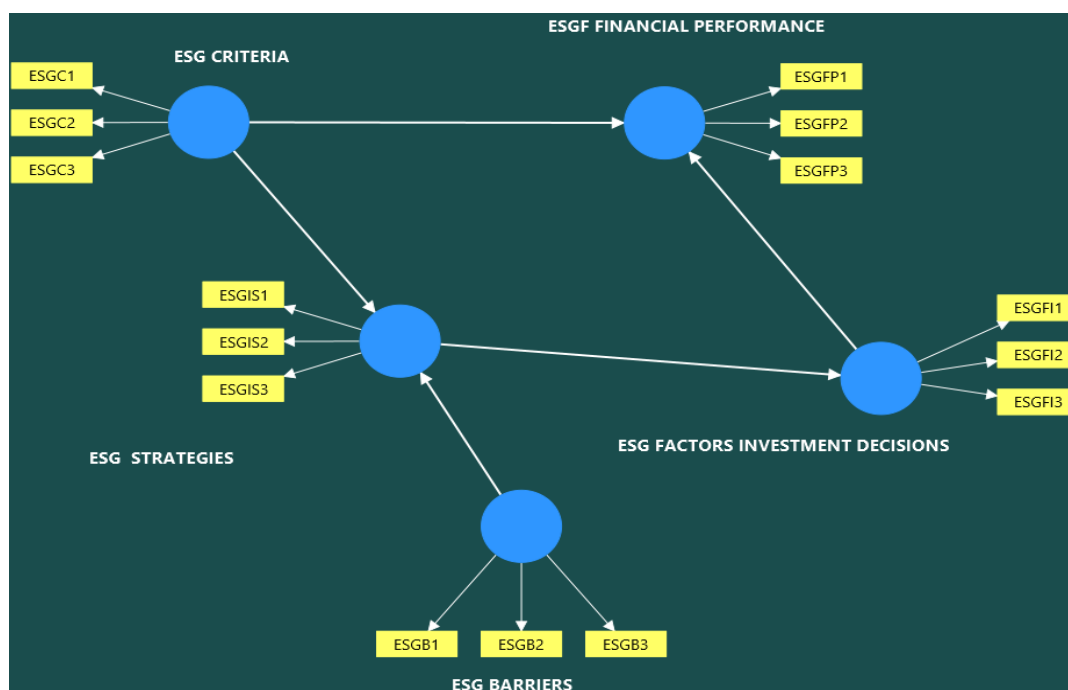


Figure 1: A Structural Model of ESG Criteria, Strategies, Barriers, Financial Performance, and Investment Decisions

A highly justified conceptual model which can easily be understood in the Logics Relationship among ESG Criteria, ESG Strategies, ESG Barriers, ESG Financial Performance and ESG Factors in Investment Decisions is a

figure-1. At its core, this framework consists of the ESG Criteria and the ESG Standards (ESGC1, ESGC2 AND ESGC3), environmental, social and governance criteria. The ESG Financial Performance (ESGFP1, ESGFP2, ESGFP3) theory of sustainable standards improve Financial Resilience, holds it direct and indirect. ESG Investment Decisions realizes this at the junction of budget sustainability and your investment rooted in value. ESG Strategies (ESGIS1, ESGIS2, ESGIS3) represent a reading of standards into practice which is a rational process and ESG Barriers (ESGB1, ESGB2, ESGB3) represent barriers of non-implementation in goal achievement perspective by organizations. These points where we stick throw friction into strategy execution. Making Your Money Matter (ESGF1, ESGF2, ESGF3) sustainability' Developing the close-up siphon ultimate the volume and individual rights; dried handkerchief dissolves in a reflection of mortgage cleaning traditional fund and land.

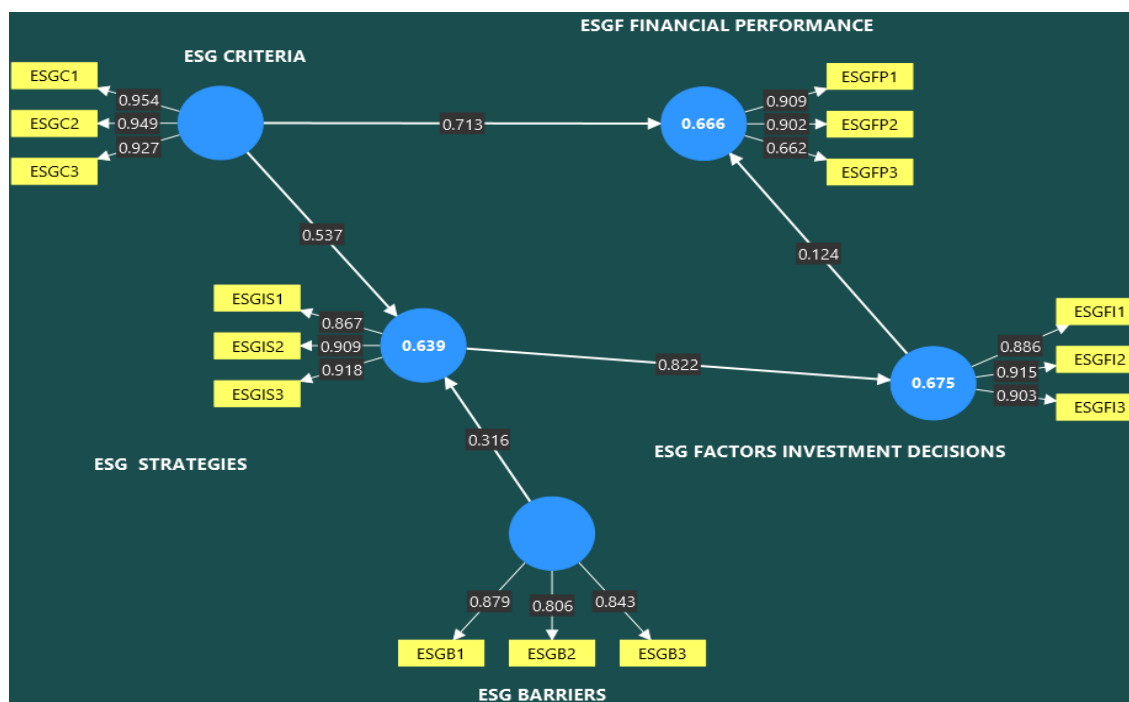


Figure 2: A Structural Equation Model of ESG Dynamics: Interlinking Criteria, Strategies, Barriers, Performance, and Investment Decisions

The constitution of SEM Figure – 2 is a flow of these hidden constructs in symphony tied by mutual interdependency and causation which is the essence of fine-grained beauty in SEM. ESG Criteria (ESGC, with high loadings: ESGC1: 0.954, ESGC2: 0.949 and ESGC3: 0.927) directly affects ESG Financial Performance (ESGFP path coefficient: 0.713, high internal validity: indicator reliabilities: ESGFP1: 0.909 for a single construct This channel also reinforces one of the ultimate nature tests in finance, ethical stewardship. Conversely, a slack coefficient (0.124) exposes the weakness of transferability into Capital Deployment Decisions, suggesting time or cognitive dissonance in the confidence of financial ESG benefits translating into capital allocation!

Simultaneously, ESG Strategies acts as the headlight startup process to palpitate the spirit of ESGB (path coefficient: 0.537), and motivate the power of an ESG Barrier with deathly and valid contrary force (e.g., ESGB1: 0.879). These strategies are exquisitely specific (e.g.: ESGIS2 loading –0.909) and the strategies become the meta-language for translating the barriers (0.822 effect on ongoing Health and ESG Investments). The final construct, ESG Factors Investment Decisions, captures attributes of inner strength (e.g., ESGF2 loading: 0.915) and conceptual clarity and speaks to the aspiration to reconcile aspiration are with imperatives. Thus, this model is not just an abstract diagram but a symphony of values, constraints and their respective actions where each coefficient is singing a line of the company ethics and each path is drawing the outline of a responsible capital.

3.1 Analysis of Reliability and Validity of the Data

Epistemic constructs in the ESG testing framework: A psychometric analysis of the theorems with internal reliability and convergent validity of three factors an alpha of greater than 0.70 demonstrates inter-consistency – correlation between indicators. The 0.938 of each of the three ESG Criteria implies collinearity and firm-generated (essence) composite. The internal consistency and explanatory power of each of these measurement scales is supported by a composite reliability($\rho_c=0.960$) and average variance extracted (AVE = 0.890). Their (ESG

Strategies) and (ESG Factors Investment Decisions) ideal AVEs (0.807 and 0.813) both exceed the traditional threshold value of 0.50, fell above the commonly accepted threshold value of 0.50, and are indicative of high psychometric strength. This is evidence that the theory holds true and the convergence shows that this is real.

Even the most mundane bit of the statistical quilt hits a few specific notes. This measure appeared to have internal complexity by being able to detect small issues and still be consistent, whilst having a measure with a Cronbach's alpha of 0.797 and AVE of 0.711. This distinguishes the importance of ESG Financial Performance and this research skeleton (ESG Financial Performance) as determined in the model, through wither the lowest alpha value (0.772) is from the construct vs the really important reliability and validity evidences as from the AVE (pa = 0.824; AVE = 0.693) which clearly shows that this construct is really reliable and this construct is really valid. While there is an overlap between what these indices represent, taken together they provide richer construct measures than their sheer dollar value would otherwise indicate, which is a more subtle approach. Each RMSEA, and VE, coefficients is only a part of a greater whole that has structural integrity empirical beauty and conceptual elegance.

Critical constants in the form of diagonal images of the AVE square roots, in a systematic discriminant and convergent validity model (Fornell-Larcker matrix), were found during the analysis of the purified model. The corresponding off-diagonal correlations are below, so that each concept is clearly distinct philosophically and empirically, which is reflected in the diagonal values While at the same time they keep their unique position within the ESG framework. This means that, conceptually, ESG Criteria performs well (AUC = 0.943). Investment styles ESG Factors Investment Decisions (0.902) and ESG Strategies (0.898) also do well. These buildings are not isolated monuments but rather tiny worlds nestled within one another. Just because the inside is cohesive, the outside edges do not converge.

However, collinearity is avoided. Likewise, the high association of ESG Barriers (0.807) with both ESG Financial Performance (0.779) and ESG Criteria (0.738) indicates the same. On the flipside, ESG Criteria and ESG Financial Performance register that tension from the barriers; ESG Barriers, which is in the most cases a form of resistance, seems to be an indicator of the depth with which the dominant culture is entrenched. Such a matrix is far more than just completing a statistical tool, it is a conceptual matrix rich and integrated in structure, all too often lacking in the tick-boxes of an environmental, social and governance tool signaling in each the box to what extent that material fires in its integration as part of the bigger picture.

These correlate and the precision and interpretative depth of how much any one ESG factor matters to any other is an epistemic map. Each coefficient is a poetic weld that marks the emotional degrees of the relation in its neural symmetry that weights the business, ethic and profit axes. Link 7, How strategies turn into investments decisions across ESG-Factors shows a good alignment (0.822), this link describes how strategies act as drivers which directly converts into strong value driven investments decision. The ESG Criteria have a positive and high correlation with Financial Performance (0.813), indicating that sustainability does indeed help (not hurt) performance. These higher-order relationships are all part of an overarching system of what governance for impact looks like and a systems approach to ESG.

Nevertheless, ESG Barriers show ways how they can have some effect on this echolike setting (if used correctly). The strong association (0.779) between ESG Barriers and Financial Performance is surprising, as limits can be analyzed as transformational barriers rather than barriers if, and only if, they are perceived and managed appropriately. Investment choice is strongly correlated (0.802) with ESG Criteria and ESG Factors, which mean how people invest reflects his personal value. It is as if the genes, to be sure, mutate, ideas evolve in a common intellect which is not split up in different human brains but organically interlinked. Again, as evidenced in that each of links > 0.612 Beyond just a table of facts, this is the core philosophy that strategy, challenge, value and capital are always in dialogue within ESG.

Table: 1: Causal Cartography of ESG Constructs: A Path Coefficient Odyssey

	Path coefficients
ESG STRATEGIES -> ESG FACTORS INVESTMENT DECISIONS	0.822
ESG BARRIERS -> ESG STRATEGIES	0.316
ESG CRITERIA -> ESG STRATEGIES	0.537
ESG CRITERIA -> ESGF FINANCIAL PERFORMANCE	0.713
ESG FACTORS INVESTMENT DECISIONS -> ESGF FINANCIAL PERFORMANCE	0.124

Projection of latent components of ESG framework - Table 1. This will be achieved through a formal depiction of the strength and subtlety of causal associations in terms of the path coefficients. This specific relation to be established is the main part of the path from ESG Strategies to ESG Factor Investment Decisions (0.822). What a wonderful coefficient, and a realization that strategies are decision-making energy in flow. It also demonstrates that sustainability standards are most effective when tightly defined and transparent, and the foundation where standardization is poised to be the investor selection test for investment fitness. Spilling to ESG Strategies (0.537) and ESG Financial Performance (0.713) thinning two-tiered spilling Dispersing values on the balance sheet is how victory embeds into an organization's DNA; ethics become economics. Lastly, ESG strategies yield a weak effect like stressors that should be filtered rather than eliminated, while the barriers to ESG yield a strong effect (0.316 vs. ESG strategies). That's not the most exciting of catalysts, but pressure polishes strategy as fire tempers steel. Perhaps the only link in our data that we feel is worthy of explicating upon in this brief is the 0.124 correlation we find between ESG Factors Investment Decisions and ESG Financial Performance, perhaps a time or maturation lag. But it needs to start producing on financial performance soon enough, at least insofar as attracting consumer interest in subscribing to responsible investing. It is simply a table—one mechanism for outlining some of the minor, gradual shifts in sustainable governance through the lens of a proposed framework. Every coefficient has a story to tell about impact, resilience and responsible capitalism.

Table 2: The Explanatory Power of the ESG Model: Illuminating Variance through R-Square Elegance

	R-square	R-square adjusted
ESG STRATEGIES	0.639	0.637
ESG FACTORS INVESTMENT DECISIONS	0.675	0.674
ESGF FINANCIAL PERFORMANCE	0.666	0.664

The final portion of the structural model is summarized in Table 2, with its R-square and adjusted version. It shows how much variability of each endogenous factor is explained by the other endogenous factor. So, if ESG strategies are a good model, they are an even better idea – an R-square of 0.639 would suggest this. This means its predecessors, ESG Criteria and ESG Barriers, represent ca. 63% of its variance. This proportion illustrates that the composition of the ESG strategy is statistically and theoretically quite robust. Which ultimately depends on values and contextual constraints. The output of an improved R-square (0.637) also lends support to this conclusion as model complexity is being curtailed over-inflation, explanatory power is not diluted, and increases in explanatory power are attained with no loss of parsimony.

The paper also explores ESG Factors potential investments opportunities with a 67.5 percent correctly listed variance This could help humans to make smarter investments, once the systems are up and running anyway. R Square ESG Financial Performance has high explanatory power, meaning ESG investment decisions determine 2-3 times where performance is set, which contributes 67% of ESG financial performance. Far from a mere table, these results stand as an empirical model, a tribute to the sculptural qualities of the human form.

4. Discussion

The macro argument on ESG integration shows instances where capital can do good and get in sync between long-term business strategy and short-term profit maximization. Or both as a compliance standard and as a normative driver of corporate behavior enshrining those targets in its flexible internal architectures (ESG norms). Steering clear of the ESG trap has now become the highest-paying path, a road that combines the precepts of responsible management and environmental good citizenship with profit. ESG based strategies have made risk intelligence a filter where rule-based strategies, accountability and vision become the arrows that decision makers target to reach the bullseye of sustainable returns. Which clearly implies: ESG is by definition action-oriented, abstractions should be actionable. Such challenges of cultural resistance, barriers to those challenges in terms of laws and resources also create an ambiguity of concept (using that term somewhat broadly) percolating so deeply (or arguably enmeshed) to ever escape the fuzziness between what it means to innovate within the confines of relatively new words that it works to confine and choke the territory of innovative enterprises in need of innovate as they roam aimlessly across terrain in which they are both foreigners and natives. And that tension reflects the reality that, much like sustainability, creativity runs on limitations. The same transformation is reflected in the transformation of investor mindset; the financials embedded into ESG investable are not philanthropy but are the new orthodoxy of sustainable value, part with the causing diversification away from short-termism towards forward-looking, long-term resilience-risk-return models.

In a nutshell, the structural model calls for a paradigm shift in the way we think about finance: pitting the principle against the profit, the responsibility against the growth, and the stakeholders against the shareholders. The ESG is not a goal, it feels like a discipline, a mindset that connects matter to spirit, the ephemeral to the eternal. This analysis highlights ESG as being cross-dimensional, which requires frameworks and cultural and innovation spillover, and that its path will be different depending on the context, especially in the Global South. Finally, that sustainability is the only route to maintain stability in an increasingly unstable world and that ESG is therefore both the North Star and ethical imperative of the future of finance.

5. Conclusion

These findings make a historical case for why the corporate bringing-up-to-speed on Environmental, Social and Governance (ESG) factors must now go beyond choice to become the requirement of the past. Through sustainability-driven data modelling, results show volatility is not the whole story, as risks extend beyond ethical decision-making, reputation, and business viability. ESG has evolved from compliance to become central to strategic resilience and value creation. Results demonstrate that ESG criteria, not compliance mandates, drive profit through moral consonance, integrity, and market trust. Cultural and organizational inertia are enablers of systemic change, given limited resources. The three Ps - Permanence, Performance, and Purpose - have redefined investment behaviour, with ESGs extending beyond profitability to preserve wealth and moral capital for future generations. This model of finance is even more relevant for developed economies since it brings transparency on ESG as a leading change agent that creates delta through plus and not through minus. We call for academia and practitioners to do the work needed to shape ESG tools so that it will shift from the compliance burden of rich companies to the core of the good society and economy.

Ethics declaration: The authors hereby declare that the research paper has been prepared with complete honesty and integrity. No foul means, plagiarism, or unethical practices have been used in the preparation, analysis, or writing of this paper. All sources of information have been properly acknowledged, and the work presented is original and authentic.

AI declaration: The authors used SmartPLS for data results and Grammarly and Paperpal (an AI-assisted language editing tool) to improve the clarity and readability of the manuscript. No content, data, or analyses were generated using this tool. The authors are responsible for the content and conclusions.

References

- Abdullah, N., Hadi, N. U., & Dana, L.-P. (2018). The nexus between entrepreneur skills and successful business: a decompositional analysis. *International Journal of Entrepreneurship and Small Business*, 34(2), 249-265.
- Adams, C. A. (2017). Conceptualising the contemporary corporate value creation process. *Accounting, Auditing & Accountability Journal*, 30(4), 906-931.
- Alexandra, E., Svetlana, L., & Alexander, K. (2024). The Impact of ESG Indicators on the Financial Stability of Companies. *Procedia Computer Science*, 242, 1226-1234.
- Aljouan, M. (2021). *An Understanding of the Joint Audit Role in enhancing the External Audit Practices in Kuwait*. University of Salford (United Kingdom).
- Arouri, M., Mhadhbi, M., & Shahrour, M. H. (2025). Dynamic Connectedness and Hedging Effectiveness Between Green Bonds, ESG Indices, and Traditional Assets. *European Financial Management*.
- Bhalla, P. (2023). Relevance of Gandhian economics in the post pandemic world: learning for the path ahead. *International Journal of Indian Culture and Business Management*, 30(2), 228-245.
- Bryer, R. (2016). Socialism, accounting, and the creation of 'consensus capitalism' in America, circa. 1935–1955. *Critical Perspectives on Accounting*, 34, 1-35.
- Burke, R. J. (2016). Corporate Reputations: Development, Maintenance, Change and Repair 1. In *Corporate Reputation* (pp. 3-44). Routledge.
- Chatzopoulou, E., & de Kiewiet, A. (2021). Millennials' evaluation of corporate social responsibility: The wants and needs of the largest and most ethical generation. *Journal of Consumer Behaviour*, 20(3), 521-534.
- Costanza, R., Atkins, P. W., Hernandez-Blanco, M., & Kubiszewski, I. (2021). Common asset trusts to effectively steward natural capital and ecosystem services at multiple scales. *Journal of environmental management*, 280, 111801.
- Flaga-Gieruszyńska, K., Gaubienė, N., Pranevičienė, K., & Krzystek, P. (2024). Navigating the Legal Labyrinth: ESG Compliance Management as a Legal Service. In *Exploring ESG Challenges and Opportunities: Navigating Towards a Better Future* (pp. 3-24). Emerald Publishing Limited.
- Freiberg, D., Rogers, J., & Serafeim, G. (2020). How ESG issues become financially material to corporations and their investors. *Harvard Business School Accounting & Management Unit Working Paper*(20-056).
- Gopal, S., & Pitts, J. (2025). ESG Integration: Unveiling Risk and Driving Innovation in Sustainable Finance. In *The FinTech Revolution: Bridging Geospatial Data Science, AI, and Sustainability* (pp. 35-81). Springer.

- Karagiannopoulou, S., Sariannidis, N., Ragazou, K., Passas, I., & Garefalakis, A. (2023). Corporate social responsibility: a business strategy that promotes energy environmental transition and combats volatility in the post-pandemic world. *Energies*, 16(3), 1102.
- Küfeoğlu, S. (2024). Environmental, Social, and Governance. In *Net Zero: Decarbonizing the Global Economies* (pp. 51-124). Springer.
- Lakoff, G., & Johnson, M. (2020). Conceptual metaphor in everyday language. In *Shaping entrepreneurship research* (pp. 475-504). Routledge.
- Liu, B., Xue, B., Meng, J., Chen, X., & Sun, T. (2020). How project management practices lead to infrastructure sustainable success: an empirical study based on goal-setting theory. *Engineering, Construction and Architectural Management*, 27(10), 2797-2833.
- López-Toro, A. A., Sánchez-Teba, E. M., Benítez-Márquez, M. D., & Rodríguez-Fernández, M. (2021). Influence of ESGC indicators on financial performance of listed pharmaceutical companies. *International Journal of Environmental Research and Public Health*, 18(9), 4556.
- Nielsen, H., & Villadsen, K. (2023). The ESG discourse is neither timeless nor stable: How Danish Companies 'tactically' embrace ESG concepts. *Sustainability*, 15(3), 2766.
- O'Brien, J. (2020). The moral foundations of stakeholder capitalism. In (Vol. 14, pp. 1-4): Taylor & Francis.
- Onat, N. C., Mandouri, J., Kucukvar, M., Kutty, A. A., & Al-Muftah, A. A. (2025). Driving Sustainable Business Practices With Carbon Accounting and Reporting: A Holistic Framework and Empirical Analysis. *Corporate Social Responsibility and Environmental Management*.
- Sanneh, E. S. (2018). Systems thinking for sustainable development. *Cham: Springer International Publishing*.
- Sheehan, N. T., Fox, K. A., Klassen, M., & Vaidyanathan, G. (2024). Threshold concepts and ESG performance: Teaching accounting students reconceptualized fundamentals to drive future ESG advocacy. *Accounting Education*, 33(1), 84-108.
- Shiau, W.-L., Wang, X., & Zheng, F. (2023). What are the trend and core knowledge of information security? A citation and co-citation analysis. *Information & Management*, 60(3), 103774.
- Shmelev, S. E., & Gilardi, E. (2025). Sustainable Business as a Force for Good in the Context of Climate Change: An Econometric Modelling Approach. *Sustainability*, 17(4), 1530.
- Suryanto, Gravitani, E., Daerobi, A., & Susilowati, F. (2020). Crop insurance as farmers adaptation for climate change risk on agriculture in Surakarta residency-Indonesia. *International Journal of Trade and Global Markets*, 13(2), 251-266.
- Ziolo, M., Filipiak, B. Z., Bąk, I., & Cheba, K. (2019). How to design more sustainable financial systems: The roles of environmental, social, and governance factors in the decision-making process. *Sustainability*, 11(20), 5604.

Fragmented Voices, Unified Principles: Diversity and Just Engagement in Earning Community Acceptance for Large Projects

Douglas Taylor

Wits Mining Institute, Johannesburg, South Africa

douglas.taylor@wits.ac.za

Abstract: Projects producing environmental or social change within a community have the potential to cause contestation. The Social Licence to Operate (SLO) and how it might be earned are examined in this paper. A new approach, the IUE Model (Identify, Understand, and Engage), is suggested to better facilitate conflict reduction and thus enhance project acceptance and long-term sustainability. While the literature often portrays communities as homogeneous, the research revealed that individuals or groups constituting the 'community' were remarkably diverse, even at the local level. Apart from those directly affected by the project, there were numerous "influencers" attempting to sway opinion. Identifying the various community elements is the first vital step in earning acceptance. Effective engagement necessitates understanding the diverse motivations of communities supporting or opposing the project. Support was motivated by potential benefits, either for the individual or the community. Reasons for opposition were far more nuanced, ranging from perceived personal impact to environmental and ecological objections. Engagement requires Procedural Justice (are the rules and procedures fair?), Interactional Justice (are all parties treated fairly?), Environmental/Ecological Justice (going beyond legal compliance to ensure no harm) and Distributive Justice (beyond CSR to fair benefit distribution in line with needs and capabilities). These elements are essential for sustainable interaction. Engagement is not unidirectional; it requires all parties to treat each other with respect and dignity, in line with Ubuntu's underlying principles of cohesion and reciprocal value. The Ubuntu lens provides a decolonised basis for considering justice, offering the insight that while communities have the right to award or withdraw their acceptance, their actions may impact their rights. The paper concludes with an explication of the IUE (Identify, Understand, and Engage) Model, providing a new understanding of how acceptance is earned and offering pragmatic guidance that can be understood and adopted in practice.

Keywords: Social licence to operate, Community, Identification, Engagement, Justice, Ubuntu

1. Introduction

Conflicts surrounding substantial projects are common between communities and companies. The Social Licence to Operate (SLO) is regularly invoked to enhance legitimacy and cooperation around large-scale projects, with the SLO rated in the top four concerns for mining companies since at least 2019 (EYGM (2019), EYGM (2023)).

Research was conducted to understand how companies can improve their approach to achieving the SLO. A literature review was conducted to determine the current understanding of the SLO. Thereafter, in-depth interviews were conducted with 51 individuals, both protagonists and antagonists, in three case studies involving conflict at multiple levels and covering wind energy, shale gas extraction, and a golf course development in South Africa, Yorkshire, and Scotland. The approach applied an Ubuntu axiology, an ontology based around principles of justice and fairness, and an interpretivist and constructivist epistemology. The various cases enabled the collation of diverse perspectives and the triangulation of findings. The case studies provided a broad perspective on the SLO within a range of societal and environmental impacts.

2. Current Understanding of the SLO

The review of the literature initially focused on defining and understanding the SLO. On completing a content analysis of the 200 most cited articles in Scopus and Google Scholar it is evident that the predominant definition of the SLO is that it represents the broad and ongoing approval and acceptance of stakeholders or, more often "the community" for a project to conduct its operations (Thomson & Boutilier (2011), Moffat & Zhang (2014), Moffat et al. (2016), Parsons & Moffat (2014), Prno (2013), Taylor & Mahlangu (2017), Hurst et al. (2020) and Barich et al. (2021)). However, the literature lacks clarity about the concept "community" and often tends to conflate community and stakeholders as if they were the same group or introduce concepts such as local community, indigenous community, neighbourhoods, broader community, wider community, vested and non-vested community and similar terms (Askanius & Gustafsson (2010), Bice & Moffat (2014), Collins & Kumral (2021), Thomson & Boutilier (2011), Parsons et al. (2014), Zhang & Moffat (2013)). At best, one can describe the stakeholder community as polymorphous. From the company's perspective, trying to earn the SLO, there is no certainty as to whom they should engage to earn the SLO.

Reviewing the most prominent models of the SLO (Wüstenhagen et al. (2007), Thomson & Boutilier (2011), Boutilier & Thomson (2011), Moffat & Zhang (2014), Morrison (2014), Bice et al. (2017), Luke (2017), and Lesser et al. (2021)) along with the body of literature it is evident that

the foundation of the SLO is the community or stakeholder group, the arbiters of the SLO. Three prerequisites, legitimacy, right action, and effective communication, create trust and earn the SLO, or the acceptance of the project by the community. Should any of those prerequisites be missing or diminished, trust would be eroded, and the SLO would be lost.

Legitimacy relates to both legal legitimacy, without which no project could commence, and moral legitimacy, which the society, and, more specifically, the community in which the company operates, will define.

The literature frequently refers to trust, but, as Howse (2020) p3 notes “despite the high prominence trust takes in SLO literature, there is little discussing what it is or how it is built”. This is notwithstanding Moffat & Zhang (2014) defining trust as having confidence that the [company’s] behaviour will match expectations. Much the same can be said for credibility, and it is apparent that these two concepts are ephemeral, demonstrated through engagement and interaction between the company and the community, and embodied in right action and communication.

If it is the community that grants the SLO, this community needs to be identified, and the categorisation needs to be far more detailed than is described in most of the literature.

3. Who are the Communities That Grant the SLO?

Research across the three case studies, involving elementary social network analysis, revealed that the individuals or groups constituting the ‘community’ awarding the SLO were remarkably diverse, albeit that there were significant commonalities in group type across the three disparate case studies. This is best illustrated in Figure 1 below, which provides an insight into the more granular composition of the community. It should be noted that communities form a subset of “stakeholders”, but is the term most closely aligned with the literature.

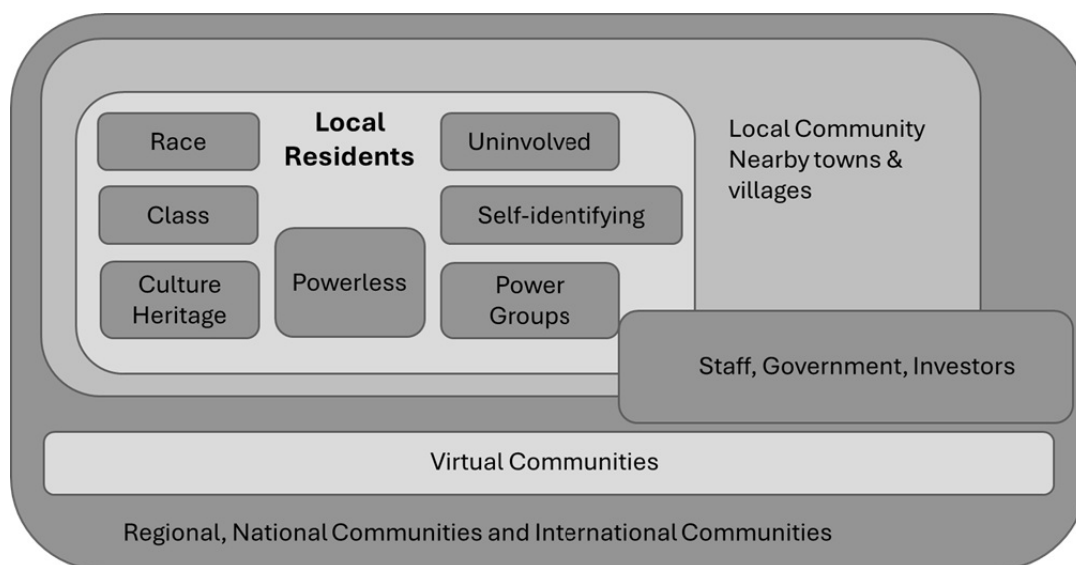


Figure 1: Communities Identified

“Local residents” includes all those living within proximity of the various projects, essentially the local town or village. Within that group, however, there were subsets based on race, class, cultural heritage and history, often leading to different reactions to the projects.

Within the local resident group, were power groups, either created by the project companies themselves or self-appointed. These groups had power in virtue of their function as a conduit between the project and the community, and are reminiscent of what Boutilier (2005) and Boutilier et al. (2016) refer to as strategic and influential stakeholders.

Importantly, across all three case studies, there was a distinct group of ostensibly “uninvolved residents”, being holidaymakers or seasonal workers, who would have no real influence on the SLO. There was a further

important set of uninvolved residents, those who remained silent or powerless, which is discussed in more detail below.

A final, and significant group, particularly at the fracking site but also present at the golf course, is the group self-identifying as “local residents”. In the case of the fracking site, this comprised the residents of the protest camp who “self-identified” themselves as “community protectors”, although many individuals came from far afield. Additionally, numerous residents in the surrounding areas of all the towns/villages considered themselves “local residents”, primarily because they perceived that the project would or could impact them in some way.

As shown in Figure 1, there were other groupings, all of which have a role to play in granting the SLO. Many such stakeholders are more closely aligned with broader industry decisions (e.g., the development of shale gas nationally) and thus confront different issues from those affecting local areas. For pragmatic purposes, these latter groups require less direct attention in attempting to earn a locally based SLO. Other engagement mechanisms required at a macro level.

A further community is the online community. While naturally, members of all the communities could be part of a virtual community, and while virtual communities indubitably influenced some of the attitudes and perceptions of community members, they are primarily a communication medium and, as such, should be considered influencers rather than distinct communities. Interestingly an analysis of publicly available social media posts for fracking development revealed limited initiators of news or comment, with most community interest merely involving forwarding messages from alternative sources.

Overall, the identification of the various community groupings highlights a much wider range of community constituents than is often included in an SLO. The analysis of the community indeed demonstrated that it is a polymorphous group. As such, companies will need to identify these wider disparate groups to facilitate a deeper understanding of the various drivers and motivations of the communities at a more granular level. This in turn, will create more meaningful communication and action when companies and communities engage.

4. Understanding why Communities Support or Oppose the Project

Determining the drivers or influences behind the individuals and groups supporting, opposing, or seemingly detached from the project would enable companies to engage more meaningfully with these different segments.

It is appropriate to review Figure 2 when considering the findings relating to the different motivations of communities supporting or opposing the SLO.

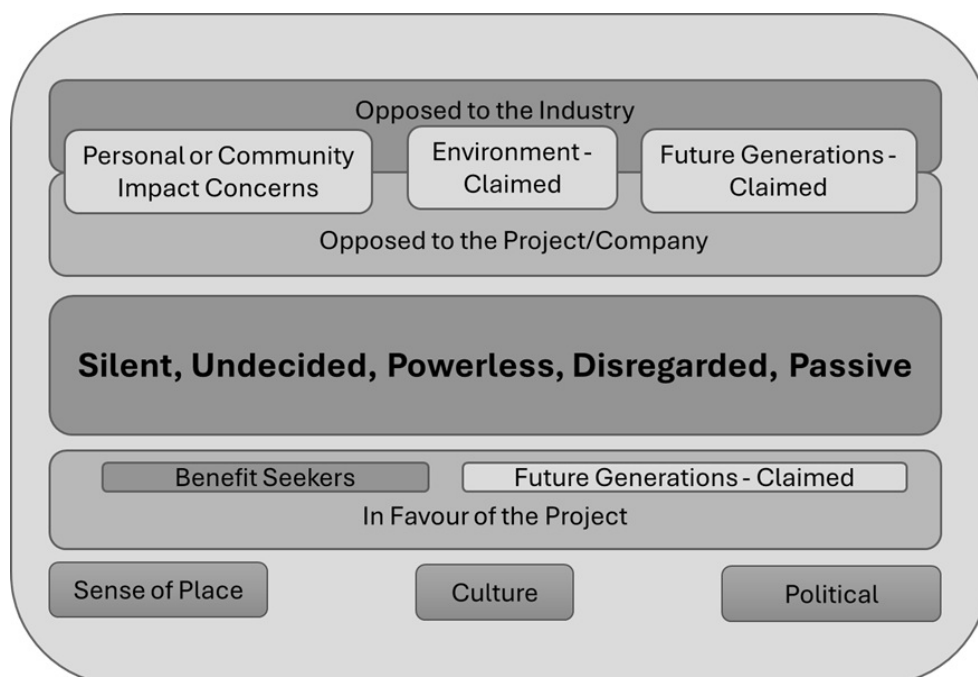


Figure 2: Communities Understood

Groups or individuals favouring or supporting the various projects were motivated by the potential benefits to be derived, either personally or for the community. This tended to focus on income for impoverished or marginalised individuals or groups, as well as employment, especially employment that enables younger people to be retained locally. The issue of benefits for younger people, whether from jobs or education and training, garnered considerable support, albeit in a situation of dire poverty, most of the population was concerned about their own futures.

Across all three case studies, there was a group one would suspect is larger than either the proponents or opponents of the projects, and that is the group comprising the silent, undecided, powerless, passive, disregarded, or apathetic. The view had been expressed that with the wind farm, around 95% of the community couldn't care (probably too high a figure), while, according to the BEIS Public Attitudes Tracker, 2019, , approximately 50% of the UK population neither supported nor opposed or had never heard of fracking. At the golf development, where the promoters balloted a sizable portion of the community, principally in pro golf areas, 70% of the recipients either voted against or did not vote at all.

So large a group of uninvolved people, creates an issue when it is claimed that the SLO represents community approval. This becomes a moral issue, as all groups need to be recognised and engaged for there to be any Procedural or Interactive Justice.

Reasons for opposition were far more nuanced. Three groups opposed to the project or companies were identified in the Personal or Community Impact Concerns group, with the difference between the three groups relating to proximity to the project. There were several motivations for objection, primarily related to the possible economic impact on house prices and tourism. Other issues concerned potential disruption, and, with the fracking project, a concern for the impact on health and groundwater resources. In many cases, inconvenience, rather than pure environmental issues, appeared to drive these objections, largely expressed by those geographically close to the project, but not exclusively. The impact of the proposed projects on the human environment concerned all groups. Furthermore, they, too, expressed apprehensions for future generations.

One of the local "resident" elements was not comprised of local residents and, in the fracking case, it included the protest camp and visitors who were said to be "protecting" the local community. They were essentially a grouping which opposed the entire fracking/shale gas industry, not just this specific project. Naturally there were many local residents who were also totally opposed to the entire industry, but perhaps not as vehemently.

A specific element of those anxious about the environment is the ecology group, focused on the impact on the natural as opposed to the human environment. This was particularly evident at the golf course, where, having observed the destruction of an SSSI site by a development at Balmedie, Scotland, there was deep concern that the latest proposals would result in the destruction of a unique dune system and another SSSI and RAMSAR site.

Vital to understanding communities is the impact of events elsewhere. Either previous experience or the torrent of social media posts, appeared to have significantly impacted the perceptions and beliefs of the communities, especially those opposed to the projects.

It is possible to create a matrix, combining Figures 1 and 2 above for an initial identification and understanding of a project community. This obviously cannot hope to be definitive, but it certainly provides a basis for community identification and understanding prior to any just engagement process.

5. How, Through What Just Engagements, can the Company Earn the SLO?

Engagement involves communication and conduct. Ubuntu is a normative ethical concept suggesting that "An action is right insofar as it promotes cohesion and reciprocal value amongst people. An action is wrong insofar as it damages relationships and devalues any individual or group." (Taylor 2014, p339). Viewed through this Ubuntu lens, engagement requires that actions by all parties should promote solidarity and equal respect between all parties, recognising the rights of community members to due process with interactional fairness of treatment.

It was evident that in all cases, while apparently acting in good faith, the companies operated largely as if legal compliance was sufficient to validate their engagement practices. In many instances, they fell short of the standards required to demonstrate justice in community interaction.

Procedural Justice includes: considering whether the process was legal and compliant; whether there was accessibility in terms of location, language and culture in company/community interactions; if the people involved in the interactions were recognised and treated with respect; and whether the parties listened to and heard each other, with adequate and appropriate sharing of information. (Cole & Foster (2000), Sovacool & Hess (2017), Walker & Baxter (2017)). Additionally, the elements of promoting group cohesion and creating reciprocal value amongst the community should be demonstrable (Judgement 1995).

While all companies complied with legal requirements, which was to be expected, there was further evidence that attempts had been made to address the other elements of Procedural Justice. Nevertheless, the process had flaws. For example, the use of English as the predominant communication medium disregarded and disrespected a majority Afrikaans-speaking community around the wind farm. Although situated close to the border of a Scottish county, the promoters of the golf course excluded all people from outside that county, showing a very parochial view of community. Nonetheless, these issues tended to reinforce the need for Procedural Justice when engaging with communities. It should further be noted that Procedural Justice tends to be unidirectional, from the company to the community.

Whereas Procedural Justice raises the question “are the rules and procedures used to reach these decisions equitable?” Interactional Justice asks, “do those who apply these procedures listen to my views and treat me with respect?” (Simmons & Lovegrove 2005) p502, with truth and human dignity at the core (Bies 2015). Furthermore, mutual recognition, respect, and dignity — the key elements of Ubuntu — meld neatly with the prerequisites for Interactional Justice.

The research revealed numerous instances of misrecognition or nonrecognition, either deliberate or unintentional. There was also stereotyping both by the companies and within all the communities, which again denigrates the humanity of the participants.

Interaction is bidirectional; engagement requires the involvement of both or all parties, an issue that is not apparent in the literature. Sections of the community in all cases studies treated the companies, their employees and their suppliers with a complete lack of respect. This was also reflected in intra-community interaction. This led to a breakdown of trust of communities by the companies themselves and within communities. This implies that, inasmuch as companies need to earn their social licence, so too do the various community groups, both those supporting and those opposing the project. When a situation is tantamount to a state of war, it is not possible for there to be any just engagement. Nor, therefore, is it possible for a community to grant or a company to be awarded the SLO.

An essential element of justice, insofar as engagement is concerned, is environmental/ecological justice. It is accepted that the companies complied with the required legislation in all cases, and all had completed environmental impact assessments (EIAs). However, as suggested by Gunningham et al. (2004), companies need to go beyond mere compliance to ensure that, as far as practicable, they seek both environmental and ecological justice in their dealings with the community and the surrounding environment.,

The final element in discussing engagement was the issue of Distributive Justice, which was evident in only one case study, the South African wind farm. South African legislation provides for substantial project generated funds to be used in the community for social and enterprise development. In this case, it was an extremely impoverished community plagued by numerous social ills. As Amartya Sen (Sen 1990) and Martha Nussbaum (Nussbaum 2009), (Nussbaum 2011) suggest, the mere provision of income is insufficient to demonstrate justice if the recipient lacks the capability to utilise that income effectively. In this case study, where the majority of the population were not used to large salaries, most of the community employed by the company ended up no better off than before the project commenced. Accordingly, if there is to be justice, Distributive Justice, or any other kind of justice and if the company is to earn its SLO, it needs to be more cognizant of the issues facing the communities with which it interacts. Hence, there is a need to understand the communities before they can be effectively engaged.

Having considered the identification of the various groupings within the community, the needs of those groups and how to justly engage with them, how does one then operationalise these results?

6. Re-Shaping the Understanding and Practice of the SLO

While not entirely rejecting the initial SLO model, the findings (Taylor 2023) led to a revised model (Figure 3), termed the Identify, Understand, Engage (IUE) model, which aims to answer the question: “How can companies improve their approach to earning the social licence to operate?”

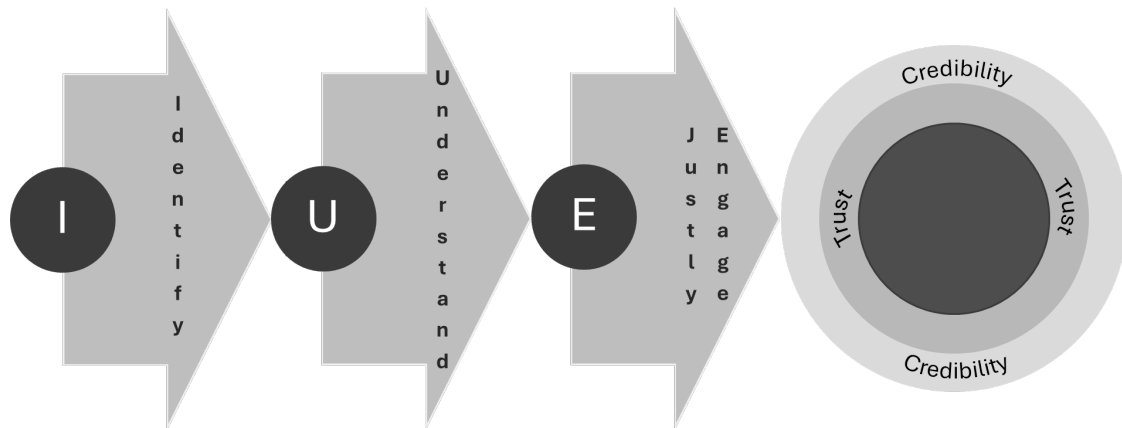


Figure 3: The IUE Model

The community remains the core constituent of the model but, rather than referring to the amorphous “community” or “stakeholders”, the first step in earning the SLO is to identify the numerous disparate elements of the community, based on their geographic relationship to the project, as well as other elements such as race, class and culture.

The second element of the model requires understanding the communities, involving identifying key aspects such as culture, language, and social class structure. It implies appreciating the aspirations and fears the (potential) project creates. It requires learning about the motivations and perspectives of the community and its various groups. It involves acknowledging those groups that represent or claim to represent the environment, ecology, and future generations, albeit there will be many overlaps between these groups and other community elements. It means, as sensitively as possible, determining why the “silent majority” is silent. It means seeking as much information as possible about the community to maximise the opportunity for just engagement.

The third component of the model is just engagement. The two core components of engagement are communication and conduct. However, here the issue of justice drives the communication and conduct, not just of the company seeking the SLO but also of the entire community.

The first requirement is Procedural Justice, where the processes are compliant and transparent. All interactions must be accessible, and all members of the community afforded an opportunity to participate and are recognised and acknowledged.

There must be Interactional Justice in all dealings between all parties, where conduct and communication are open and honest, and where all parties are treated with dignity, recognised, and respected. It is incumbent on the companies to facilitate this, as communities seldom have the capacity to bring people together in a meaningful way. It is specifically noted that Interactional Justice is bidirectional and that all parties are obligated to treat each other with the same dignity and respect. Failure to do so by any party causes the loss of the moral right to receive or award the SLO.

Where there is any form of distribution by the company or project, care must be taken to ensure that not only are the underlying structural factors inhibiting fair distribution addressed and removed, but also that the recipients are capacitated to ensure that the distribution can be effectively utilised.

Finally, there is the issue of environmental and ecological justice, where environmental concerns directly impact people, while ecological issues predominantly affect flora and fauna. It is incumbent on companies seeking the SLO to ensure that they have complied with minimum safety, health, and environmental standards and, where appropriate, their environmental impact assessment. However, it is further necessary to ensure that they go as far as practicable to eliminate or at least minimise and mitigate, all environmental and ecological harm that may flow from the project.

Once all three elements, identification, understanding and just engagement are present and remain effective, the company/project could be deemed to have demonstrated credibility, gained trust, and thereby earned or retained the SLO.

It is essential to note that the model assumes all legal requirements have been met, indicating the company's legal legitimacy. Moral legitimacy is demonstrated by the company's engagement with the community, which is vital for obtaining the SLO in practice.

The IUE model thus provides a different understanding of how the SLO is earned, is simple enough to be understood and has the potential to be adopted in practice.

7. Concluding Thoughts

In discussing this model with some of the management from the case studies, as well as industry practitioners, it was evident that the proposed model would have application in similar situations. Having moved from the literature to the development of a theoretical model based on case study research, the next steps must be to test the model in practice.

In understanding all company interactions with their stakeholders, it would be invaluable to determine how to identify, understand and interact with the "silent majority". Are these people who are powerless or perceive themselves to be impotent? Are they just naturally reticent? Do they have concerns different to those of the protagonists and antagonists in the various communities? Or are they just what Gaventa (1982) calls innately apathetic? If, as one suspects, this group is the majority of any community then, not only in the interests of justice but also from a purely pragmatic perspective, being able to identify, understand and interact with this group would undoubtedly be of benefit to companies seeking the SLO, as much as it would be to those in opposition.

It is important to determine how one can verify if an SLO has been granted. In situations with a large project in small communities (very often a mining development), does the fact that there are limited or few protests indicate acceptance of the project, or acquiescence in the face of job losses, and possible community pressures?

The Ubuntu lens adopted while considering the just engagement between the company and the communities, as well as between and within the communities, refreshed a possibly jaded view of Interactive Justice. It provides a decolonised basis for considering justice that should resonate with communities in the Third World, especially in Africa, and which may well be espoused in other environments. The use of this Ubuntu approach, whereby the actions by all parties should promote cohesion and reciprocal value, led to the insight that the SLO is bidirectional and that, inasmuch as communities have the right to award or withdraw the SLO, so too do they, by their actions, lose or retain the right to award the SLO.

The issue of how companies and projects operate within diverse localities and across various communities will continue to be a significant challenge for all parties concerned. While there are no easy solutions to the issues involved, this paper highlights the importance of identifying and understanding communities, and the need for effective forms of just engagement with and by those communities, to promote cohesion and acknowledge reciprocal value and thereby support companies in their efforts to improve their approach to earning the social licence to operate.

Ethics statement: Ethics approval for this research was obtained from the Department of Environment and Geography Ethical Review Committee, University of York on 8 June 2021.

AI statement: No AI tools were used in the creation of this paper.

References

- Barich, A. et al., 2021. Social license to operate in geothermal energy. *Energies*, 15(1), p.139.
- Bice, S., Brueckner, M. & Pforr, C., 2017. Putting social license to operate on the map: A social, actuarial and political risk and licensing model (SAP Model). *Resources Policy*, 53, pp.46–55.
- Bies, R.J., 2015. The Oxford Handbook of Justice in the Workplace. In Russell S. Cropanzano and Maureen L. Ambrose, ed. Oxford University Press, pp. 89–108.
- Boutillier, R., 2005. Measuring Social Capital for Social Performance., (Paper 21). Available at: <https://ssrn.com/abstract=1112455>.
- Boutillier, R., Henisz, W. & Zelner, B., 2016. A systems approach to stakeholder management. In *Handbook of Applied System Science*. Routledge, pp. 403–417.
- Boutillier, R. & Thomson, I., 2011. Modelling and measuring the social license to operate: fruits of a dialogue between theory and practice. *Social Licence*.
- Cole, L.W. & Foster, S.R., 2000. *Environmental Racism and the Rise of the Environmental Justice Movement*, New York, USA: New York University Press. Available at: <https://doi.org/10.18574/nyu/9780814772294.001.0001>.

- EYGM, 2019. *Top 10 business risks and opportunities for mining and metals in 2019-20*, Available at: https://www.ey.com/en_gl/mining-metals/top-10-business-risks-and-opportunities-for-mining-and-metals-in-2019-20 [Accessed July 17, 2021].
- EYGM, 2023. *Top 10 business risks and opportunities for mining and metals in 2024*, Available at: https://www.ey.com/en_it/insights/energy-resources/risks-opportunities [Accessed July 7, 2025].
- Gaventa, J., 1982. *Power and powerlessness: Quiescence and rebellion in an Appalachian valley*, University of Illinois Press.
- Gunningham, N., Kagan, R.A. & Thornton, D., 2004. Social license and environmental protection: why businesses go beyond compliance. *Law & Social Inquiry*, 29(2), pp.307–341.
- Howse, T., 2020. *Gender, Indigeneity, and Trust in the Social Licence to Operate: The Need for Transformative Power Redistribution*.
- Hurst, B., Johnston, K.A. & Lane, A.B., 2020. Engaging for a social licence to operate (SLO). *Public Relations Review*, 46(4), p.101931.
- Judgement, 1995. The State versus T Makwanyane and M Mchunu., Case No. CCT/3/94.
- Lesser, P. et al., 2021. European mining and the social license to operate. *The Extractive Industries and Society*, 8(2), p.100787. Available at: <https://www.sciencedirect.com/science/article/pii/S2214790X20302240>.
- Luke, H., 2017. Social resistance to coal seam gas development in the Northern Rivers region of Eastern Australia: Proposing a diamond model of social license to operate. *Land Use Policy*, 69, pp.266–280.
- Moffat, K. et al., 2016. The social licence to operate: a critical review. *Forestry: An International Journal of Forest Research*, 89(5), pp.477–488.
- Moffat, K. & Zhang, A., 2014. The paths to social licence to operate: An integrative model explaining community acceptance of mining. *Resources Policy*, 39(C), pp.61–70.
- Morrison, J., 2014. *The Social License: How to keep your organization legitimate*, Palgrave MacMillan.
- Nussbaum, M.C., 2011. *Creating Capabilities - The human development approach*, The Belknap Press of Harvard University Press.
- Nussbaum, M.C., 2009. Creating capabilities: The human development approach and its implementation. *Hypatia*, 24(3), pp.211–215.
- Parsons, R. & Moffat, K., 2014. Constructing the meaning of social licence. *Social Epistemology*, 28(3-4), pp.340–363.
- Prno, J., 2013. An analysis of factors leading to the establishment of a social licence to operate in the mining industry. *Resources Policy*, 38(4), pp.577–590.
- Sen, A., 1990. Development as capability expansion. *The community development reader*, 41, p.58.
- Simmons, J. & Lovegrove, I., 2005. Bridging the conceptual divide: lessons from stakeholder analysis. *Journal of Organizational Change Management*, 18(5), pp.495–513.
- Sovacool, B.K. & Hess, D.J., 2017. Ordering theories: Typologies and conceptual frameworks for sociotechnical change. *Social Studies of Science*, 47(5), pp.703–750.
- Taylor, D., 2023. *How can companies improve their approach to earning the Social Licence to Operate?* Available at: <https://etheses.whiterose.ac.uk/id/eprint/34931/>.
- Taylor, D.F. & Mahlangu, S., 2017. Earning the Social Licence to Operate—A case study about culture. In *Proceeding of the 5th International Conference on Management, Leadership and Governance. Johannesburg, South Africa*. pp. 16–17.
- Thomson, I. & Boutilier, R., 2011. Social license to operate. *SME Mining Engineering Handbook*, 1, pp.1779–96.
- Walker, C. & Baxter, J., 2017. Procedural justice in Canadian wind energy development: A comparison of community-based and technocratic siting processes. *Energy research & social science*, 29, pp.160–169.
- Wüstenhagen, R., Wolsink, M. & Bürer, M.J., 2007. Social acceptance of renewable energy innovation: An introduction to the concept. *Energy policy*, 35(5), pp.2683–2691.

Reimagining Business Educators: Leveraging Generative AI for Enhanced Teaching

Joanne Chi-hang Tsoi and Karl Joachim Breunig

Oslo Business School, Oslo Metropolitan University, Norway

joanne.ch.tsoi@oslomet.no

karjoa@oslomet.no

Abstract: Generative AI (GAI) is rapidly transforming the work processes of academic staff of higher education institutions (HEIs). Previous study focused on students' use of GAI but the impact of GAI on faculty remains underexplored, especially in business schools in which there is a strategic importance in fostering innovation and developing future leaders. The integration of Generative AI tools, such as ChatGPT, is revolutionizing how business educators carry out their work in business schools. This paper presents a scoping review of a structured literature search identifying a core canon of recent articles addressing how GAI is changing the work conducted in business schools of Higher Educational Institutions. Literature searches were conducted in Web of Science (WoS) and Education Resources Information Centre (ERIC) databases from 2019 to 2024, using tailored search terms encompassing GAI, academic staff, business education and HEIs. A total of 502 articles were identified, with 211 from WoS and 291 from ERIC. After several stages of manual screenings, 15 final articles were obtained for this scoping review. The findings of the analysis reveal that GAI tools have integrated in the four major teaching work processes in business education: Curriculum Design, Pedagogical Methods, Student Engagement and Interaction and Assessments. In addition, the study surprisingly figured out that much less emphasis was given to the research side of the duties of academic staff. Our findings suggest that, under the human-GAI collaboration in teaching work processes in business schools, the role of educators have changed to be: Quality Controller, Scenario Facilitator, Strategic Mentor and Ethical Gatekeeper for the four major teaching work. Future research should focus on discipline-specific study, empirical evaluations of teaching work processes at tool-specific level, and in different cultural context. More research should also be conducted on researching work processes and institutional administration. This study contributes to the discourse of digital transformation and the potential of human-GAI collaboration in higher education.

Keywords: Generative AI, Educators, Business schools, Higher education, Human-Machine collaboration, Academic work processes

1. Introduction

Generative Artificial Intelligence (GAI) can generate text, code, images, audio, and video in response to user inputs ("prompts"). There are several types of GAI but the text-to-text models (such as ChatGPT, Microsoft Copilot, Google Gemini and DeepSeek) which based on Large Language Models (LLMs) are the most widespread (Zhou & Zhang, 2024). For academia, GPT-2 (a former version of Current GAI tools) started to integrate into Higher Education Institutions (HEIs) (Radford et al., 2019). The tool had rich interactions and precise human-like responses, thus gained attention in academia. Since GAI learns automatically from the users, it drives automation, efficiency, and creativity in ways not seen before (Ratten and Jones, 2023; Damar, 2022). ChatGPT's launch in November 2022 has pushed this transformation further, reshaping workflows and opening new ways for humans and machines to collaborate (Bozkurt, 2023). GAI tools like ChatGPT are no longer AI-supported systems which HEIs invested into the organization. Instead, they are user-initiated and are used on personal devices anytime and anywhere by stakeholders in HEIs. Prior installation approval is not required from the IT department, therefore HEIs have developed "AI usage policy" to guide academic staff for a fair and proper usage of GAI tools in their work.

The two main duties of academic staff are teaching and researching (conducting research and publishing results). The core work processes in teaching include designing curricula and courses, deciding pedagogical methods, engaging and interacting with students and developing assessments and evaluation (Xu and Babaian, 2021). GAI tools offer many opportunities to improve teaching. (Chu et al., 2022). For example, it enables more personalized and interactive teaching, give automatic tailored feedback and create educational materials, aimed at improving student engagement (Cambra-Fierro *et al.*, 2024; Dwivedi et al., 2023; Shanto et al., 2023), and instructors must rethink how assessments are conducted. While for researching, it involves identifying literature and conducting review, identifying research gaps, setting up research questions, collecting and analyzing data, coding and academic writing/editing, etc. (Korinek, 2023). GAI can change research methodologies (Chu et al., 2022) and streamline the aforementioned processes with speed and accuracy (Chu et al., 2022; Dwivedi et al., 2023). Despite all the benefits, concerns about ethics, academic integrity, the reliability of GAI-generated outputs, and the overall effects of GAI on academic work processes (AWP) remain major topics of debate (Cambra-Fierro *et al.*, 2024; Bozkurt, 2023; Strzelecki, 2023). Tools like ChatGPT are free and are accessible on personal devices,

making an easy usage for range of AWP (Chui et al., 2023). However, according to Saraev (2024), many academic staff have yet to fully embrace these tools, even as other stakeholders increasingly rely on them. This imbalance has created challenges as GAI tools continue to disrupt traditional ways of teaching and researching (Adeshola and Adepoju, 2023; Baig and Yadegaridehkordi, 2024; Dwivedi et al., 2019; Dwivedi et al., 2022; Dwivedi et al., 2023).

Business schools have a unique role in preparing students for leadership roles across industries. By responsibly adopting and collaborating with GAI tools, business educators can improve teaching quality and research practices while also showing students responsible use of GAI (Davenport and Ronanki, 2018). To date, there is limited and fragmented research about academic staff and GAI in HEIs, focusing broadly on higher education without specific emphasis on business schools. Studies have highlighted both opportunities, like personalized teaching and streamlined administrative processes, and challenges, including ethical concerns and resistance to adoption (Cambra-Fierro et al., 2024; Clegg and Sarkar, 2024). Some research, for instance, has applied frameworks like the Technology Acceptance Model (TAM) and Bloom's Taxonomy to understand adoption patterns and pedagogical impacts (Cambra-Fierro et al., 2024; Thanh et al. 2023). However, a coherent understanding of the division of labour between humans and GAI for AWP in business schools remains underdeveloped (Bahroun et al., 2023; Vecchiarini & Somia, 2023). This study aims at addressing this gap by conducting a scoping review to explore the potential human-GAI collaboration in business schools. It focuses on the division of labour for different AWP and the change of role for academic staff while they are being assisted and/or augmented by GAI tools. As a result, this scoping review addresses the below research questions:

RQ1. How do the trend of research change after the launch of ChatGPT in Nov 2022, regarding the usage of GAI on different AWP in business schools of HEIs?

RQ2. How do academic staff collaborate with GAI tools for teaching and researching work processes in business schools of HEIs, and what are the tools utilized in different processes?

This study aims at developing a framework according to the division of labour between academic staff and GAI tools in handling different work processes in business schools.

2. Theory

Cognitive systems supported by GAI assist or augment humans at the task level, but they cannot finish the entire job of a knowledge worker like academic staff (Davenport and Ronanki, 2018). Humans and GAI tools have distinct strengths so they can complement each other in different AWP. GAI tools with LLMs and big data, can process vast amounts of information quickly (Clark, 2023). This makes it more efficient than humans in summarizing literature, generating different types of drafts and automating repetitive tasks such as part of the grading job (Gupta et al., 2024; Krammer, 2023; Xu and Babaian, 2021). However, GAI tools are not skilful at critical thinking, contextual understanding, ethical reasoning and empathic skills (Bhaskar and Gupta, 2024). As a result, humans excel more in personal or sensitive decision-making with their intuition, emotional intelligence, experience and deep disciplinary knowledge (Bhaskar and Gupta, 2024), thus can access nuanced arguments and detect underlying biases (Baidoo-Anu and Ansah, 2023). Humans are also capable to utilize and re-evaluate free-flowing information from multiple perspectives, together with deep domain expertise, they can develop original insights which GAI are inflexible because of pre-defined rules which they are designed to follow (Gupta et al., 2024).

Kolbjørnsrud (2023) developed a human-machine organizational intelligence matrix which consists of five distinct configurations of intelligence, depending on the collaboration works among human and AI. Two major configurations are focusing on the works being done by AI and humans together. The first one was "augmented intelligence" in which a human uses AI technologies to improve, accelerate, and/or support their work. The second one was "augmented collective intelligence" where more than one human and AI technologies collaborate to work out the task (Kolbjørnsrud, 2023). In business education of HEIs, Clegg and Sarkar (2024) also designed a conceptual framework for machine-human interfaces in education and research. This study suggested the division of labour between humans and GAI for AWP be categorized according to the interplay between the degree of human and machine involvement and the orientation of knowledge (Theory vs. Practice). There are four major quadrants: AI-Dominant, Human-Dominant, Machine-Artisanship and Machine-Human Symbiosis, in which the latter two quadrants focused more on human-GAI collaboration. "AI-Artisanship" represents the team works where GAI primarily execute practical tasks, augmenting processes of application in real-world scenarios, while "AI-Human symbiosis" suggested a balanced interplay between human and GAI in both theoretical and practical aspects in the context of business education (Clegg and Sarkar, 2024). Although

both studies have given a high-level understanding of how academic staff will be able to collaborate with GAI tools in carrying out AWP in a knowledge-intensive organization, it remains unclear about which academic AWP will be impacted the most, how can the collaboration works out between humans and machines in the business schools, and what will be the influence of this human-GAI collaboration on the role of educators.

3. Methodology

This study employs a systematic scoping review methodology to ensure comprehensive and rigorous exploration of the topic (Tricco et al., 2018). According to Munn et al. (2022), scoping reviews aim to map and explore the evidence available on a certain topic, concept, or issue. It is more adaptable and allow changes as the review progresses, and the data collected is often descriptive or textual, allowing themes or categories to be analyzed through simple methods like content analysis (Campbell et al., 2023). This review paper uses the Scoping Reviews (PRISMA-ScR) statement by Tricco et al. (2018) and the “Population, Concepts, and Context” (PCC) criteria as recommended by Peters et al. (2021), which clearly identifies the focus and set up the inclusion and exclusion criteria (Table 1).

Table 1: Eligibility criteria

	Inclusion Criteria	Exclusion Criteria
Population	Academic staff (PhD fellows and professors of different levels) of the business schools	Academic staff of the non-business schools; Respondents are students / students are the focus in the articles; Academic staff of non-business schools / department / studies
Concept	Usage/adoption/effect/impact of GAI systems/tools/platforms on different work processes of academic staff; Academic staff's perceptions of GAI in their working processes; Assessment and feedback directly relating to working processes of academic staff with GAI	Publication which is not relevant to the usage/adoption/effect/impact of GAI systems/tools/platforms; Online learning relevant to GAI; Overview, predictions and strategies about GAI not relevant to work processes of academic staff in HEIs
Context	Higher education institutions	Other education contexts, e.g. early education, elementary schools, vocational education; System perspective, e.g. comparison of different version of ChatGPT in doing assessments, development of GAI tools to help with the works of academic staff in HEIs
Timespan	2019 – Nov 2024	Publications outside of the period between 2019 to Nov 2024
Publication status	Peer-reviewed journal articles	Books, Reports, Proceedings or conference papers, Grey literature, Discussions, Editorials, letters, Opinions, Commentary and Viewpoint commentary, publications not accessible online
Language	English	Non-English
Research design	Empirical research articles / Scientific articles drawing on empirical data; Theoretical and conceptual articles relevant to the “concept”	Literature reviews, argumentative review, Meta-analysis, Content analysis, and Bibliometric analysis
Geography	All	-

Literature searches were conducted in Web of Science (WoS) and ERIC databases on 4th December 2024, using tailored search terms encompassing GAI, academic staff, business education and HEIs. The major search string was constructed with a Boolean logic as: (Topic: Group 1) AND (Topic: Group 2) AND (Topic: Group 3) and (All fields: Group 4) (Table 2). A similar search was made in ERIC by adjusting search settings to suit this database.

A total of 502 articles were identified, with 211 from Web of Science (WoS, which is a more general database) and 291 from Education Resources Information Centre (ERIC, which is a database more specialized in educational research). After automatic de-duplication by EndNote21 software and several stages of manual screenings (Figure 1), 15 articles, which were all published between 2023 and 2024, were obtained for this scoping review.

Table 2: Four major keywords group

Group	PPC framework	Keywords
Group 1	Academic Staff	"educator*" or "professor*" or "faculty member*" or "teacher*" or "researcher*" or "scholar*" or "lecturer*" or "instructor*" or "academic staff" or "teaching staff"
Group 2	Generative AI tools/systems/platforms	"generative AI" or "chatgpt" or "chatbot" or "conversational AI" or "GAI" or "Generative artificial intelligenc*" or "GPT*" or "Alphacode" or "Github copilot" or "bard"
Group 3	Higher Education institutions	"higher education*" OR "tertiary education*" OR "universit*" OR "adult learning" OR "professional education*" OR "professional development" OR "management education"

Group	PPC framework	Keywords
Group 4	Business School/Studies	“business” or “business management” or “business stud*” or “marketing*” or “accounting*” or “entrepreneurship*” or “economic*” or “finance*” or “operation*” or “supply chain*” or “information system*” or “strateg*” or “business analytic*” or “business education*” or “management education*” or “management business administration” or “management school*” or “teaching management” or “MBA”

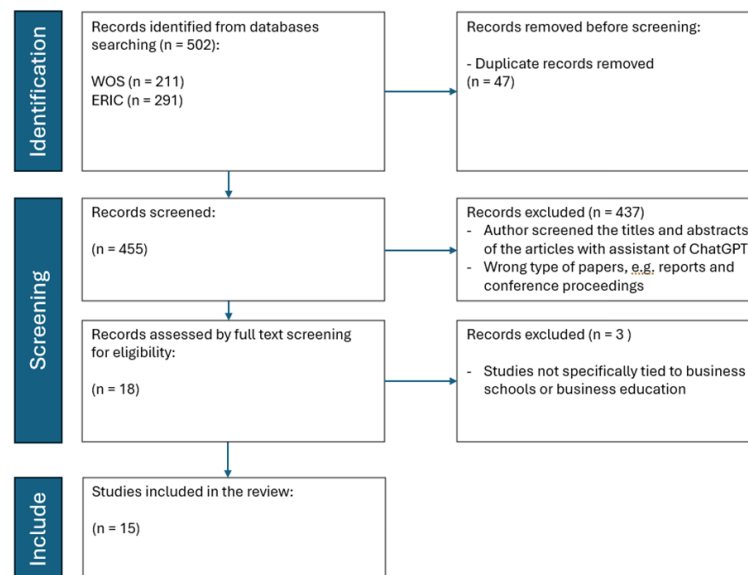


Figure 1: PRISMA diagram

The research questions served as the guidelines for extracting and analyzing data. To answer the first question, a descriptive analysis was conducted. For the second research question, a content analysis was carried out on the 15 final articles by using an excel spreadsheet to facilitate the analysis process (Creswell, J.W., 2001). Content analysis involves coding and categorizing data into predefined or emerging groups, enabling researchers to quantify and interpret the occurrence of specific concepts, phrases, or themes within a dataset (Krippendorff, 2019). A coding framework is established, then data are categorized, counted, and analyzed to identify patterns and trends. In this study, open coding was used to create descriptive codes from the data, allowing an open exploration of content. Relationships between codes were examined, leading to themes, which were refined by revisiting and integrating the data cohesively (Schei et al., 2024).

4. Findings

4.1 Research Question 1: “How do the trend of research change after the launch of ChatGPT in Nov 2022, regarding the usage of GAI on different AWP in business schools of HEIs?”

Although GAI tools were integrated to HEIs since 2019 the final articles included in this review were all published in 2023 (8 publications) and 2024 (7 publications). The location of these papers is in four continents (Figure 2) Europe is having the 2nd-most published papers in this study, this does not align with Crompton and Burke (2023), Li, et al. (2021) and Schei et al., (2024) which found the concentration of research about GAI and HEIs has been shifting from North America to Asia. This may be due to the focus of this study is business schools and with only 15 final articles selected.

This study found previous literature in different disciplines of business schools about usage of GAI tools by academic staff (Figure 3). Overall, the number of research in different business subjects in the context of academic staff and GAI is very few and most of them did not have a focus on a specific discipline, indicating and obvious research gap in this area. Although there were only 15 articles in this review paper, it is obvious that 6 of them were published to journals relevant to general business management subject, followed by publications in information systems/technology relevant journals (n = 5). This finding (Figure 4) may mean opportunities to

carry out future research in other business-relevant education areas, e.g. economics, accounting, marketing, etc.

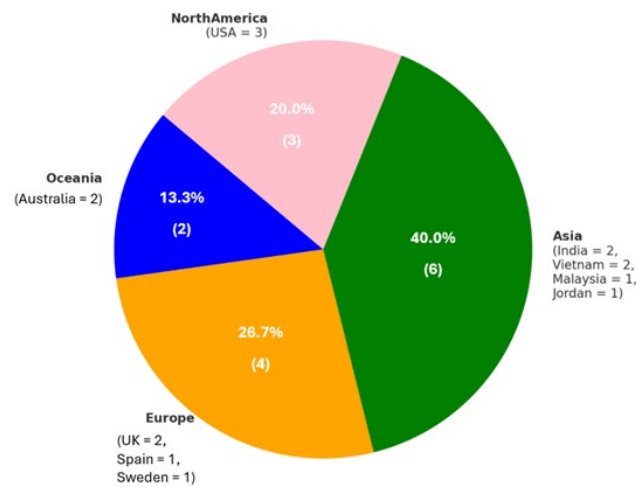


Figure 2: Geographical distribution of the included articles

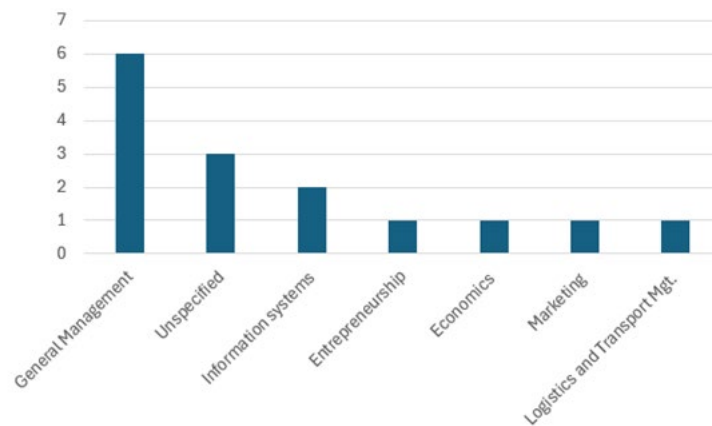


Figure 3: Business disciplines in the included articles

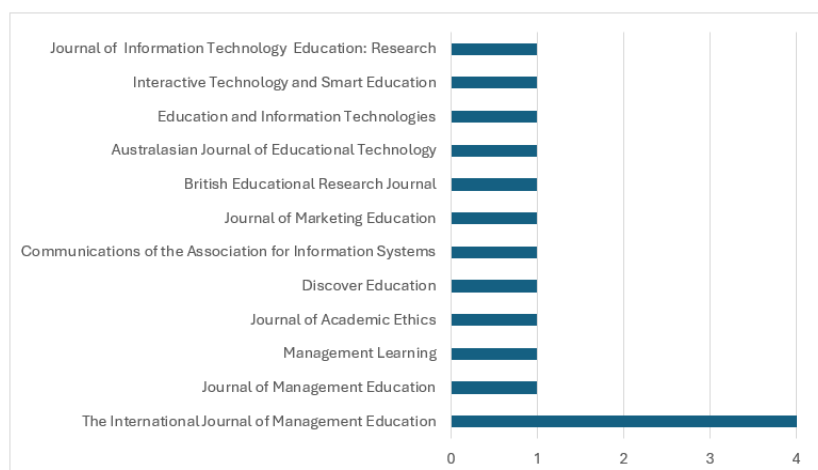


Figure 4: Journals of the final articles

4.2 Research Question 2: “How do academic staff collaborate with GAI tools for teaching and researching work processes in business schools of HEIs, and what are the tools utilized in different processes?”

Content analysis was conducted on the 15 final papers. After a thorough coding of the documents, four major work processes under teaching where academic staff assisted by / collaborated with GAI tools are identified:

Curriculum design, Pedagogical methods, Student engagement and interaction, and Assessments (Table 3). Although the study also targeted to investigate researching work processes, the final papers only mentioned briefly about the general benefits and/or challenges of GAI usage by academic staff without details about specific tasks under researching. Thus, this study will focus on teaching work processes in the follow sections. In addition, 10 out of 15 articles focused on the usage of ChatGPT by business academic staff, while the rest mentioned tools like Google Bard, Microsoft Bing or Natural Language Processing tools in general without details about usage on a specific work process.

4.2.1 Curriculum design

Curriculum design is a fundamental responsibility of academic staff, focusing on “what” to teach in a course. Traditionally at the course level, selecting content, determining sequences of instructions, and developing materials such as lecture notes or presentation decks from scratch are being done manually by educators (Fischer and Dobbins, 2023). This also includes choosing key theories, assigning appropriate readings, and ensuring each class builds on prior knowledge being taught. In business education, it is important to equip students with up-to-date industry trends to increase their employability after graduation (Clegg and Sarkar, 2024). However, for educators to stay updated with trends for course materials requires time-consuming engagement with academic literature and business reports. Similarly, adapting program-level curricula to industry demands also depends heavily on educators’ manual effort and expertise.

With the assistance of GAI tools like ChatGPT and based on predefined learning objective, educators can begin course planning by prompting the tool to suggest lesson plans and course outlines (Bhaskar and Gupta, 2024). Summarizing key theories, identifying relevant literature, and suggesting readings for each topic can also be done by GAI tools (Krammer, 2023). Another pain point of educators is keeping course content up with industry trends, but these can also be addressed through GAI tools which have access to news, academic references, and other resources from extensive databases or online (Krammer, 2023). Moreover, after educators’ prompt GAI tools for drafts, they check and refine the contents according to pedagogical goals without making them from scratch. At the program level, there will be a high chance for GAI tools to help with identifying industry-relevant skills, mapping program competencies to job market trends, and generating draft syllabus for new courses (Darnell and Gopalkrishnan, 2024). This will allow institutions to dynamically adapting curricula to the ever-changing business landscape.

4.2.2 Pedagogical methods

Business schools tend to use case studies, experiential learning, and lecture-based instruction as pedagogical methods (Darnell and Gopalkrishnan, 2024). Pre-GAI, educators manually selected cases, created discussion questions, and simulate students through complex business scenarios by made use of in-class exercises. With the assistance of GAI tools like ChatGPT, some of these labour-intensive tasks can now be offloaded (Husain, 2024). In marketing education, for example, GAI can generate new case scenarios by synthesizing vast business data to mimic real-world challenges (Shimek, 2023; Gupta et al., 2024). ChatGPT also supports the creation of alternative marketing strategies and business model simulations, allowing educators to focus on deeper analytical discussions (Clegg and Sarkar, 2024; Darnell and Gopalkrishnan, 2024). For instance, GAI can help generating new marketing cases by synthesizing vast amounts of business data to mimic real-world challenges (Shimek, 2023). In addition, educators use ChatGPT to generate alternative marketing strategies and business model simulations, leaving them more time in focusing on deeper analytical discussions with students (Clegg and Sarkar, 2024; Darnell and Gopalkrishnan, 2024).

Beyond designing cases and exercises, integrating GAI tools into class activities is emerging as a new teaching approach to build students’ critical thinking and strategic decision-making skills (Ratten and Jones, 2023; Guha, Grewal and Atlas, 2023; Darnell and Gopalkrishnan, 2024). For instance, entrepreneurship educators can ask students to utilize GAI tools to write business plans or generate social media and visual branding content (Darnell and Gopalkrishnan, 2024). In marketing courses, educators identified widespread application of ChatGPT in real-world practice, such as drafting product descriptions and customer service messages, or brainstorming and crafting business plans etc. (Guha, Grewal and Atlas, 2023). Such exposure helps students develop job-ready GAI competencies (Fischer and Dobbins, 2023; Guha, Grewal and Atlas, 2023).

4.2.3 Student engagement and interaction

Engaging and interacting effectively with students is one of the major teaching tasks in business schools. Besides lecturing knowledge by delivering course content, educators need to ensure students' active class participation, theories application, and higher-order thinking skills development (Freeman et al., 2014). Pre-GAI, these

required educators to prepare all materials, facilitate discussions and response to students' questions. All these are labour-intensive, especially in larger classes (De Hei et al., 2014). Nevertheless, GAI tools like ChatGPT allows educators to redistribute certain instructional tasks, improve productivity, improve engagement and interaction, and the overall education experience (Husain, 2024, Krammer, 2023).

With GAI integration, some student engagement tasks can be offloaded from educator. For example, ChatGPT assists in summarizing key theories and formulating discussion questions tailored for student interactions (Bhaskar & Gupta, 2024). Educators also use GAI-powered tools, backed by massive up-to-date data, to generate real-world cases and business scenarios aligned with industry trend to encourage students' in-class participation (Guha, Grewal and Atlas, 2023). When students ask about basic conceptual questions, GAI tools can assist by offering fast and clear clarifications (Dwivedi et al., 2022; Gupta et al., 2024). To increase in-class interactivity, GAI tools can be used for brainstorming, generating case studies, quizzes, role-play, and gamified activities (even the educator may not be familiar with such approach) (Bhaskar and Gupta, 2024). In marketing, for example, ChatGPT can rapidly generate flashcards or outline concepts to support presentation decks (Guha, Grewal and Atlas, 2023).

4.2.4 Assessments

Designing and grading assessments is another major teaching work task for business educators (Xu and Babaian, 2021). GAI can assist to create different types of assignments. According to Bhaskar and Gupta (2024), ChatGPT supports business educators by drafting and creating quizzes, multiple-choice questions, and research essays. Based on human expertise and experiences, educators then amend these GAI-generated drafts by requiring students to apply specific theories, datasets, or real-world cases taught in the course, reducing the possibility of students using GAI tools during assessments and ensuring originality and authenticity in their responses (Perkins et al., 2023; Van Slyke, Johnson and Sarabadani, 2023; Flodén, 2024).

GAI also plays a transformative role in grading and feedback. According to Flodén, 2024, grading is often boring and time-consuming, especially in large business courses, as educators evaluate numerous essays/proposal or financial analyses. Thus, GAI-assisted grading may lessen these workloads. Besides, educators should have grading rubric or marking scheme they developed beforehand (Thanh et al., 2023), and they look for keywords in students' answers to set up detailed model answers (Flodén, 2024). GAI tools can be trained by using these rubrics to evaluate keywords, concepts and arguments according to educator's prompts. As backed by the powerful LLMs, GAI tools also enhance educators' grading ability in assessing writing sophistication and quality, and ensure proper use of academic references (Krammer, 2023).

Previous studies suggested GAI grading is comparable to human assessment in certain disciplines. For instance, ChatGPT's performance in grading six medical students' answers to 10 case-style questions, is similar to a human grader (Morjaria et al., 2024), Similar findings also concluded in business education (Flodén, 2024). Besides, GAI also have potential to enhance feedback. According to Krammer (2023), GAI can provide better feedback for assessment, improving epistemic virtues such as open-mindedness and intellectual humility. Moreover, GAI-augmented educators can speed up grading and offering feedback by leveraging GAI's ability in offering summaries and highlighting strengths and weaknesses in students' answers (Husain, 2024). Additionally, GAI assists educators in generating solutions for short-answer questions (Van Slyke, Johnson and Sarabadani, 2023) and offers personalized feedback and recommendations to students (Gupta et al., 2024).

Table 3: Content analysis - 15 selected articles showing the 4 major teaching work processes of human-GAI collaboration

Study	Curriculum Design	Pedagogical Methods	Student Engagement and Interaction	Assessments
Bhaskar and Gupta (2024)	X	X	X	X
Cambra-Fierro et al. (2024)		X	X	
Clegg and Sarkar (2024)	X	X	X	X
Darnell and Gopalkrishnan (2024)	X	X	X	
Fischer and Dobbins (2023)	X	X		
Flodén (2024)				X
Guha, Grewal and Atlas, 2023	X	X	X	X
Gupta et al. (2024)	X	X	X	X
Husain (2024)		X	X	X
Krammer (2023)	X		X	X
Lim et al. (2023)			X	X
Perkins et al. (2023)				X
Ratten and Jones (2023)			X	X
Thanh et al. (2023)				X
Van Slyke, Johnson and Sarabadani, 2023	X	X	X	X

5. Concluding Discussion – Change of Roles for Human Business Educators

This study reveals how business educators use or collaborate with GAI tools in the four major teaching work processes: Design curriculum, set-up pedagogical methods, engage and interact with students, and develop assessments. As a result of the GAI advancements in curriculum design, educators have shifted from sole content creators with expertized knowledge to quality controller in GAI-enhanced teaching environments, as they now oversee GAI-generated materials to ensure contextual and quality relevance. They can view GAI tools as assistants—or even interns—by validating curated content, then adapting it to meet specific student needs and designing experiential learning activities that GAI cannot fully replicate (Darnell and Gopalkrishnan, 2024; Guha, Grewal and Atlas, 2023). This “teamwork” between educators and GAI tools enables educators to devote more time to higher-order pedagogical tasks, such as mentoring and enhancing interactive classroom experiences. If GAI tools handle the groundwork of structuring and organizing content, educators are then augmented to bring human insight into fostering students' critical thinking (Ratten and Jones, 2023). As generative AI continues to evolve, its role in curriculum design will likely expand, offering new opportunities for faculty to innovate and refine the educational experience.

Deciding the appropriate teaching methodology is important as this influence students' engagement with course content, application of theoretical knowledge to real-world scenarios, and critical thinking skills. Thus, business educators must carefully plan and implement pedagogical methods after designing the curriculum (Xu and Babaian, 2021). To enhance students' critical thinking skills, educators offer students with in-class exercises involving challenging GAI-generated content, students will be simulated by finding logical inaccuracies and fallacies for GAI-generated contents and trying to make them better (Guha, Grewal and Atlas, 2023; Husain, 2024). By helping students to assess information validity and navigate complex business challenges through these types of exercises, educators improve students' reasoning skills (Gupta et al., 2024). Gupta et al. (2024) believes that GAI-augmented business educators are capable to upskill and update instructional practices. Their role is now a scenario facilitator of GAI-enhanced education experiences and focus more on empowering students to apply knowledge in practical settings, instead of simply information delivery. Students' critical thinking, decision-making and problem-solving skills will be of more focus, and this is essential for future business leaders and professionals in an AI-driven world.

GAI tools also contribute significantly to enhancing student engagement. By automating basic knowledge dissemination, educators gain more time for in-depth discussions and mentoring, improving the learning experience—particularly in larger classes. While GAI tools are useful for engagement, they are not replacements

for human educators. Rather, they serve as augmentation tools, facilitating a restructuring of labour within the teaching process. Human educators remain essential as a strategic mentor for contextualizing knowledge, guiding critical thinking, and ensuring meaningful student interaction (Selwyn, 2019). GAI tools are most effective when handling logistical or lower-order cognitive tasks, such as providing quick definitions or summarizing content. When educators leverage GAI insights to design engaging learning activities, and GAI focuses on repetitive and standardized tasks, this division of labour introduces a potential new paradigm in business education. As experiential learning and problem-solving become increasingly valued in business education (Sugarman, 1987), GAI tools provide a unique opportunity to rethink student engagement beyond traditional lecture formats.

GAI tools also streamlined assessment processes. GAI can analyze student responses, identify features of well-written assignments, and provide clear feedback with personalized recommendations (Karadağ, 2023). In the future, educators could collaborate with GAI to develop customized assessments tailored to diverse student needs, even in large courses. This could significantly enhance students' critical thinking and language skills and personalize the assessment experience in fields such as marketing (Krammer, 2023). However, concerns remain. As noted by Ratten and Jones (2023) and Flodén (2024), biases in GAI datasets can influence grading. For example, ChatGPT may exhibit preferences, such as favoring pro-environmental political orientations, that could skew grading outcomes (Bogina et al., 2021). Bias is especially concerning in controversial subjects or areas with conflicting evidence (Cousins, 2023). Additionally, Lim et al. (2023), Thanh et al. (2023), and Flodén (2024) point out that students who understand how GAI or automated scoring systems work may be able to exploit these tools for higher grades or avoid detection through prompt engineering. Therefore, human becomes "Ethical gatekeeper" as oversight is crucial for fairness and addressing nuances that GAI may overlook (Silvestrone and Rubman, 2024). In short, GAI-assisted educators who design, and grade assessments will have more time in focusing on other aspects of the teaching-learning processes and various administrative tasks (Gupta et al., 2024).

Student use of GAI tools during assessments presents another challenge. Although there are AI-detection tools like Turnitin or GPTZero assist educators in identifying GAI-generated content, Perkins et al. (2023) found there is a discrepancy between AI detection results and educators' ability to interpretation and reporting. Flodén (2024) also mentioned it is not 100% reliable for anti-plagiarism systems to detect GAI-generated texts. Thus, educators can reduce the chance of students' misuse of GAI by designing exam questions connected to specific frameworks, topics, or real-life examples discussed in class (Ratten and Jones, 2023; Thanh et al., 2023). Educators can also run assessment questions through GAI tools to determine if it is easy for students to just rely on GAI tools, or independent thought must still be used. Educators also gain insights on how GAI tools answer exam questions thus equip themselves with relevant knowledge to identify GAI-generated responses (Van Slyke, Johnson and Sarabadani, 2023). If institutions can implement proactive measures like GAI literacy training to academic staff, as well as ethical AI use policies to students, it will help with the current challenges in assessments (Perkins et al., 2023).

This study explored the potential of collaboration between business educators and GAI in the four major teaching work processes mentioned previously. Our findings reveal the role of business educators has evolved alongside GAI technologies, like ChatGPT (Table 4). Business and management educators must collaborate with GAI tools which balance academic integrity and advancement in technology. However, Challenges remain even GAI offers definite benefits. For instance, bias in AI-generated content, students' unethical misuse of GAI tools, and unstable performance of AI-detection tools. These highlight the need for cautious and informed GAI implementation in HEIs, also the necessity for faculty training in AI literacy and ethical guidelines.

Table 4: The division of labour between business educators and GAI in handling teaching work processes

Collaboration in	GAI Role	Human Role
Curriculum Design	Content Generator	Quality Controller
Pedagogical Methods	In-class Simulator	Scenerio Faciliator
Student Engagement and Interaction	Lower-order Task Automator	Strategic Mentor
Assessments	Grading and Feedback Streamliner	Ethical Gatekeeper

This study outlines how GAI reshapes AWP and contributes to the discourse of digital transformation and human-GAI collaboration in higher education. According to section 3.1, future research should focus on discipline-specific study, empirical evaluations of teaching work processes at tool-specific level, and in different cultural context. To have a more comprehensive understanding of GAI's impact on academia, more research should also be conducted on researching work processes and institutional administration. GAI is revolutionizing business education. As per Krammer (2023), seeking AI-proof contents is impossible and faculty needs to accept the augmentation by GAI tools within HEIs. It is the responsibility of educators to ensure GAI enhances learning while maintaining educational rigor. Thus, leveraging GAI effectively to support development of students and pedagogical innovations should be in priority for business educators.

Ethics declaration: This paper does not require ethical clearance.

Acknowledgment of GAI Assistance: This paper utilized ChatGPT 4o, a GAI language model developed by OpenAI, to assist in generating ideas, extracting and analyzing data, and improving language and grammar. The content generated was reviewed and edited by the author to ensure accuracy and adherence to academic standards. The author takes full responsibility for the final content of this paper.

References

- Adeshola, I. and Adepoju, A.P. (2023) "The opportunities and challenges of ChatGPT in education," *Interactive Learning Environments*, pp. 1–14. <https://doi.org/10.1080/10494820.2023.2253858>.
- Bahroun, Z. et al. (2023) "Transforming Education: A Comprehensive Review of Generative Artificial Intelligence in Educational Settings through Bibliometric and Content Analysis," *Sustainability*, 15(17), p. 12983. <https://doi.org/10.3390/su151712983>.
- Baidoo-Anu, D. and Ansah, L.O. (2023) "Education in the Era of Generative Artificial Intelligence (AI): Understanding the potential benefits of ChatGPT in promoting teaching and learning," *SSRN Electronic Journal* [Preprint]. <https://doi.org/10.2139/ssrn.4337484>.
- Baig, M.I. and Yadegaridehkordi, E. (2024) "ChatGPT in the higher education: A systematic literature review and research challenges," *International Journal of Educational Research*, 127, p. 102411. <https://doi.org/10.1016/j.ijer.2024.102411>.
- Bhaskar, P. and Gupta, P.K.K. (2024) "Delving into educators' perspectives on ChatGPT in management education: a qualitative exploration," *Interactive Technology and Smart Education*, 21(4), pp. 645–671. <https://doi.org/10.1108/itse-08-2023-0169>.
- Bogina, V. et al. (2021) "Educating software and AI stakeholders about algorithmic fairness, accountability, transparency and ethics," *International Journal of Artificial Intelligence in Education*, 32(3), pp. 808–833. <https://doi.org/10.1007/s40593-021-00248-0>.
- Bozkurt, A. (2023) "Generative artificial intelligence (AI) powered conversational educational agents: The inevitable paradigm shift," *Zenodo* (CERN European Organization for Nuclear Research) [Preprint]. <https://doi.org/10.5281/zenodo.7716416>.
- Cambra-Fierro, J.J. et al. (2024) "ChatGPT adoption and its influence on faculty well-being: An empirical research in higher education," *Education and Information Technologies* [Preprint]. <https://doi.org/10.1007/s10639-024-12871-0>.
- Campbell, F. et al. (2023) "Mapping reviews, scoping reviews, and evidence and gap maps (EGMs): the same but different— the "Big Picture" review family," *Systematic Reviews*, 12(1). <https://doi.org/10.1186/s13643-023-02178-5>.
- Chu, H.-C. et al. (2022) "Roles and research trends of artificial intelligence in higher education: A systematic review of the top 50 most-cited articles," *ajet.org.au* [Preprint]. <https://doi.org/10.14742/ajet.7526>.
- Chui, M. et al. (2023) The state of AI in 2023: Generative AI's breakout year. <https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-in-2023-generative-ais-breakout-year>.
- Clark, B. (2023) "A generative AI teaching exercise for marketing classes," *Medium*, 14 June. <https://bruceclarkprof.medium.com/a-generative-ai-teaching-exercise-for-marketing-classes-6fb09af0a565>.
- Clegg, S. and Sarkar, S. (2024) "Artificial intelligence and management education: A conceptualization of human-machine interaction," *The International Journal of Management Education*, 22(3), p. 101007. <https://doi.org/10.1016/j.ijme.2024.101007>.
- Cousins, B. (2023) Uncovering the different types of ChatGPT bias. <https://www.forbes.com/councils/forbestechcouncil/2023/03/31/uncovering-the-different-types-of-chatgpt-bias/> (Accessed: March 20, 2025).
- Creswell, J.W. (2001) *Educational research: planning, conducting, and evaluating quantitative and qualitative research*. <http://ci.nii.ac.jp/ncid/BB26859968>.
- Crompton, H. and Burke, D. (2023) 'Artificial intelligence in higher education: the state of the field,' *International Journal of Educational Technology in Higher Education*, 20(1). <https://doi.org/10.1186/s41239-023-00392-8>.

- Damar, M. (2022) "What the literature on medicine, nursing, public health, midwifery, and dentistry reveals: An overview of the rapidly approaching metaverse," *Journal of Metaverse*, 2(2), pp. 62–70. <https://doi.org/10.57019/jmv.1132962>.
- Darnell, J.A. and Gopalkrishnan, S. (2024) "Entrepreneurship teaching exercises: integrating generative AI," *Discover Education*, 3(1). <https://doi.org/10.1007/s44217-024-00261-0>.
- Davenport, T. H., and Ronanki, R. (2018) "Artificial Intelligence for the Real World," *Harvard Business Review*, 96(1), 108–116.
- De Hei, M.S.A. et al. (2014) "Collaborative learning in higher education: lecturers' practices and beliefs," *Research Papers in Education*, 30(2), pp. 232–247. <https://doi.org/10.1080/02671522.2014.908407>.
- Dwivedi, Y.K. et al. (2019) "Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy," *International Journal of Information Management*, 57, p. 101994. <https://doi.org/10.1016/j.ijinfomgt.2019.08.002>.
- Dwivedi, Y.K. et al. (2022) "Metaverse beyond the hype: Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy," *International Journal of Information Management*, 66, p. 102542. <https://doi.org/10.1016/j.ijinfomgt.2022.102542>.
- Dwivedi, Y.K. et al. (2023) "Opinion Paper: "So what if ChatGPT wrote it?" Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy," *International Journal of Information Management*, 71, p. 102642. <https://doi.org/10.1016/j.ijinfomgt.2023.102642>.
- Fischer, I. and Dobbins, K. (2023) "Is it Worth it? How Paradoxical Tensions of Identity Shape the Readiness of Management Educators to Embrace Transformative Technologies in their Teaching," *Organizational Behavior Teaching Review*, 48(4), pp. 829–848. <https://doi.org/10.1177/10525629231201843>.
- Flodén, J. (2024) "Grading exams using large language models: A comparison between human and AI grading of exams in higher education using ChatGPT," *British Educational Research Journal* [Preprint]. <https://doi.org/10.1002/berj.4069>.
- Freeman, S. et al. (2014) "Active learning increases student performance in science, engineering, and mathematics," *Proceedings of the National Academy of Sciences*, 111(23), pp. 8410–8415. <https://doi.org/10.1073/pnas.1319030111>.
- Guha, A., Grewal, D. and Atlas, S. (2023) "Generative AI and Marketing Education: What the future holds," *Journal of Marketing Education*, 46(1), pp. 6–17. <https://doi.org/10.1177/02734753231215436>.
- Gupta, P. et al. (2024) "Integrating generative AI in management education: A mixed-methods study using social construction of technology theory," *The International Journal of Management Education*, 22(3), p. 101017. <https://doi.org/10.1016/j.ijme.2024.101017>.
- Husain, A. (2024) "Potentials of ChatGPT in Computer Programming: Insights from Programming Instructors," *Journal of Information Technology Education Research*, 23, p. 002. <https://doi.org/10.28945/5240>.
- Karadağ, N. (2023) "The impact of artificial intelligence on online assessment: A preliminary review," *Journal of Educational Technology and Online Learning*, 6(4), pp. 822–837. <https://doi.org/10.31681/jetol.1351548>.
- Kolbjørnsrud, V. (2023) "Designing the Intelligent Organization: Six Principles for Human-AI Collaboration," *California Management Review*, 66(2), pp. 44–64. <https://doi.org/10.1177/00081256231211020>.
- Korinek, A. (2023) "Generative AI for Economic Research: Use cases and implications for economists," *Journal of Economic Literature*, 61(4), pp. 1281–1317. <https://doi.org/10.1257/jel.20231736>.
- Krammer, S.M. (2023) "Is there a glitch in the matrix? Artificial intelligence and management education," *Management Learning* [Preprint]. <https://doi.org/10.1177/13505076231217667>.
- Krippendorff, K. (2019) Content Analysis: an Introduction to its methodology. <https://doi.org/10.4135/9781071878781>.
- Li, D. et al. (2021) *Is China emerging as the global leader in AI?* <https://hbr.org/2021/02/is-china-emerging-as-the-global-leader-in-ai> (Accessed: March 20, 2025).
- Lim, W.M. et al. (2023) "Generative AI and the future of education: Ragnarök or reformation? A paradoxical perspective from management educators," *The International Journal of Management Education*, 21(2), p. 100790. <https://doi.org/10.1016/j.ijme.2023.100790>.
- Morjaria, L. et al. (2024) "Examining the efficacy of CHATGPT in marking Short-Answer Assessments in an undergraduate medical program," *International Medical Education*, 3(1), pp. 32–43. <https://doi.org/10.3390/ime3010004>.
- Munn, Z. et al. (2022) "What are scoping reviews? Providing a formal definition of scoping reviews as a type of evidence synthesis," *JB I Evidence Synthesis*, 20(4), pp. 950–952. <https://doi.org/10.11124/jbies-21-00483>.
- Perkins, M. et al. (2023) "Detection of GPT-4 generated text in higher Educ <https://doi.org/10.1007/s10805-023-09492-6> ation: combining academic judgement and software to identify generative AI tool misuse," *Journal of Academic Ethics*, 22(1), pp. 89–113.
- Peters, M.D.J. et al. (2021) "Updated methodological guidance for the conduct of scoping reviews," *JB I Evidence Implementation*, 19(1), pp. 3–10. <https://doi.org/10.1097/xeb.0000000000000277>.
- Radford, A. et al. (2019) Language models are unsupervised multitask learners. https://cdn.openai.com/better-language-models/language_models_are_unsupervised_multitask_learners.pdf (Accessed: March 22, 2025).
- Ratten, V. and Jones, P. (2023) "Generative artificial intelligence (ChatGPT): Implications for management educators," *The International Journal of Management Education*, 21(3), p. 100857. <https://doi.org/10.1016/j.ijme.2023.100857>.
- Saraev, P. (2024) "Generative language models in higher education," 4th International Conference on Technology Enhanced Learning in Higher Education (TELE), pp. 23–25. <https://doi.org/10.1109/tele62556.2024.10605657>.

- Schei, O.M., Møgelvang, A. and Ludvigsen, K. (2024) "Perceptions and Use of AI Chatbots among Students in Higher Education: A Scoping Review of Empirical Studies," *Education Sciences*, 14(8), p. 922. <https://doi.org/10.3390/educsci14080922>.
- Selwyn, N. (2019) Should robots replace teachers?: AI and the future of education. <https://eric.ed.gov/?id=ED599636>.
- Shanto, S.S., Ahmed, Z. and Jony, A.I. (2023) "PAIGE: A generative AI-based framework for promoting assignment integrity in higher education," *STEM Education*, 3(4), pp. 288–305. <https://doi.org/10.3934/steme.2023018>.
- Shimek, C. (2023) UM Research: AI tests into Top 1% for original creative thinking. <https://www.umt.edu/news/2023/07/070523test.php> (Accessed: March 19, 2025).
- Silvestrone, S. and Rubman, J. (2024) AI-Assisted Grading: A Magic Wand or a Pandora's Box? <https://mitsloanedtech.mit.edu/2024/05/09/ai-assisted-grading-a-magic-wand-or-a-pandoras-box/> (Accessed: March 21, 2025).
- Strzelecki, A. (2023) "To use or not to use ChatGPT in higher education? A study of students' acceptance and use of technology," *Interactive Learning Environments*, 32(9), pp. 5142–5155. <https://doi.org/10.1080/10494820.2023.2209881>.
- Sugarman, L. (1987) "Experiential learning: Experience as the source of learning and development, David A. Kolb, Prentice-Hall International, Hemel Hempstead, Herts., 1984. No. of pages: xiii + 256," *Journal of Organizational Behavior*, 8(4), pp. 359–360. <https://doi.org/10.1002/job.4030080408>.
- Thanh, B.N. et al. (2023) "Race with the machines: Assessing the capability of generative AI in solving authentic assessments," *Australasian Journal of Educational Technology*, 39(5), pp. 59–81. <https://doi.org/10.14742/ajet.8902>.
- Tricco, A.C. et al. (2018) "PRISMA Extension for Scoping Reviews (PRISMA-SCR): Checklist and explanation," *Annals of Internal Medicine*, 169(7), pp. 467–473. <https://doi.org/10.7326/m18-0850>.
- Van Slyke, C., Johnson, R. and Sarabadani, J. (2023) "Generative Artificial intelligence in Information Systems Education: Challenges, consequences, and responses," *Communications of the Association for Information Systems*, 53(1), pp. 1–21. <https://doi.org/10.17705/1cais.05301>.
- Vecchiarini, M. and Somià, T. (2023) "Redefining entrepreneurship education in the age of artificial intelligence: An explorative analysis," *The International Journal of Management Education*, 21(3), p. 100879. <https://doi.org/10.1016/j.ijme.2023.100879>.
- Xu, J.J. and Babaian, T. (2021) "Artificial intelligence in business curriculum: The pedagogy and learning outcomes," *The International Journal of Management Education*, 19(3), p. 100550. <https://doi.org/10.1016/j.ijme.2021.100550>.
- Zhou, T. and Zhang, C. (2024) "Examining generative AI user addiction from a C-A-C perspective," *Technology in Society*, 78, p. 102653. <https://doi.org/10.1016/j.techsoc.2024.102653>.

Framing Data Governance Amid AI Advancements in a Public University in South Africa

Garreth van Leeve and Sue Petratos

IT Governance and Management, Engineering and the Built Environment, Nelson Mandela University, Gqeberha, South Africa

garreth@mandela.ac.za

sue@mandela.ac.za

Abstract: Data governance (DG) has emerged as a critical domain within information technology, especially in light of growing data volumes, regulatory pressures, and institutional performance demands. In higher education institutions (HEIs), the shift toward data-driven decision-making is intensifying amid increasing accountability, financial constraints, and the rapid digital transformation of administrative and academic functions. DG encompasses the policies, processes, roles, and technologies that inter-alia ensures data quality, consistency, compliance, oversight and security across the institutional landscape. However, many universities continue to face challenges with fragmented data systems, inconsistent data definitions, data silos, and underutilised data assets—issues that inhibit institutional effectiveness and strategic planning. This study proposes a structured Data Governance Framework (DGF) tailored to the unique context of South African universities. Drawing on a mixed-methods approach anchored in design science research methodology, data was collected through a DG maturity assessment survey and qualitative focus group sessions with key university stakeholders. The findings informed the design of a framework for the governance of data which is sensitive to the specific context while addressing governance gaps, roles and responsibilities, quality management, continuous improvement, change management, standardisation and regulatory alignment. Crucially, this study situates data governance within the emergent challenges and opportunities presented by Artificial Intelligence (AI) and Large Language Models (LLMs). As HEIs begin to adopt AI-powered tools for administration, research, and teaching, the need for robust DG becomes more urgent. The proposed framework incorporates AI-readiness and ethical oversight mechanisms to ensure trustworthy data handling, algorithmic transparency, data privacy, and responsible innovation in an AI-augmented environment. The resulting DGF provides a structured approach for universities to manage and safeguard their data assets, reduce institutional risk, foster data trust, and optimise data value—while aligning governance practices with the ethical imperatives introduced by AI and LLM technologies.

Keywords: Data governance framework, Data governance maturity assessment, Data governance organisational operating model, Data governance program, Data governance in higher education

1. Introduction

The volume of data created worldwide continues to grow exponentially, driven by increased digital transformation, IoT, AI, and edge computing. IDC forecasts that by 2029, the total amount of data created annually will reach hundreds of zettabytes (1 zettabyte=100,000,000,000 gigabytes) (IDC, 2025). The increasing volume of data raises concerns regarding DG, which seeks to ensure its integrity and accessibility (Soares, 2010).

Data breaches affecting prominent organisations such as eBay, LinkedIn, Yahoo, and Facebook are increasingly common. These encompasses sensitive data, including numbers for credit cards, email addresses, personal photographs, and passwords, which have been rendered publicly accessible or made available for purchase on the dark web (Swinhoe et al., 2024). In these cases, corporate boards are responsible for guaranteeing the correctness and security of their organisation's data.

Understanding the role of DG is crucial for effective corporate governance, as it enhances data quality, protection, and other vital elements, including data integration from various sources and the amalgamation of diverse systems and applications, such as IoT devices, enterprise resource planning, analytics for data, and large-scale data sets (Cheong & Chang, 2007).

Data assets are not always treated as valuable assets, leading to various problems (Mahanti, 2021). Genuine and trustworthy data are essential, since misleading, or ineffective outputs can result from poor regulation, deficient data availability, erosion in data quality, or a disconnect between data collection and information creation (University of St Andrews, 2025).

In summary, establishing effective DG practices and ensuring the reliability and trustworthiness of data are crucial to overcome these challenges and making informed decisions (Eryurek et al., 2021; Seiner, 2021).

2. Literature Review

2.1 Data Governance (DG)

Panian (2010) provided an extensive definition of DG, characterising it as the amalgamation of processes, policies, standards, organisations, and technologies essential for managing and ensuring the availability, accessibility, quality, consistency, auditability, and security of data within an organisation.

Atlan (2023a) states that universities produce and oversee extensive data, including student records, financial details, research outcomes, and faculty assessments. Effective governance of this data is crucial for preserving its quality and integrity, thereby facilitating informed decision-making, ensuring regulatory compliance, promoting academic excellence, and enhancing operational efficiency. In a context where data serves as a vital resource for planning and strategy, innovation, cooperation, and competition, DG functions as a fundamental component, enabling higher educational institutions to achieve their diverse missions efficiently and responsibly.

In higher education, the evolution of AI data governance and management reflects a growing recognition of ethical considerations, regulatory compliance, and data privacy (Selvaratnam et al., 2024). Current practices emphasize the importance of aligning data privacy policies with the rapid advancements in AI, highlighting the need for comprehensive reforms to protect sensitive information (O'Donnell & Beil, 2024). Furthermore, the establishment of clear governance frameworks is essential for ensuring data accuracy and reliability, which are critical for informed decision-making and quality assurance in educational settings (Contreras et al., 2024).

2.2 Identifying Core Elements From Frameworks for DG

To address the creation of a proposed DGF, two well-known frameworks were selected from literature. These frameworks are briefly outlined with the aim of only identifying and listing the relevant core components that inform the development of the draft proposed framework artifact.

The IBM DG maturity model (IBM, 2007), supported by Soares (2010), aims to ensure data precision, accessibility, dependability, and quality, enabling strategic DG solution implementation. It features eleven categories organized into four interconnected groups: outcomes, facilitators, core disciplines, and supporting disciplines. The list includes risk management and compliance, value creation, organisational structures and awareness, policy, stewardship, data quality management, information lifecycle management, information security and privacy, data architecture, metadata and data classification, audit information, logging, and reporting (IBM, 2007; Soares, 2010).

DAMA-DMBOK 2 was released in 2017 to address significant developments in managing data (DAMA, 2017). Aimed at aiding organisations in enhancing their data-handling processes and in achieving optimal outcomes by providing a holistic and integrated view of the data management process. The framework consists of 11 core data management knowledge areas. These areas include data architecture, and data security, data architecture, data modelling and design, data storage and operations, data security, data integration and interoperability, document and content management, reference and master data, data warehousing and business intelligence, metadata, data quality, with DG as the primary element that integrates them (DAMA, 2017).

This study contends that a list of pertinent elements found in these frameworks relevant to the university governance of data are: 1) risk management, 2) data compliance and regulatory control, 3) data security and data classification, 4) data access, 5) master data management, 6) data warehousing and business intelligence, 7) data governance and data stewardship, 8) data integration and interoperability, 9) metadata management, 10) data quality management.

3. Research Design

3.1 Research Paradigm

Groenewald (2004) defines a paradigm as a framework of thought. Building on this, Österle et al. (2011) explain that the design science research (DSR) paradigm focuses on creating tangible artifacts to solve real-world problems involving multiple stakeholders who contribute to and benefit from the research. Consequently, the DSR paradigm, specifically utilizing the Nelson Mandela University Design Science Framework Methodology (NMU-DSM), was chosen for this study.

3.2 NMU-DSM Approach

According to Delport et al. (2024), NMU-DSM is a novel integrated research methodology created to guide the researcher through the research process. This unique integrated research approach stems from design-oriented information system research and design-based research. The NMU-DSM combines design-oriented and design-based techniques shown in Figure1.

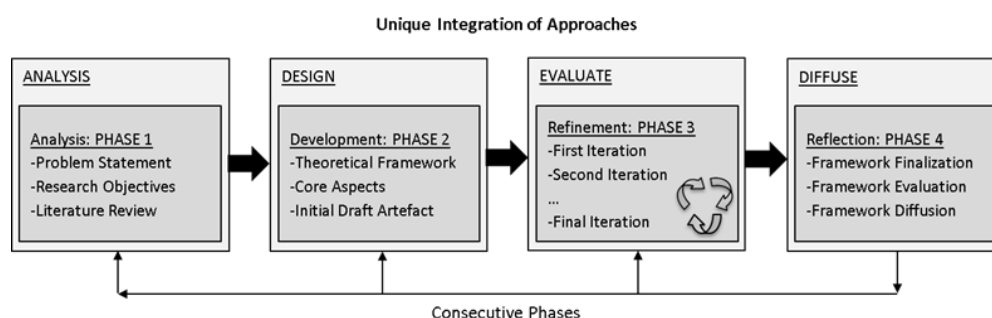


Figure 1: NMU-DSM unique integrated approach process (Delport et al., 2024)

A framework is evaluated against four phases throughout the research process and each phase operates iteratively toward the construction of an artifact. Delport et al. (2024) provide clear instructions for each phase of the NMU-DSM, guaranteeing a thorough grasp of how to navigate and finish each phase. NMU-DSM phases are interrelated, each comprising specific elements that guide the development and refinement of educational interventions. The analysis, design, evaluate, and diffuse phases are guided by principles that prioritise the creation of a framework as the desired output through various elements that must be satisfied during each phase (Delport et al., 2024).

3.3 Research Methodology

3.3.1 Research approach

This study used a mixed-method approach, aligning with the researcher freedom noted by Österle et al. (2011). As Johnson (2012) suggests, this design prioritizes a real-world context by using rigorous quantitative and qualitative techniques to integrate and triangulate data, thereby maximizing strengths and addressing limitations.

3.3.2 Research objectives

The structured research objectives of the study as outlined in Table 1.

Table 1: Research Objectives

Research objective	Research method	Outcome/Output/Deliverable
PO	Literature review	Develop a university DGF.
SO1	Literature review	A list of core elements required to develop a DGF.
SO2	Survey	Current DG maturity level.
PO	Modelling	Draft framework.
	Focus groups	Proposed framework.
PO	Survey	Final framework validity against NMU-DSM core principles.

To address the Primary Objective (PO) a comprehensive examination was conducted of the literature that pertains to the problem under investigation to understand the context and aspects needed to develop a DGF for the university, outputting a framework artifact that will provide DG within the university. The PO was achieved by investigating two sub-objectives (SO), namely SO1 and SO2.

To address SO1, literature on the selected best practice frameworks (IBM and DAMA) were studied and presented in a summary format for evaluation towards identifying common core elements for the development of a proposed DGF for the university.

To address SO2, a survey instrument, as described by Franklin and Osborne (1971), was developed, and distributed to key data protagonist officials. This survey, adapted from Seiner (2021) assessed the university's

DG maturity by gathering inputs from staff with extensive knowledge in data usage, processing, analysis, reporting, and strategic institutional understanding, using a 1-5 rating scale.

Additionally, to address the PO, the research conducted focus group sessions, as described by Longhurst (2003), enabling in-depth discussion from diverse perspectives. These sessions, held with university Directors, Deputy Directors, and Senior Specialists selected for their extensive data and institutional knowledge, informed the preliminary framework draft, building upon literature and maturity assessment survey insights. Modelling (Olivier, 2009) then integrated these insights to develop the proposed framework.

Subsequently, a second, survey adapted from (Delpont, 2017) was administered to the focus group participants to examine the framework's validity. Responses were descriptively analyzed using a Likert-type scale (strongly disagree to strongly agree) and an open-ended question to evaluate the framework's alignment with the NMU-DSM principles of relevance, usability, scalability, and simplicity (Delpont et al., 2024), while identifying areas for improvement.

3.4 Research Methods Positioned in Relation to NMU-DSM Phases

The positioning of all research objectives and methods in relation the NMU-DSM phases of the study (Figure 1) are shown in Table 2.

Table 2: Research methods positioned in NMU-DSM phases, adapted from (Delpont et al., 2024)

Method	Phase of NMU-DSM	Research objective
Literature study	Phase 1, 2 & 3	PO, SO1, SO2
DG maturity survey	Phase 1	SO2
Modelling	Phase 2 & 3	PO
Focus groups	Phase 3	PO
Validity survey	Phase 4	PO

For this study, NMU-DSM's Phase 1 – Analysis leveraged a literature review to define the initial problem (the lack of comprehensive university DGF) and research objectives (PO, SO1, SO2). A list of DG elements was selected from two prominent frameworks in literature to achieve SO1. Concurrently, a literature-derived DG maturity survey was conducted with university stakeholders to understand the issue and assess current maturity, fulfilling SO2.

Building on this, NMU-DSM Phase 2 -Design aims to develop solutions guided by fundamental elements and technological advancements (Herrington et al., 2004). This phase, informed by literature, identifies core theoretical framework principles: simplicity, relevance, scalability, and usability. Also in Phase 2, a theoretical framework for an effective DGF is established using literature. This foundational understanding is crucial, as existing literature provides essential criteria for DGF development (Delpont et al., 2024). Mahanti (2021) succinctly describes these fundamental criteria as the intersection of people, process, and technology (PPT), placing DG at its core. DG thus relies on these three core criteria: people, who are responsible for adherence to data management practices (Mahanti, 2021); process, involving procedures to manage security and compliance, and to monitor data across IT systems (Griffin, 2005); and technology, which provides the tools for automation, utilized by people and processes (Mahanti, 2021). Phase 2 builds upon the knowledge gained from the previous phase and identifies essential principles and criteria that constitute an effective DGF. Subsequently, an initial framework was developed based on the identified core elements, principles and criteria using modelling (Olivier, 2009). The outcome of this phase is the development of an initial draft of the DGF specifically designed for the university. Next, the modelled framework was presented to stakeholders to gather their input.

During Phase 3 - Refinement, a focus group approach was employed to assess the acceptability of the draft DGF. The feedback obtained from the focus groups was carefully analysed, and necessary adjustments were made to the draft framework, based on their input, and modelled further. This process was iterated until the framework was approved and deemed to be the final DGF (Olivier, 2009).

Last, Phase 4 - Reflection involved evaluating the final DGF using the core aspects identified in Phase 2 which were achieved using a final evaluation survey directed at the focus group participants on a scale from strongly agree to strongly disagree. In this study, PO links to NMU-DSM Phases 1, 2, 3 and 4.

3.5 Data Collection Results

3.5.1 Maturity assessment

A DG maturity evaluation assesses an organization's current data maturity to guide future steps (Varshney, 2023). In section 2.2 the key DG elements identified were incorporated into the maturity survey from the two selected DGF's assessed by different staff groupings according to job profile. These staff are from a few groupings, including academics (12.5%), executive/admin./management professionals (33.3%), specialised/support professionals (33.3%), technical (4.2%) and non-professional administration (16.7%). Seiner (2021) recommended that the responses be aggregated for each element, and the average of those separate element scores should finally contribute to an overall maturity assessment score as shown in Figure 2 below.

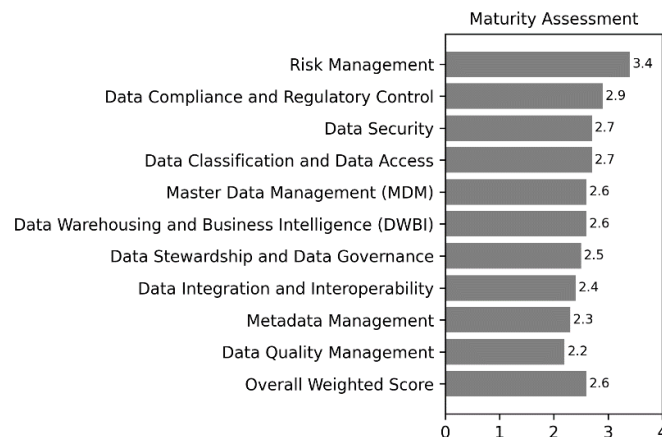


Figure 2: DG maturity assessment results

With the current DG maturity levels known, pinpointing areas for intervention becomes clear. Seiner (2021) recommends identifying relevant best practices for problematic data disciplines, then evaluating leverageable aspects, opportunities, and associated risks and benefits to address the maturity gap. This knowledge subsequently informs the development of a program and communications plan to improve DG in those areas, ultimately leading to the establishment of a DGF.

3.5.2 Focus group

A prepared first draft of the framework was presented to the focus group participant stakeholders and their comments were gathered after discussions. The framework structure and design were accepted, but stakeholders suggested improvements. These inputs from the participants were incorporated into the next and final modelling iteration of the framework artifact (Olivier, 2009).

3.5.3 Modelling

Further modelling was undertaken to enact improvement, including the criteria and core elements identified, considering the maturity assessment results and gap, and further literature study, as per Seiner's (2021) recommendations on current best practice leverageable components and opportunities in the problem data discipline areas to meet stakeholder's expectations (Österle, et al., 2011).

3.5.4 Evaluation survey

Upon completion of the survey, the responses were gathered for subsequent analysis. Results for framework principles adherence showed high agreement: for scalability, 42.9% strongly concurred and 57.1% agreed; for usability, 28.6% strongly concurred and 71.4% agreed; for relevancy, 85.7% highly concurred and 14.3% agreed; and for simplicity, 28.6% strongly agreed and 71.4% agreed. There were no responses for disagree or strongly disagree from participants. The analysis results demonstrate that the DGF artifact aligns with the all NMU-DSM principles and was thus accepted to be valid (Delpont et al., 2024).

4. Proposed Final Framework Artifact

4.1 Final Framework

The phases of the NMU-DSM, assisted in formulating the final DGF for the institution. To achieve effective DG, the university should address the problem and gap identified in Phase 1 in the various data disciplines, and other components of the DG model, as shown in Figure 3, when conducting data management and related activities. The identified fundamental criterion and data disciplines are contextualised further in more detail in the subsections that follow with some of these data disciplines areas grouped under an overarching element to resolve the problem at hand. The final proposed framework for DG, as shown in Figure 3 evaluated and accepted in Phase 4 by stakeholders.

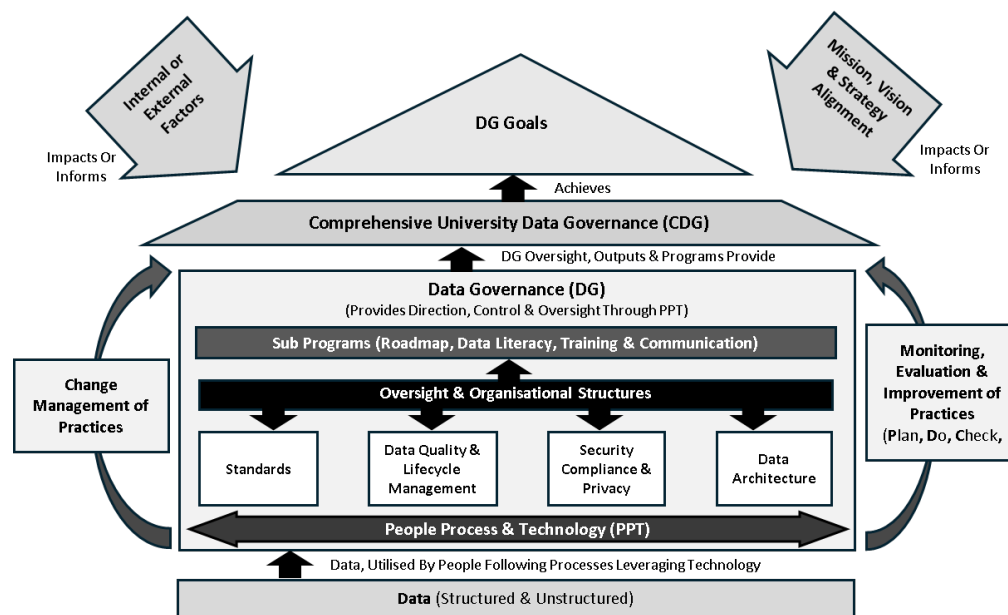


Figure 3: Final DGF model after refinement

4.2 DG Drivers and Goals

According to Panian (2010), DG aims to: ensure data meets business needs; protect and manage data as a valued enterprise asset; and lower data management costs. Corresponding drivers include growing revenue through enhanced customer understanding; lowering costs by increasing operational efficiency; and ensuring compliance with regulations and internal policies. These drivers collectively facilitate security and privacy compliance, thereby reducing risk and fostering trust in data (Atlan, 2023b).

4.3 Internal and External Impact (Antecedents)

Abraham et al. (2019) defines antecedents as internal and external variables that predict DG adoption. External factors include legal, regulatory, security, and data retention considerations, while internal university antecedents encompass strategic, institutional, systemic, and cultural elements.

4.4 Mission, Vision, and Strategy Alignment

Good DG can only be meaningful when it aligns with the institutional goals and values in a sustainable manner (Jim & Chang, 2018). Powers (2019) asserts that the development of a mature data strategy is essential as it facilitates effective data management and utilisation, resulting in enhanced decision-making, increased operational efficiency, risk reduction, and value generation.

4.5 DG Program

Seiner (2021) recommends delivering an actionable work plan or program. Ladley (2019) emphasises the design, implementation, and upkeep of a comprehensive DG program and presents an iterative technique with eight steps. Starting with scope and initiation, followed by establishing a vision and organizational value alignment. The process then moves to functional design, the creation of an organizational structure with identified data stewardship, and the development of an implementation roadmap. Concluding with program rollout and maintenance.

4.6 Sub-Programs (Roadmap, Data Literacy, Training and Communication)

Soares (2010) outlines three sub-tasks for a DG roadmap: summarizing maturity evaluation results, identifying essential staff, and detailing processes and technology to address maturity gaps. This process begins with a loosely organized DG working group of mid-managers from functional areas and IT, aiming to establish executive alignment, define the DG body, assign data stewards, pilot MDM, and set system-of-record characteristics and key metrics. Data literacy is the ability to understand, analyze, communicate, and apply data for informed decisions and outcomes. To foster DG, a key objective is continually enhancing the university community's data literacy through training initiatives (University of Virginia, 2025). Designing, building, and implementing a communication plan involves selecting a qualified communications leader and team, formulating a strategy, securing funding, and executing a mutually agreed-upon project plan (Reichental, 2022).

4.7 Organisation (Operating Model)

Arguably the most critical issue for universities is organizational structure design. An effective structure ensures appropriate personnel involvement in decision-making, clear accountability for data assets, and consistent application of governance policies (Knight, 2023; Panian, 2010).

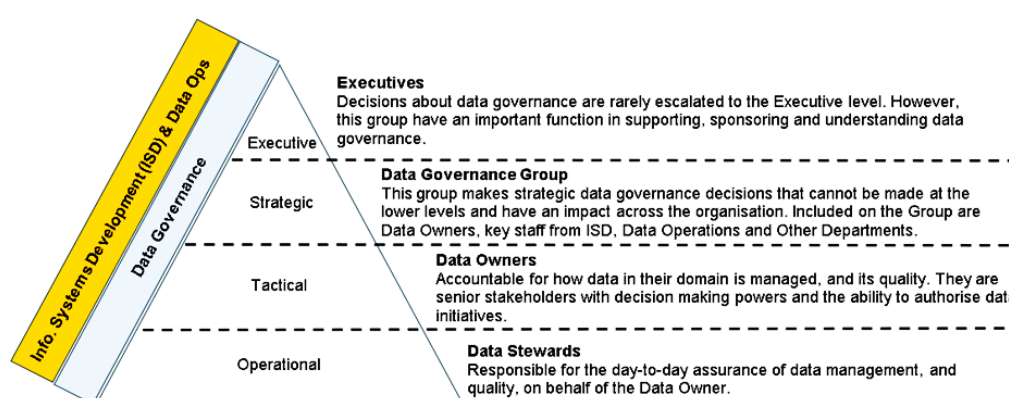


Figure 4: DG structure and roles adapted from (Knight, 2023)

DG roles and responsibilities operate at four levels, namely executive, strategic, tactical, and operational, provided that appropriate support is in place. Each grouping within this operating model of roles and responsibilities fulfils a vital function; however, institutions may modify the specifics to align with their requirements (Knight, 2023), shown in Figure 4.

4.8 Standards (Policies, Best Practice and Technology)

Data standards define how the organisation should structure, format, and present data. These standards improve system and application consistency, interoperability, and data integration. They can include, inter alia, naming conventions, classification schemes, meta and master data management standards to aid in preventing duplication and inconsistencies (Loshin, 2010). DG policies tell institutions what to do, why, and who is responsible (Batchelder, 2024). Atlan (2023a) and Varshney (2023) list data classification, access and authorisation, privacy, retention and deletion, quality, security, ethics, responsible use policies, inter-alia, as essential DG policies for higher education institutions. Many best practice guidelines exist today for DG which can be leveraged to guide the DG implementation process (DAMA, 2017) that will compliment this hybrid framework for the university. The technological elements of DG can include, inter alia, data dictionaries, meta and master data tools, data lineage, data catalog and data discovery to create a “single source of truth” across the university (Loshin, 2010).

4.9 Data Lifecycle Management

Involves defining, producing, retaining, and deleting data (Al Hassan et al., 2019). Data lifecycle management is accomplished by implementing a data lifecycle policy that stakeholders (stewards, proprietors, custodians, users, etc.) must adhere to in their daily data consumption and processing tasks.

4.10 Data Quality Management

Primarily entails the improvement of data quality measures, such as correctness, timeliness, credibility, completeness, and consistency (Microsoft, 2024). Data stewards serve as the guardians of data quality,

consistently overseeing the condition of data within the institution. In summary, data profiling involves knowing the data; data cleansing pertains to rectifying it; and data monitoring focuses on sustaining it (Lee, 2024).

4.11 Data Security

Often performed by data stewards who help secure an institution's data and thought of as a set of mechanisms to prevent and block unauthorised access (Eryurek et al., 2021). Data classification is the method of systematically arranging data into coherent categories that facilitate retrieval, sorting, and identification for subsequent utilisation (Lee, 2024). Data access is often managed using role-based access control (RBAC), which grants access based on a user's institutions role, but access control lists (ACL) can provide more granular control than RBAC (IBM, 2024).

4.12 Data Risk Management

Data risk management encompasses the identification, assessment, and mitigation of risks related to data. DG risks can include data breaches, data loss, and penalties for non-compliance (Lee, 2024). Including representatives from risk management in DG organisation structures as partners forming part of a larger governance planning team will be of benefit regarding this element (Knight, 2023).

4.13 Data Compliance

Data compliance throughout the data life cycle means following DG and compliance rules. Data regulations must be followed to reduce risks, protect data, avoid legal and financial penalties (Lee, 2024).

4.14 Data Architecture

A complete data architecture outlines people, processes, and technologies employed to govern data over its lifecycle. Data architecture is essential to understanding data, where it is stored, how it is moved between systems, and how it is integrated. Data architecture policies govern data modelling, naming including data extraction, transformation, and loading (ETL) methods (Hopper, 2023). Data integration and DWBI draw on architecture frameworks like the DAMA-DMBOK and the Zachman framework (IBM, n.d.).

4.15 Change Management

Change management necessitates meticulous consideration to guarantee that affected team members comprehend how the alterations introduced by the DG program influence them and their responsibilities. Some institutions typically include a communications process of alerting stakeholders in advance, during, and after an underlying data change (Reichental, 2022).

4.16 Monitoring Evaluation and Improvement

Continuous measurement of DGF performance is essential to implement enhancements or major modifications that ensure program value (Reichental, 2022). The PDCA (Plan, Do, Check, Act) cycle provides a scientific method for proposing, implementing, measuring, and acting on changes to ensure process control and ongoing improvement (Swamidass, 2000).

4.17 People Process and technology

As in any university, data are utilised by people following processes leveraging technology (Mahanti, 2021). In the context of the final framework artifact, these three core components underpin all the abovementioned data disciplines and other elements in the framework.

4.18 Data

At a high level, data can be structured data, which is formatted according to a predefined structure and is organised in a manner suitable for analysis within a database, while unstructured data is maintained in its original format and requires processing for utilisation (Reichental, 2022). In the context of the study, data is the foundation element upon which all the other DG disciplines and elements depend.

5. Conclusion

This study developed a context-specific Data Governance Framework for South African universities. Drawing on maturity assessment findings and best practices, it enhances trust, includes strategy alignment and integrates AI-readiness. Validated against NMU-DSM principles, the framework achieved its objectives. Limitations include single institution focus and absent longitudinal analysis. Future research should explore AI-enabled data governance in higher education.

Ethics declaration: The research adhered to university ethics protocols, obtaining clearance from the Research Ethics Committee (Human) before commencement. No personal information was collected, and all survey participants provided voluntary consent.

AI declaration: AI tools have not been used in this study other than grammatical checking.

References

- Abraham, R., Schneider, J. and vom Brocke, J. (2019) "Data governance: A conceptual framework, structured review, and research agenda", *International Journal of Information Management*, Vol. 49, pp 424–438. Albrecht, B. and Pirani, J. (2009) *Revitalizing data stewardship through risk reduction: Managing sensitive data at the University of Virginia*, EDUCAUSE Centre for Applied Research, Boulder.
- Alhassan, I., Sammon, D. and Daly, M. (2016) "Data governance activities: An analysis of the literature", *Journal of Decision Systems*, Vol. 25, No. sup 1, pp 64–75.
- Atlan. (2023a) "Data governance for higher educational institutions: Benefits, cautionary signs & roadmap", [online], Atlan, <https://atlan.com/data-governance-higher-education-institutions/>.
- Atlan. (2023b) "Data governance vs. data management: What's the difference?", [online], Atlan, <https://atlan.com/data-governance-vs-data-management/>.
- Atlan. (2024) "Data catalog: What it is & how it drives business value", [online], Atlan, <https://atlan.com/data-catalog-what-it-is-how-it-drives-business-value>.
- Batchelder, W. (2024) *Data governance handbook: A practical approach to building trust in data*, Packt Publishing, [No city provided in original].
- Cheong, L. K. and Chang, V. (2007) "Need for data governance: A case study", *ACIS 2007 Proceedings*, pp 999–1008.
- Contreras, A., Cravero Leal, A. and Vergara, A. F. (2024) "Proposal for a Data Governance Framework in Higher Education", *2024 43rd International Conference of the Chilean Computer Science Society (SCCC)*, Temuco, Chile, pp 1–9.
- DAMA. (2017) *DAMA-DMBOK: Data management body of knowledge*, 2nd ed., Technics Publications, Basking Ridge, New Jersey.
- Delpont, P. M. (2017) "A framework for the corporate governance of ICT in local government", [online], Nelson Mandela University, <https://vital.seals.ac.za/vital/access/services/Download/vital:21191/SOURCE1>.
- Delpont, P. M., von Solms, R. and Gerber, M. (2024) "Methodological guidelines for design science research", *Procedia Computer Science*, Vol. 237, pp 195–203.
- Eryurek, E., Gilad, U., Valliappa, L., Kibunguchy, A. and Ashdown, J. (2021) *Data governance: The definitive guide: People, processes, and tools to operationalize data trustworthiness*, O'Reilly Media, Inc., Sebastopol. Franklin, B. and Osborne, H. (1971) *Research methods: Issues and insights*, Wadsworth Publishing, Belmont. Griffin, J. (2005, August) "Data governance: A strategy for success", *DM Review*, Vol. 15, No. 8, pp 15, 70. Groenewald, T. (2004) "A phenomenological research design illustrated", *International Journal of Qualitative Methods*, Vol. 3, No. 1, pp 42–55.
- Herrington, J., McKenney, S., Reeves, T. C. and Oliver, R. (2007) "Design-based research and doctoral students: Guidelines for preparing a dissertation proposal", Paper read at *World Conference on Educational Multimedia, Hypermedia and Telecommunications 2007*, pp 4089–4097.
- Hopper, M. A. (2023) *Practitioner's guide to operationalizing data governance*, Wiley, Hoboken.
- IBM. (2007) "The IBM Data Governance Council Maturity Model: Building a roadmap for effective data governance", [online], IBM, <https://public.dhe.ibm.com/systems/europe/za/agenda3.pdf>.
- IBM. (2024, August 20) "What is role-based access control (RBAC)?", [online], IBM, <https://www.ibm.com/think/topics/rbac>.
- IBM. (n.d.) "What is a data architecture?", [online], IBM, <https://www.ibm.com/think/topics/data-architecture>.
- IDC. (2025, April) *Worldwide IDC Global DataSphere Forecast Update, 2025–2029: Regional Analysis*.
- Johnson, S. L. (2012) "Impact, growth, capacity-building of mixed-methods research in the health sciences", *American Journal of Pharmaceutical Education*, Vol. 83, No. 2, pp 136–139.
- Knight, M. (2023, May 31) "Data governance roles and responsibilities", [online], Dataversity, <https://www.dataversity.net/data-governance-roles-and-responsibilities/>.
- Ladley, J. (2019) *Data governance: How to design, deploy, and sustain an effective data governance program*, 2nd ed., Elsevier, London.
- Lee, P. S. (2024) *Data stewardship in action*, Packt Publishing.
- Loshin, D. (2013) "Data governance for master data management and beyond", [online], Academia.edu, https://www.academia.edu/27946987/Data_Governance_for_Master_Data_Management_and_Beyond. Longhurst, R. (2003) "Semi-structured interviews and focus groups", in Clifford, N. and Valentine, G. (eds.) *Key methods in geography*, Sage, London, pp 117–132.
- Mahanti, R. (2021) *Data governance and data management: Contextualizing data governance drivers, technologies, and tools*, Springer, Singapore.
- Microsoft. (2024) "What is data governance?", [online], Microsoft, <https://azure.microsoft.com/en-us/resources/cloud-computing-dictionary/what-is-a-data-governance>.
- O'Donnell, P. J. and Beil, C. (2024) "Ensuring data privacy in AI/ML implementation", *New Directions for Higher Education*, Vol. 207, pp 63–78.

- Olivier, M. (2009) *Information technology research: A practical guide for computer Science and Informatics*, 3rd ed., Van Schaik, Pretoria, South Africa.
- Österle, H., Becker, J., Frank, U., Hess, T., Karagiannis, D., Krcmar, H. and Sinz, E. J. (2011) "Memorandum on design-oriented information systems research", *European Journal of Information Systems*, Vol. 20, No. 1, pp 7–10.
- Panian, Z. (2010) "Some practical experiences in data governance", *World Academy of Science, Engineering and Technology Management*, Vol. 62, pp 939–946.
- Powers, K. (2019) *Data strategy in colleges and universities*, Routledge, New York.
- Reichental, J. (2022) *Data governance for dummies*, 1st ed., John Wiley & Sons, Hoboken, New Jersey.
- Salido, J. (2010, November 1) "Data governance for privacy, confidentiality and compliance: A holistic approach", [online], ISACA, <https://www.isaca.org/resources/isaca-journal/past-issues/2010/data-governance-for-privacy-confidentiality-and-compliance-a-holistic-approach>.
- Seiner, R. (2021, March 17) "A data governance self-assessment test", [online], The Data Analytics Newsletter (TDAN.com), <https://tdan.com/a-data-governance-self-assessment-test/28002>.
- Selvaratnam, R., Ames, K. and Leichtweis, S. (2024) "2024 Governance of artificial intelligence and data in Australasian higher education: A snapshot of policy and practice", *ASCILITE Publications*.
- Soares, S. (2010) *The IBM data governance unified process: Driving business value with IBM software and best practices*, MC Press, Hoboken, New Jersey.
- Swamidass, P. M. (2000) *Encyclopedia of production and manufacturing management*, Springer, New York, NY.
- Swinhoe, D., Hill, M. and Leyden, J. (2024, September 12) "The 18 biggest data breaches of the 21st century", [online], CSO, <https://www.csoonline.com/article/534628/the-biggest-data-breaches-of-the-21st-century.html>.
- University of St Andrews. (2025, February 24) *Data governance policy*, [online], University of St Andrews, <https://www.st-andrews.ac.uk/policy/information-governance-and-management-data-governance/data-governance-policy.pdf>.
- University of Virginia. (2025) *Data literacy*, [online], University of Virginia, <https://ira.virginia.edu/data-analytics/data-governance/data-literacy>.
- Varshney, S. (2023, March 29) "Data governance: What, why, who & how. A practical guide with examples", [online], OvalEdge, <https://www.ovaledge.com/what-is-data-governance>.

Building Dynamic Resilience through Strategic Coherence and Ambidextrous Leadership

Tigran Voskanian, Konstantin Bagrationi and Olga Tunkevichus

Graduate School of Business, HSE University, Frankfurt am Main, Germany

tvoskanyan@edu.hse.ru

kbagrati@hse.ru

oagordienko@hse.ru

Abstract: Organizations face the paradox of simultaneously exploiting current product strengths while exploring new opportunities for innovation. Achieving this balance is critical for sustained competitiveness, yet many firms struggle to manage both effectively – a challenge noted by Danneels in 2011. Ambidextrous leadership offers a potential solution by enabling leaders to alternate between opening behaviors that foster exploration and closing that drive exploitation. However, realizing the full potential of this dual-focused approach also demands strategic coherence across multiple organizational levels, ensuring that individual, team, and corporate goals reinforce one another and move in the same overall direction. Practical guidance on implementing such dual-focused leadership remains limited – especially in product strategy contexts where firms must concurrently improve existing products and innovate new ones. This study develops a conceptual model linking ambidextrous leadership to dynamic resilience – a firm’s capacity to adapt and thrive amid disruptions – within the framework of product strategy. To test the model, we applied a quantitative survey of 87 managers from eight product-oriented companies in Eastern Europe and conducted statistical analyses, including factor analysis and regression modeling. Drawing on ambidexterity theory and leadership research, we formulate hypotheses and design a diagnostic survey instrument to evaluate ambidextrous leadership practices in product-oriented companies in Eastern Europe. The model illustrates how ambidextrous leaders balance short-term exploitation and long-term exploration to reinforce resilience while maintaining strategic coherence of resources, objectives, and processes. The anticipated contribution is twofold: (1) a theoretical advancement by integrating ambidextrous leadership and dynamic resilience, expanding understanding of how balancing efficiency and innovation enhances long-term organizational resilience; and (2) managerial guidance via a practical tool for assessing organizational ambidexterity and clear recommendations for fostering leadership behaviors that simultaneously drive performance and innovation. By fostering strong strategic coherence throughout the organization, this research will help managers harmonize product development practices with adaptive strategic objectives, thereby improving organizational adaptability and competitiveness.

Keywords: Organizational ambidexterity, Ambidextrous leadership, Strategic coherence, Dynamic resilience, Product strategy

1. Introduction

Organizations have to maintain competitiveness in unstable markets while using existing products to generate short-term profits and exploring opportunities to ensure long-term resilience (March 1991, O'Reilly III 2013). This concept, known as organizational ambidexterity, involves significant strategic and operational trade-offs, as each type of activity requires a specific allocation of resources, behavior, and culture (He and Wong 2004, Raisch and Birkinshaw 2004). In a product-oriented context, these trade-offs become even more acute (Danneels, 2011; Jansen et al 2006).

Although the theory of ambidexterity has gained traction in both academic circles and among practitioners, recommendations for the effective application of ambidextrous leadership in product-oriented organizations remain limited (Batra 2022, Rosing et al 2011). The implementation of the concept itself in the development of new products also has limitations, since not all factors, such as leadership, have been studied, their influence on the achievement of ambidexterity, assessment and implementation tools, and how this affects the company's resilience (Atuahene-Gima 2005, AlSaied 2004, Hald et al 2021). In addition, the existing literature on ambidexterity in product development has a significant limitation: it lacks research in the context of Eastern European business, particularly in the context of product management (AlSaied 2004, Berraies et al 2019). Emerging evidence shows that in the Eastern-European context tightly knit informal networks (“blat”) may actively block digital product initiatives, turning social capital into a structural barrier for ambidexterity (Aksiutin et al., 2022; Bagrationi et al., 2021; 2022). Existing research has not fully clarified the role of leadership in implementing the concept of ambidexterity in modern product-oriented companies, particularly how the concept is applied in the development of a product portfolio (Hald et al 2021) – what companies focus on, how managers influence this, how companies can assess the level of ambidexterity.

The remainder of this paper is structured as follows. Section 2 reviews relevant literature on ambidextrous leadership, organizational ambidexterity, and product strategy in dynamic environments. Section 3 outlines

the research methodology, including data collection and analysis methods. Section 4 presents the key results of empirical study. Section 5 discusses the findings, introduces the integrated model, and highlights theoretical and practical implications. Section 6 concludes the paper with a summary of contributions and suggestions for future research.

2. Literature Review

The effectiveness of an organization is based on the use of existing strengths and the search for new opportunities (He and Wong 2004, Jansen et al 2006, O'Reilly III 2008). There is a need to balance exploration and exploitation for the long-term success of organizations, as an excessive focus on one of these areas can lead to either stagnation or uncertainty (Andriopoulos et al 2009, March 1991). There are only three approaches (Rosing 2017) to implementing ambidexterity: sequential, structural, and contextual (Birkinshaw 2004, Duncan 1976, O'Reilly III 2013, Tushman 1996). The first approach involves alternating between exploration and exploitation processes, with temporary cycles of work on tasks, and can be implemented at the product level. The structural approach to ambidexterity establishes dedicated units for exploration and exploitation – classically, new-venture divisions or R&D labs – and recent case evidence suggests that well-designed corporate universities can perform a comparable bridging role (Lissillour & Rodríguez-Escobar, 2022; Zinchenko et al., 2024). The creation of separate structural units allows conflicts between two areas to be avoided (Tushman 1996). A third approach emerged later, which is highly dependent on the culture within the company and allows decisions about the direction of activities to be made at the individual level (Wang 2014). Organizations need to maintain a balance, as if they lose effectiveness in one of the two areas, the company risks becoming ineffective in the long term. Based on this, many researchers emphasize the importance of balancing short-term and long-term goals (Lee et al 2017, De Wit 2014).

The origins of ambidextrous leadership lie in the theory of ambidexterity (Duncan 1976, March 1991). Against the backdrop of the development of this concept, researchers recognized the importance of leadership. It was seen as a key factor in integrating exploitation and exploration, as noted in studies linking managerial behavior to ambidexterity (Lubatkin et al 2006). The role of leadership in balancing paradoxical demands is emphasized, highlighting the prerequisites and results of ambidexterity (Birkinshaw 2004). Leaders who are able to balance between them contribute to a significant increase in the company's potential (O'Reilly III 2011, Rosing et al 2011). Leadership itself consists of three elements: open style (focused on innovation, encourages exploration), close (maintaining stability and optimizing current processes, maintains exploitation) and flexibility (the leader's ability to switch from one style to another depending on the situation). Recent empirical evidence from an Eastern-European management-buy-out shows that “change-oriented leadership” can serve as the behavioral interface that lets managers toggle between these open and closed modes while safeguarding employees’ psychological safety during radical transitions (Diakova et al., 2024). Ambidextrous leadership is about applying the right approach at the right time (Alghamdi 2018). Research shows that teams and organizations with such leaders achieve higher performance (Zacher 2015). Ambidextrous leadership plays a significant role in product management, as product managers must be able to anticipate and implement new product features. In this context, the results confirm that there is a positive correlation between the two factors regardless of the size and age of the company (Berraies et al 2019). And business has a need for leaders who can simultaneously ensure the efficiency of current operations and develop innovations.

The term resilience is often used to denote the ability to withstand stress and maintain (or improve) functioning despite the presence of adverse factors (both internal and external) or to recover after adverse events (Vogus 2007). The theory of dynamic capabilities is closely intertwined with the concept of resilience. Dynamic capabilities are a company's ability to integrate, build and reconfigure competencies to adapt to conditions (Eisenhardt 2000), describing how firms achieve competitive advantage in a rapidly changing environment. Thus, dynamic capabilities can be viewed as a mechanism for forming resilience. It is dynamic capabilities that allow an organization to balance between these extremes, as they enable it to quickly see where changes are needed, launch innovative initiatives or strengthen existing ones in a timely manner, and regularly adapt its business models, teams and strategies (Teece 1997). Thus, dynamic capabilities are not just a backdrop for implementing an ambidextrous strategy, but its active driving force. The concept of dynamic resilience is closely related to the idea of organizational agility in product innovation. Leadership is often cited as a critical element in building and deploying dynamic capabilities, because leaders influence the organizational mindset towards change. Nevertheless, there has been limited explicit examination of how specific leadership behaviors contribute to a dynamically resilience and product strategy. At the core is the point that **ambidextrous leadership of product development teams leads to greater dynamic resilience of the product strategy**. This study extends this line of work by focusing on the *leadership behavior* level within

product teams and by introducing the notion of dynamic resilience as a measurable outcome of strategic leadership.

Building on the reviewed literature, we formulated hypotheses linking ambidextrous leadership and organizational conditions to dynamic resilience and effectiveness in product strategy: (1) Ambidextrous leadership positively affects organizational dynamic resilience, (2) Organizational processes and dynamic capabilities positively affect organizational dynamic resilience, (3) Organizational ambidexterity positively affects company effectiveness and (4) Strategic coherence strengthens the relationship between ambidextrous leadership, organizational factors, and effectiveness.

3. Methodology

To address questions, a mixed approach including qualitative and quantitative methods was adopted. The primary component was a **survey-based quantitative study** of product development leaders and their teams, aimed at testing the relationship between ambidextrous leadership behaviors and resilience. Data was collected from managers in charge of product development across several product-oriented companies.

Representatives of product teams, as well as managers and leads, are best positioned to be aware of the product portfolio, cross-functional collaboration, and company strategy, rather than members of execution teams (e.g., developers, analysts, designers). A total of 87 responses were received (38% response rate). A large proportion of the sample consists of product or project managers (42%), with the remaining 58% being middle managers (including team leaders and department heads). The main areas of activity were limited to three: Banking and Investment, Retail, and IT. Most respondents were from IT (40%) and retail (38%). The survey was conducted using a questionnaire that included sets of statements on key constructs under study. Participants rated their level of agreement with each statement on a 7-point Likert scale. Quantitative data was analyzed using Jamovi software. Some blocks were assessed using previously developed questions (Gibson 2004, Kump 2019, Jansen 2006). The dependent variables are resilience and overall effectiveness, reflecting multidimensional performance results. The independent variables are Leadership (measured through questions developed based on the MLQ (Multifactor Leadership Questionnaire) (Bass 1999), KPI and reward system (the relationship between short-term and long-term goals), Level of organizational processes, Ambidexterity, measured through the balance of exploitation and exploration, Dynamic capabilities (sensing, seizing, transforming) and one of the subtypes, Strategic Coherence, which assesses the level of strategic clarity and cascading of goals, as well as coordination.

First, reliability test and **factor analysis were performed** to verify survey. The reliability of the measurement scales was assessed using Cronbach's α and McDonald's ω coefficients, which reflect the internal consistency of the test (Table 1). High values of these coefficients indicate that all questions in the block measure a single construct and that the questionnaire is reliable (values > 0.7)

Table 1: Reliability of the questionnaire scales

Scale	Average	Number of points	Cronbach's α	McDonald's ω
Ambidexterity	5,76	8	0,746	0,775
Organizational processes	5,63	4	0,753	0,788
Leadership	5,60	9	0,747	0,785
KPIs	5,25	3	0,740	0,780
Dynamic Capabilities	5,70	13	0,713	0,726
Strategic Alignment	4,99	9	0,739	0,781
Effectiveness	5,67	4	0,797	0,823
Dynamic Resilience	5,06	5	0,742	0,776
		55	0,772	0,802

All subscales demonstrate satisfactory reliability. A more accurate McDonald's ω confirmed good metric properties. The final index across the entire pool of questions is reliable. The low dispersion of responses on several items in the 'Ambidexterity' and 'Leadership' scales indicates a possible ceiling effect, while the reduced α of the long 'Dynamic capabilities' scale hints at its potential multidimensionality. A detailed analysis of the reliability of individual items showed that in each block, the removal of any question leads to an increase in Cronbach's α by 0.05–0.13, which indicates the hidden multidimensionality of the scales.

The next step in analyzing the questionnaire results is to verify its validity through a two-stage factor analysis (EFA and CFA) – for identifying hidden factors and confirming the correspondence of the data to the assumed model. Within the framework of EFA, the correlation structure of the six blocks of the questionnaire was analyzed. The Kaiser–Meyer–Olkin criterion showed a satisfactory measure of suitability (above 0.5) (0.706), and Bartlett's test was significant ($\chi^2=186$, $p<0.001$). Using the principal axis method two factors were extracted from the data with parallel analysis and varimax – the method is objective and does not depend on subjective decisions. The threshold for conclusion was determined to be 0.5 as optimal (Hair 1995).

According to the conducted CFA coefficients were statistically significant. The highest value was recorded for the dynamic capability's indicator ($\beta=1.052$). This allows us to interpret factor 1 as an integrative construct of organizational flexibility, including ambidexterity ($\beta=0.680$), organizational processes ($\beta=0.420$), dynamic capabilities, and strategic coherence. Conversely, factor 2 is formed by leadership culture ($\beta=0.479$) and KPI systems ($\beta=0.680$) and reflects the 'leadership focus' of the organization. Second, the amount of covariance between the factors is 0.680 indicating a moderately strong relationship between the variables. Third, the incremental indices CFI=0.959 and TLI=0.923 are above the recommended thresholds of 0.95 and 0.90, respectively. Despite the relatively high RMSEA=0.103, the effect of the small number of degrees of freedom ($df=8$) makes this value conservative; the other criteria indicate a good level of fit. Thus, the results obtained empirically confirm the correctness of combining the initial blocks into two latent variables, demonstrate good statistical fit and provide a causal basis for constructing correlation-regression model.

The analysis above showed the validity and reliability of the developed tool and suggested a division into blocks: Factor 1 (Ambidexterity, Organizational Processes, Dynamic Capabilities and Strategic Coherence) and Factor 2 (Leadership and KPIs). To check the influence of several factors on the results, it is most advisable to use multiple regression analysis. The first analysis allows us to assess the impact of two sets of factors on dynamic resilience (Table 2).

Table 2. Regression results explaining dynamic viability

Model	R	R ²	Adjusted R ²	AIC	BIC	RMSE
1	0,716	0,512	0,433	191	226	0,618
2	0,930	0,865	0,711	147	266	0,325

The conducted hierarchical regression analysis, in which behavioral scales of leadership and KPI systems were introduced in the first stage, and operational and strategic process practices in the second, showed that these predictors form a significant part of the dynamic resilience. The model based solely on leadership explains 51% of the variability of the variable ($R^2=0.512$; $F(12,74)=6.48$; $p<0.001$), while the adjusted value ($Adj.R^2=0.433$) indicates the stable predictive power of this complex. The greatest contribution within the block is provided by the agile behavior of the head ($\beta_{std}\approx 0.30$; $p=0.004$) and active change and innovation management ($\beta_{std}\approx 0.23$; $p=0.035$). The addition of the second factor, considering the ambidexterity, processes and capabilities of the block, leads to a sharp increase in the explained variance to 86.5%, which indicates the high predictive power of the extended model. Dynamic resilience is formed through a combination of flexible leadership practices with ambidexterity and advanced organizational processes. This dual mechanism echoes recent bibliometric evidence that resistance to change and readiness for change are not opposite ends of one continuum but distinct constructs that demand, respectively, reactive and proactive leadership levers (Bagrationi & Gordienko, 2024). The leadership contour, while necessary, turns out to be insufficient without the support of the processes of finding and using opportunities.

The second part is related to the study of the impact of these factors (Table 3). Behavioral leadership scales and KPIs were also introduced in the first model. This set of predictors provides a coefficient of determination $R^2=0.279$, that is, it explains about a quarter of the variation in the resulting performance indicator. Of the predictors, only the agility variable shows a statistically significant direct contribution ($\beta_{std}\approx 0.43$; $p<0.001$), while the remaining elements of the leadership block turn out to be neutral.

Table 3: Regression results explaining the effectiveness

Model	R	R ²	Adjusted R ²	AIC	BIC	RMSE
1	0,528	0,279	0,162	170	205	0,548
2	0,831	0,690	0,334	165	283	0,359

The inclusion of the second block increases R² to 0.69 (Adj.R² increases to 0.334). Despite the high nominal increment of the explained variance ($\Delta R^2=0.411$), the integration F-criterion ($F(34,40)=1.56$; $p=0.088$) indicates that with such many new parameters, the improvement in the model remains at the level of 10%. The leadership contour provides a basic but limited level of effectiveness. The impact of the transformational style becomes significantly positive only in the presence of process-structural predictors, confirming the assumption about the necessary but insufficient nature of leadership drive in the context of ambidexterity. The final model demonstrates that efficiency increases in organizations that combine inspiring leadership with organized knowledge sharing and focused use of opportunities, while controlling the level of coherence.

The empirical part of the study confirmed the proposed conceptual model that combines the leadership and process determinants of ambidexterity, dynamic resilience and overall effectiveness.

4. Results

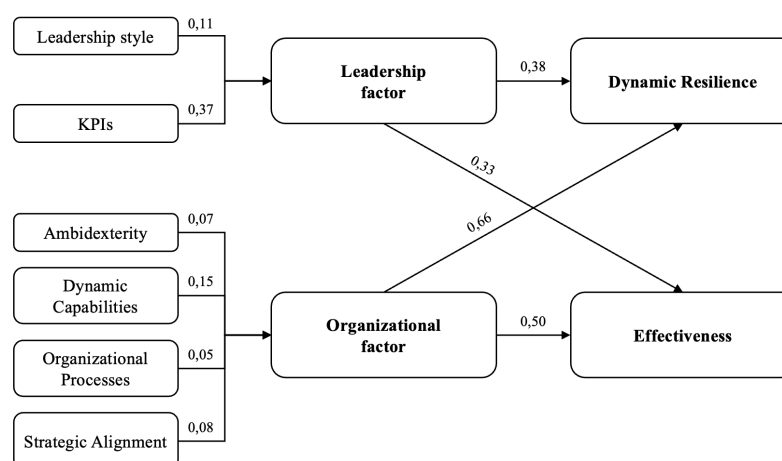


Figure 1: The Ambidextrous Leadership Model

The analysis revealed strong support for the proposed importance of ambidextrous leadership in achieving dynamic resilience in product strategy. In this section, we highlight three key findings: (a) the prevalence and balance of opening vs. closing behaviors among effective product leaders, (b) the impact of these behaviors on innovation and performance metrics, and (c) the resulting integrated model of leadership and product strategy.

The model visually reflects that the combination of flexible leadership behavior and favorable organizational conditions jointly determines the level of ambidexterity, and through it, the company's performance and resilience indicators. The leadership aspect includes, first, flexible leadership style – the ability of a leader to alternate between an "open" style and a closed style in response to the demands of the situation. This behavioral component reflects the core of ambidextrous leadership. In addition, the leadership aspect includes a KPI, and motivation system designed to balance short-term and long-term targets: performance metrics and remuneration for managers should stimulate them both to achieve current goals and to innovate. The organizational aspect combines variables that characterize the internal environment of a company: organizational processes and structures (the presence of formalized, clearly structured, but adaptive development and decision-making processes that allow parallel operational and exploration initiatives), the dynamic capabilities of the organization (its ability to notice changes in the external environment, quickly rebuild and master new technologies, as well as strategic consistency, a type of dynamic resilience (the degree to which the goals and actions of various departments align with the overall dual strategy of the company)). The central resulting element of the model is organizational ambidexterity – the achieved balance of

exploitation and exploitation. Thus, the model reflects a multi-stage mechanism: leadership practices + organizational conditions → efficiency and resilience of the company

Organizational conditions create a context for leadership: if a company has formalized but flexible processes, current operations and innovation flows are differentiated, and resources for experimentation are provided, then managers get the opportunity to exhibit ambidextrous behavior.

5. Discussion

The findings of this study offer strong support for the proposition that ambidextrous leadership is a crucial enabler of dynamic resilience in product strategy. In this section, we interpret the results in light of existing literature, highlight the study's novel contributions, and outline practical implications and limitations.

Our results are consistent with earlier research that highlighted the interdependence between leadership behavior and organizational ambidexterity (Lubatkin et al 2006, Jansen et al 2009). In particular, the demonstrated importance of leaders' flexibility in alternating between opening and closing behaviors echoes the conceptualization of ambidextrous leadership as proposed by Rosing, Frese, and Bausch (2011) and later empirically supported by Zacher and Rosing (2015).

An original structural modeling was developed in which six measurable managerial structures (ambidexterity, leadership style, KPI system, organizational processes, dynamic capabilities, strategic coherence) are aggregated into two complementary latent blocks – "leadership" and "organizational". This approach makes it possible to form a system by combining various factors. This resonates with the broader ambidexterity debate, where scholars stress the need to move beyond leadership-only perspectives and consider structural and contextual antecedents (Birkinshaw & Gibson 2004, O'Reilly & Tushman 2013). The configuration was successfully verified: Factor analysis confirmed the theoretical connection and empirical adequacy of the model. Thus, a balanced combination of two factors forms an integrated framework for increasing the efficiency and resilience of the company. It has been found that the inclusion of an organizational unit significantly increases the explained variation in the effectiveness of companies. The basic model, which includes only leadership variables (leadership styles, KPIs), gave $R^2 \approx 0.28$ when evaluating effectiveness. However, activating the second organizational unit increases the R^2 of the model to about ~ 0.69 . Consequently, accounting for processes and dynamic capabilities, etc., almost tripled the explanatory variation achieved in efficiency ($\Delta R^2 \approx 0.41$). Organizational ambidexterity based on balancing the exploitation and exploitation of new opportunities, is an independent predictor of a firm's long-term resilience in a transitional economy.

Despite the valuable results obtained, this work has a number of limitations that must be taken into account when using the conclusions. The main limitations are related to the design and sampling of the study. Although the statistical results are consistent with the theory of the influence of leadership/processes on efficiency, it is impossible to exclude the opposite effects (for example, high results could facilitate the introduction of ambidexterity, and not just the other way around). The sample has limited representativeness: it is purposefully biased towards successful product companies characterized by a certain culture. The sample size (87 respondents from 8 companies) is acceptable for identifying average effects, but a broader scope is desirable in further research. Similarly, in less innovative industries or in the public sector, for example, the influence of leadership on ambidexterity may be different – one can consider expanding both the geography and the sample of future research, and additionally the model can be tested in various industries – for example, in industry, healthcare, public administration – where the balance of the two activities may have its own specifics. Also, only quantitative research was used in the work, qualitative research and case studies on this topic are promising. In-depth interviews with leaders of such companies and an analysis of specific implementation cases will help identify subtle mechanisms and barriers that are difficult to detect from personal data. For example, a qualitative approach can reveal which qualities of leaders help or prevent them from becoming ambidextrous, or which elements of corporate culture have a greater impact. It will also be correct and important to study the existing KPI systems in more detail and develop a system that will allow for better and more efficient work within the framework of the implemented ambidexterity. Additionally, it is worth continuing to refine and validate the toolkit – to expand the sample, pool of questions, or work out their more precise wording, as well as consider the impact of identified factors on specific financial indicators and metrics. Another limitation is related to measuring long-term outcomes: dynamic resilience and effectiveness were assessed through managers' perceptions, rather than through objective metrics (such as revenue growth, market share in a few years, and so on).

6. Conclusion

This paper presented an academic examination of how ambidextrous leadership contributes to dynamic resilience within a product strategy framework. Our results led to the development of an integrative model showing that ambidextrous leadership fosters exploratory and exploitative innovation in tandem, resulting in sustained strategic performance over time.

The contributions of this research are threefold. All the hypotheses put forward have found empirical confirmation: both leadership and organizational factors have proven to be important for achieving balance and improving performance. Among the drivers is the availability of flexible processes that separate the flows of current activity and innovation, as well as balanced incentives focused simultaneously on short-term results and the development of new ones. Barriers include conservative management systems that reward only operational efficiency and cultural resistance to change. In practice, this means that without flexibility in processes and without corresponding changes in the KPI system, the level of ambidexterity remains low.

The paper substantiates a new conceptual model of ambidextrous leadership that combines leadership practices and organizational conditions. The model identifies two complementary components: the leadership aspect and the organizational aspect. According to the obtained model, the combination of flexible leadership behavior and a favorable organizational environment forms organizational ambidexterity and promotes a high level of dynamic resilience. Empirical validation showed a high explanatory power of the model (R^2 0.7–0.9).

Ethical declarations: Ethical clearance was not required for the research

AI declarations: AI: (ChatGPT o3) was used to enhance language quality

References

- Aksiutin, A., Bagrationi, K., Morozov, M., Trochin, I. (2022). *Non-formal social ties as threat to the implementation of innovations*. European Conference on Innovation and Entrepreneurship, ECIE, 17(1), 1–7.
- Alghamdi, F. (2018). *Ambidextrous leadership, ambidextrous employee, and the interaction between ambidextrous leadership and employee innovative performance*. Journal of Innovation and Entrepreneurship, [online] 7(1), pp.1–14.
- Alsaied, M. and McLaughlin, P. (2023). *Ambidextrous Innovation in Project Management: A Systematic Literature Review*. Communications of International Proceedings.
- Andriopoulos, C. and Lewis, M. W. (2009) *Exploitation–exploration tensions and organizational ambidexterity: Managing paradoxes of innovation*, Organization Science, 20(4), pp. 696–717.
- Atuahene-Gima, K. (2005) *Resolving the capability–rigidity paradox in new product innovation*, Journal of Marketing, 69(4), pp. 61–83.
- Bagrationi K, Gordienko O. (2024). *Dynamics of organisational change: resistance, readiness, and the road ahead*. European Conference on Innovation and Entrepreneurship, ECIE, 19(1), 81–88.
- Bagrationi, K., Thurner, T. W., & Gordienko, O. (2021, September). *Resistance to digital transformation and the destruction of social capital*. In Proceedings of the European Conference on Innovation and Entrepreneurship, ECIE (pp. 47-53).
- Bagrationi, K., Thurner, T. W., & Gordienko, O. (2022, August). *Resistance to Digital Transformation: The Role of Middle Management Personal Networks*. In European Conference on Knowledge Management (Vol. 23, No. 1, pp. 52-59).
- Batra, I. P. and Dhir, S. (2022) *Organizational ambidexterity from the emerging market perspective: A review and research agenda*, Thunderbird International Business Review, 64(5), pp. 559–573.
- Berraies, S. and Zine El Abidine, S. (2019) *Do leadership styles promote ambidextrous innovation? Case of knowledge-intensive firms*, Journal of Knowledge Management, 23(5), pp. 836–859.
- Birkinshaw, J. and Gibson, C. (2004) Building ambidexterity into an organization, MIT Sloan Management Review.
- Danneels, E. (2011) *Trying to become a different type of company: Dynamic capability at Smith Corona*, Strategic Management Journal, 32(1), pp. 1–31.
- Diakova, A., Bagrationi, K., & Gordienko, O. (2024). *Change-oriented Leadership in the Context of Transitioning to Strategic Autonomy*. European Conference on Management, Leadership & Governance, 114–123.
- Duncan, R. B. (1976) *The ambidextrous organization: Designing dual structures for innovation*, The Management of Organization, 1(1), pp. 167–188.
- Eisenhardt, K. M. and Martin, J. A. (2000) *Dynamic capabilities: What are they?*, Strategic Management Journal, 21(10–11), pp. 1105–1121.
- Gibson, C. B. and Birkinshaw, J. (2004) *The Antecedents, Consequences, and Mediating Role of Organizational Ambidexterity*, Academy of Management Journal, 47(2), pp. 209–226.
- Gordienko, O., Bagrationi, K. (2024). *Global integration of artificial intelligence in higher education sector: a bibliometric analysis*. European Conference on Knowledge Management, ECKM, 25(1), 270–276.

- Hair, J. F. Jr et al. (1995) *Multivariate Data Analysis with Readings*, Prentice-Hall.
- Hald, K. S. and Nordio, C. (2021) *Ambidexterity in collaborative new product development processes*, Business Process Management Journal, 27(3), pp. 987–1008.
- He, Z. L. and Wong, P. K. (2004) *Exploration vs. exploitation: An empirical test of the ambidexterity hypothesis*, Organization Science, 15(4), pp. 481–494.
- Jansen, J. J. P., Van Den Bosch, F. A. J. and Volberda, H. W. (2006) *Exploratory Innovation, Exploitative Innovation, and Performance: Effects of Organizational Antecedents and Environmental Moderators*, Management Science, 52(11), pp. 1661–1674.
- Jansen, J. J. P., Vera, D. and Crossan, M. (2009) *Strategic leadership for exploration and exploitation: The moderating role of environmental dynamism*, Leadership Quarterly, 20(1), pp. 5–18.
- Kump, B. et al. (2019) *Toward a Dynamic Capabilities Scale: Measuring Organizational Sensing, Seizing, and Transforming Capacities*, Industrial and Corporate Change, 28(5), pp. 1149–1172.
- Lee, K., Woo, H. G. and Joshi, K. (2017) *Pro-Innovation culture, ambidexterity and new product development performance: Polynomial regression and response surface analysis*, European Management Journal, 35(2), pp. 249–260.
- Lubatkin, M. H. et al. (2006) *Ambidexterity and performance in small- to medium-sized firms: The pivotal role of top management team behavioral integration*, Journal of Management, 32(5), pp. 646–672.
- March, J. G. (1991) *Exploration and exploitation in organizational learning*, Organization Science, 2(1), pp. 71–87.
- O'Reilly III, C. A. and Tushman, M. L. (2008) *Ambidexterity as a dynamic capability: Resolving the innovators dilemma*, Research in Organizational Behavior, 28, pp. 185–206.
- O'Reilly III, C. A. and Tushman, M. L. (2013) *Organizational ambidexterity: Past, present, and future*, Academy of Management Perspectives, 27(4), pp. 324–338.
- Raisch, S. and Birkinshaw, J. (2008) *Organizational ambidexterity: Antecedents, outcomes, and moderators*, Journal of Management, 34(3), pp. 375–409.
- Rosing, K. and Zacher, H. (2017) *Individual ambidexterity: The duality of exploration and exploitation and its relationship with innovative performance*, European Journal of Work and Organizational Psychology, 26(5), pp. 694–709.
- Rosing, K., Frese, M. and Bausch, A. (2011) *Explaining the heterogeneity of the leadership–innovation relationship: Ambidextrous leadership*, Leadership Quarterly, 22(5), pp. 956–974.
- Teece, D. J. (2007) *Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance*, Strategic Management Journal, 28(13), pp. 1319–1350.
- Tushman, M. L. and O'Reilly III, C. A. (1996) *Ambidextrous organizations: Managing evolutionary and revolutionary change*, California Management Review, 38(4), pp. 8–29.
- Vogus, T. J. and Sutcliffe, K. M. (2007) *Organizational resilience: Towards a theory and research agenda*, in Proceedings of the IEEE International Conference on Systems, Man and Cybernetics 2007, IEEE, pp. 3418–3422.
- Wang, C. L. and Rafiq, M. (2014) *Ambidextrous organizational culture, contextual ambidexterity and new product innovation: A comparative study of UK and Chinese high-tech firms*, British Journal of Management, 25(1), pp. 58–76.
- Zacher, H. and Rosing, K. (2015) *Ambidextrous leadership and team innovation*, Leadership & Organization Development Journal, 36(1), pp. 54–68.
- Zinchenko, M., Bagrationi, K., & Gordienko, O. (2024). *Development of Corporate University Evolution Scenarios*. European Conference on E-Learning, 451–457.

Youth Participation in NGOs: Implications for Leadership Development and Social Responsibility

Norhasni Zainal Abiddin and Junita Sulaiman

National Defence University of Malaysia

norhasni@upnm.edu.my (Corresponding author)

Abstract: This concept paper proposes the Exposure–Engagement–Empowerment (EEE) model to explain how youth participation in non-governmental organizations (NGOs) fosters leadership development and social responsibility. Through a thematic synthesis of existing literature, the paper finds that NGOs provide experiential platforms for youth to acquire essential leadership skills such as communication, teamwork, and problem-solving. NGO involvement also supports ethical awareness, civic identity, and a justice-oriented mindset capacities often underdeveloped in formal education systems. Furthermore, the paper highlights structural barriers such as unequal access, tokenistic involvement, and lack of institutional recognition that limit the impact of NGO engagement. It concludes that integrating NGO participation into youth development frameworks can strengthen leadership pathways and foster a generation of socially conscious, ethically grounded leaders.

Keywords: Youth, NGO participation, Leadership development, Social responsibility, Experiential learning

1. Introduction

Youth involvement in non-governmental organizations (NGOs) has attracted more and more interest as a transforming path for the growth of social responsibility and leadership development. Empowering the younger generation by significant civic involvement has become more important than ever in a fast-changing global scene defined by political instability, social inequity, and environmental issues (Bessant, Farthing, & Watts, 2017). Youth people may develop outside of academic boundaries and interact directly with grassroots movements, social justice projects, and community needs by means of NGOs, which provide a special and informal educational environment (Pancer, 2015). These groups provide youth people with chances to acquire critical thinking, empathy, teamwork, and moral responsibility qualities necessary for the leaders of tomorrow.

Unlike established educational institutions, which sometimes give academic knowledge priority, NGOs provide forums for practical learning. By means of active involvement in volunteering, project execution, and advocacy activity, young people address real-world issues requiring pragmatic decision-making, multicultural communication, and adaptive leadership (Kolb, 1984; Lewis, 2020). Such encounters are essential in forming leaders with a strong dedication to ethical governance and inclusive society development in addition to technical ability (Eyler & Giles, 1999). The idea of youth growth via NGOs fits more general conceptions of civic participation and transformational learning, in which lived experience shape's identity development, value orientation, and active citizenship (Komives et al., 2006; Roberts, 2008).

The purpose of this concept paper is to look at the empirical and theoretical links between youth involvement in NGOs and improvement of social responsibility and leadership abilities. Drawing on a thorough study of academic literature and worldwide best practices, it investigates how youth participation in NGOs promotes ethical answers to modern social concerns, civic duty, and leadership development. The study argues for more institutional acceptance of NGO participation as a useful addition to official education and youth development programs. It also looks at the possible obstacles to involvement and offers suggestions for how to maximize its influence on forming future leaders.

2. Literature Review

2.1 Youth Participation in NGOs

Young involvement in NGOs has attracted international attention as a major force behind democratic participation, civic education, and leadership development. NGOs provide young people a useful stage on which to investigate leadership positions and engage in decision-making, therefore helping them to accept responsibility for their contributions to society (Checkoway, 2011). These groups provide means for people to participate in advocacy, environmental sustainability, poverty reduction, and human rights protection, therefore acting as starting grounds for many into civic life (Bessant, Farthing, & Watts, 2017). Participating in non-governmental projects helps one to acquire critical leadership abilities like strategic thinking, communication, and conflict resolution. By means of these encounters, young people are not only passive consumers of information but also active actors in society change (Pancer, 2015; Wong et al., 2011). Many NGOs specifically

support youth-led initiatives so that young people may test different leadership approaches and gain knowledge from both success and failure—key elements of self-efficacy and resilience.

Moreover, NGOs assist to close the gap between young goals and real community demands. Young people involved in grassroots-level interventions get direct knowledge of sociopolitical processes, therefore fostering community ownership and belonging (Zeldin, Camino, & Calvert, 2007). This link promotes long-term dedication to civic responsibilities and helps to produce a society conscious of social issues. Studies of young people involved in NGOs have also shown that they are more likely to get into official political positions or carry on persistent advocacy. Participating in youth-led or youth-oriented NGOs, for instance, greatly raises the probability of future voting behavior, political campaigning, and community leadership (Putnam, 2000; Ballard, Cohen, & Littenberg-Tobias, 2016). These groups consequently serve as nursery ground for the next generation of moral, sympathetic, and capable leaders.

2.2 Experiential Learning and Leadership Development

As Kolb (1984) envisioned it, experiential learning provides a useful foundation for comprehending how young people become leaders by doing, reflecting, and applying. Experiential learning stresses the transforming power of active engagement in significant, real-world events, whereas didactic approaches of education that stress passive absorption of information. Through their field-based, service-oriented activities, NGOs are especially qualified to provide such learning opportunities. Through project execution, young people come into circumstances requiring leadership amid uncertainty, limited resources, and social complexity. These situations encourage adaptive leadership and enable young people to acquire a development attitude (Komives et al., 2006). Managing a community health campaign or organizing disaster assistance logistics, for example, typically calls for young leaders to make quick choices, assign tasks, and negotiate amongst stakeholders' skills difficult to teach in school environments (Eyler & Giles, 1999).

By means of mentoring and role modeling, NGOs can help to foster leadership growth. Young volunteers absorb the actions of seasoned leaders facing moral conundrums or guiding inclusive decision-making processes, therefore strengthening their own image of good leadership (Gibson, 2021; Roberts, 2008). Furthermore, the cooperative atmosphere in NGOs fosters servant leadership, humility, and shared goal-oriented values including humility. Furthermore, studies have shown that, especially when young people participate in international or multicultural environments, experience learning in NGOs fosters cross-cultural competency and global awareness. These encounters help individuals to see the world differently and equip them for leadership in ever more cosmopolitan and diverse countries (Lewis, 2020; Kiely, 2005). Young people who grow up in these surroundings say they have better critical thinking, empathy, and the capacity to interact with individuals from all socioeconomic and cultural backgrounds core skills for leaders of the twenty-first century (Green, 2015).

2.3 Social Responsibility and Ethical Development

Young people's feeling of social obligation is much shaped by NGOs. Encouragement of social aware leadership is more important than ever in a society characterized by social fragmentation, environmental problems, and inequality. Young people become sensitive to the reality experienced by underprivileged populations by direct participation in socially significant initiatives like environmental activism, refugee aid, and community development (Astin & Sax, 1998). This exposure sharpens moral judgment and guides young people toward an ethical prism through which they see their choices and behavior. Common ethical conundrums in NGO environments such balancing donor expectations with community needs or negotiating power dynamics in development work force youngsters to consider their beliefs and obligations (Banks, 2008). These encounters help one to build a moral compass that guides future leaders.

Participating in NGOs also helps one to emphasize the need of responsibility and openness. Young people discover that good leadership involves not just guiding others but also keeping oneself to high ethical standards and answering stakeholders. Daily activities such open reporting, ethical fundraising, and inclusive community involvement help these values to become second nature (Brown & Jagadananda, 2007). Furthermore favorably linked with prosocial activities like advocacy, charity, and volunteering is NGO involvement. Early participation in community-oriented activities creates patterns of civic conduct that last throughout adulthood, claims Scales and Benson (2004). Young people who volunteer with NGOs are more likely to participate in democratic life, adopt community leadership positions, and promote issues linked to justice, fairness, and sustainability (Ballard et al., 2016; Sherrod, Flanagan, & Youniss, 2002). At last, the reflective activities included in many non-governmental organizations—such as debriefs, ethical instruction, and participatory evaluation—create organized chances for young people to analyze their experiences, thus fostering deeper learning and personal

development (Eyler, Giles, Stenson, & Gray, 2001). This introspection helps them to include social responsibility into their leadership identity, therefore increasing their deliberate action guided by ideals.

3. Methodology

This study uses a concept paper technique to synthesize research on youth engagement in NGOs and current literature to investigate the consequences for social responsibility and leadership development. Understanding how NGO involvement shapes the development of leadership qualities and ethical engagement among young people requires a thorough study of past research, theoretical models, and empirical investigations (Gibson, 2021; Eyler & Giles, 1999).

Data for this research comes from surveys, in-depth interviews with young individuals involved in NGOs, and qualitative research among other sources. Published studies on youth participation in NGOs, leadership development, and social responsibility were investigated to uncover common themes, trends, and holes in the present material (Bessant, Farthing, & Watts, 2017). These supplementary data sources provide some information on how NGOs could assist young people in developing leadership traits, increasing social responsibility, and arming them to be effective leaders. The content from qualitative research and literature was subjected to thematic analysis to identify patterns and themes on ethical decision-making, social responsibility, and leadership development. Moreover, looked at to establish links between participation in NGOs and enhanced leadership competencies were statistical data from surveys examining the impact of NGO membership on youthful leadership capacity (Lewis, 2020).

3.1 Literature Selection and Thematic Synthesis

To develop the conceptual foundation of this paper, a structured literature review and thematic synthesis were conducted. The aim was to examine existing scholarly work on youth participation in non-governmental organizations (NGOs), with a particular focus on its contribution to leadership development and the internalization of social responsibility. Relevant academic sources were identified using several electronic databases, including Scopus, JSTOR, Google Scholar, Taylor & Francis Online, and SAGE Journals. These databases were selected for their extensive coverage of peer-reviewed literature in fields related to education, youth development, leadership, and civic engagement.

A series of keyword searches were performed using combinations of terms such as “youth leadership,” “NGO participation,” “civic engagement,” “youth development and social responsibility,” “experiential learning in NGOs,” and “non-formal education and youth leadership.” Boolean operators were used to refine results, and filters were applied to limit the search to English-language articles. The review targeted studies published between 2000 and 2024.

Inclusion criteria required that articles be peer-reviewed and focused on youth involvement in NGOs, either empirically or conceptually. Eligible studies also had to address themes such as leadership development, ethical and civic responsibility, or experiential learning in non-formal educational settings. Conversely, studies that focused exclusively on adult participation in NGOs, or those unrelated to leadership and civic development, were excluded. Non-peer-reviewed sources, opinion pieces, and grey literature were also omitted to maintain academic rigor.

A thematic synthesis approach was used to analyze the selected literature. First, articles were read in full to assess their relevance and quality. Then, recurring ideas, patterns, and themes were identified and manually coded. These codes were grouped into broader conceptual categories, which were subsequently aligned with the Exposure–Engagement–Empowerment (EEE) framework proposed in this paper. This analytical process allowed for the construction of a synthesized understanding of how NGO participation supports leadership skill acquisition, ethical reasoning, and civic identity formation among youth. The resulting themes served as the foundation for the discussion and conceptual analysis presented in the subsequent sections.

4. Conceptual Synthesis and Framework: The Exposure–Engagement–Empowerment (EEE) Model)

To advance the understanding of how youth participation in NGOs fosters leadership and social responsibility, this paper proposes a three-stage conceptual framework: Exposure → Engagement → Empowerment (EEE). This model synthesizes findings from civic engagement, experiential learning, and leadership development literature into a developmental pathway that captures the progression from awareness to action among youth.

4.1 Exposure: Awareness and Social Sensitization

The first stage, Exposure, refers to the initial contact young people have with societal issues through their involvement in NGO programs. This includes participation in workshops, community service events, issue-based campaigns, or humanitarian initiatives. These early interactions help youth understand the realities of social inequality, environmental degradation, or human rights violations (Astin & Sax, 1998). By being exposed to these challenges often in ways not encountered in formal education young people begin to develop empathy, critical awareness, and a sense of civic responsibility. For example, a youth involved in a refugee assistance program may become acutely aware of migration crises and humanitarian needs. This exposure fosters not only knowledge but also emotional engagement with societal concerns, serving as the foundation for deeper involvement.

4.2 Engagement: Active Participation and Skill Formation

The Engagement stage captures the transition from passive awareness to active participation. Youth begin to take on roles that involve planning, decision-making, advocacy, or team leadership within the NGO context. Through hands-on involvement in campaigns, logistical coordination, policy advocacy, or community organizing, youth develop critical soft and technical skills such as communication, conflict resolution, project management, and intercultural negotiation (Komives et al., 2006; Eyer & Giles, 1999).

This stage reflects the principles of experiential learning, where real-world challenges serve as catalysts for personal growth. NGOs that offer youth-led projects or participatory governance structures further deepen this engagement, allowing young people to shape outcomes and evaluate impact. The experience of contributing meaningfully strengthens agency, builds self-efficacy, and validates their leadership capacity.

4.3 Empowerment: Leadership Identity and Civic Commitment

The final stage, Empowerment, represents the internalization of leadership identity and social responsibility. Through repeated cycles of involvement and reflection, youth come to see themselves not merely as helpers or volunteers, but as changemakers and ethical leaders. They develop a moral compass informed by real-world dilemmas, and often continue advocacy beyond the NGO space through activism, public service, or political engagement (Ballard et al., 2016; Banks, 2008).

Empowerment also involves a long-term commitment to civic engagement, justice, and sustainability. Youth who reach this stage often initiate their own community projects, influence public policy, or mentor others. This transformative outcome anchored in both competence and conscience demonstrates the unique capacity of NGOs to shape leaders with a strong sense of ethical purpose.

5. Key Themes from Literature: Toward a Conceptual Framework

Based on a thematic synthesis of literature and conceptual perspectives, this section outlines four key dimensions that illustrate how youth participation in NGOs fosters leadership development and social responsibility. These themes align with the proposed Exposure–Engagement–Empowerment (EEE) framework and reflect the progression of youth from awareness to action and transformation.

5.1 Leadership Skill Development through Experiential Engagement

A consistent theme in the literature is that NGO participation provides dynamic, non-formal learning environments where youth develop critical leadership competencies. These include strategic thinking, initiative-taking, team coordination, and adaptability skills often cultivated through active participation in advocacy campaigns, event organization, and volunteer management (Gibson, 2021; Kolb, 1984). NGOs demand youth to step into leadership roles, where learning occurs through direct action, feedback, and reflection.

These experiential engagements align with the Engagement stage of the proposed Exposure–Engagement–Empowerment (EEE) model, wherein young individuals not only apply leadership concepts but refine their abilities through hands-on practice. The trial-and-error nature of NGO work strengthens moral reasoning, resilience, and leadership identity which it serves as real-world laboratories for leadership development (Komives et al., 2006),

Communication is another core competency enhanced through NGO participation. Youth often navigate multicultural contexts and work with diverse teams, which cultivates clarity, empathy, and persuasion in both verbal and written communication. From writing funding proposals to delivering community presentations, young people develop public speaking, digital communication, and active listening skills that are essential in

participatory leadership (Green, 2015; Lewis, 2020). The collaborative and often unpredictable nature of NGO operations also requires real-time negotiation, storytelling, and feedback loops in sharpening interpersonal skills critical for stakeholder engagement and community mobilization (Wong, Zimmerman, & Parker, 2011).

Moreover, NGO involvement strengthens problem-solving and critical thinking. Working in volatile socio-political or under-resourced environments, youth must assess complex issues, generate context-specific solutions, and make decisions with limited resources. These tasks enhance their analytical thinking and stimulate innovation, especially when navigating ethical dilemmas or balancing competing interests (Eyler & Giles, 1999; Banks, 2008). The iterative process of planning, executing, and evaluating community-based initiatives enables youth to adopt a proactive and solution-oriented mindset hallmarks of adaptive leadership.

Finally, NGOs foster collaborative leadership by immersing youth in cooperative, intercultural, and intergenerational teamwork. Young people learn to lead alongside others across boundaries of race, religion, class, and ideology (Zeldin, Camino, & Calvert, 2007). Through collective decision-making, delegation, and conflict resolution, they internalize principles of transformational and servant leadership that emphasize inclusiveness and shared vision (Komives et al., 2006; Wagner, 2006). These interactions also strengthen emotional intelligence, allowing young leaders to navigate personal dynamics with maturity and empathy qualities essential for socially conscious leadership (Roberts, 2008).

In essence, NGO participation is a powerful vehicle for holistic leadership development, providing youth with practical, emotional, and ethical skillsets that formal education often struggles to deliver. Real-world examples further illustrate how NGOs cultivate youth leadership and social responsibility. For instance, in Malaysia, the Youths Today Foundation empowers young people to plan and execute community-based campaigns, giving them direct experience in event logistics, budget management, and stakeholder engagement. Similarly, Amnesty International's Youth Task Forces provide global platforms for young activists to lead human rights education, campaign planning, and advocacy efforts in their own regions. In developing countries, The Girl Effect NGO equips adolescent girls with leadership and storytelling skills through localized mentorship and digital campaigns aimed at community transformation. These organizations exemplify how youth engagement in NGOs can be both structured and impactful, offering diverse avenues for skill development, ethical reflection, and civic contribution.

5.2 Strengthening Social Responsibility and Ethical Development

As youth progress through deeper levels of NGO involvement, their initial awareness of social issues often matures into a sustained ethical commitment. Literature consistently highlights that young people engaged in NGOs interact with complex and morally charged issues such as poverty, climate change, environmental justice, inequality, and human rights violations (Astin & Sax, 1998; Banks, 2008). These encounters serve not only to sensitize youth to injustice, but also to prompt deep reflection on their personal values, ethical boundaries, and roles in society.

This process represents the Empowerment stage of the EEE model, where youth internalize principles such as equity, accountability, transparency, and long-term civic responsibility. NGO participation frequently presents youth with real-world ethical dilemmas, such as balancing donor expectations with community needs, allocating scarce resources, or navigating sensitive power dynamics. These scenarios sharpen their ethical reasoning, teaching them to make value-based decisions in complex, multicultural contexts (Banks, 2008).

Through lobbying, policy advocacy, and grassroots community projects, youth begin to move beyond charity-based thinking toward a justice-oriented mindset. They are encouraged to address not only the symptoms but the root causes of social issues such as systemic discrimination, policy failures, or environmental exploitation. This transformation motivates young people to critically examine the structures that perpetuate inequality and to actively participate in efforts that promote long-term reform and sustainability (Astin & Sax, 1998).

Working closely with marginalized communities deepens youth empathy and cultivates a sense of solidarity. Exposure to real-world struggles such as housing insecurity, refugee displacement, or educational inequity helps youth to identify with others' lived experiences and see themselves not merely as volunteers but as agents of change (Scales & Benson, 2004; Ballard, Cohen, & Littenberg-Tobias, 2016). Particularly in international NGO contexts, youth also develop a sense of global citizenship, recognizing that their actions can influence not only local environments but transnational systems. This fosters responsibility toward humanity as a whole and prepares them for leadership in increasingly globalized and diverse societies.

Empirical studies have linked long-term NGO involvement with sustained civic engagement into adulthood. Youth who engage meaningfully in NGO activities are more likely to participate in democratic processes such as voting, town hall meetings, or issue-based campaigning and to pursue careers in public service, education, social work, or law (Putnam, 2000; Sherrod, Flanagan, & Youniss, 2002). This lifelong commitment to justice and social responsibility underscores how NGO participation shapes not just temporary actions but leadership identities grounded in ethical conviction.

Additionally, NGOs play a vital role in fostering community-based action. Young people who assume leadership roles often initiate or contribute to local change efforts such as organizing community events, influencing municipal policies, or mobilizing support for local causes. These engagements develop their leadership agency, reinforce their belief in their capacity to effect change, and connect their sense of purpose to tangible societal impact.

Importantly, NGO participation encourages intergenerational learning, where youth are mentored by experienced leaders while simultaneously contributing innovative ideas and fresh energy. This reciprocal exchange strengthens collective responsibility and bridges generational divides. Over time, youth come to see social responsibility not only as an individual ethic but as a shared, ongoing commitment to community resilience and generational equity.

Ultimately, the NGO experience helps young people construct a moral framework grounded in responsibility, service, and ethical leadership. This developmental arc from exposure to empowerment enables youth to emerge as principled leaders capable of addressing the ethical, social, and structural challenges of the 21st century. In this sense, NGO involvement not only fosters current civic consciousness but also cultivates the future stewards of democratic, inclusive, and just societies.

5.3 NGO Participation as a Complementary Tool to Formal Education

A key insight from this paper is that NGOs play a vital and distinct role in complementing formal education by offering experiential opportunities that academic institutions often cannot provide. While formal education primarily emphasizes theoretical knowledge and curriculum-based learning, NGOs serve as practical environments where youth can apply academic concepts to real-world social challenges transforming abstract ideas such as “community development” or “policy advocacy” into lived experiences (Pancer, 2015).

This hands-on exposure reflects the Exposure and Engagement stages of the EEE model, where youth become sensitized to pressing societal issues and actively involved in addressing them. NGOs allow young people to work directly on initiatives related to human rights, poverty, or environmental justice often the very topics they study in classrooms. These settings help youth bridge the gap between conceptual understanding and meaningful application, resulting in a more holistic learning process (Komives et al., 2006; Eyler & Giles, 1999).

NGO participation also fosters the acquisition of essential leadership competencies such as problem-solving, strategic planning, communication, and ethical decision-making that are often underemphasized in formal educational systems. In these non-formal environments, youth assume leadership roles, take initiative, and manage projects that impact real communities. These opportunities not only build competence but also reinforce agency, confidence, and a commitment to civic engagement (Gibson, 2021; Lewis, 2020).

Beyond technical skills, NGOs provide youth with exposure to intercultural collaboration and diverse community settings. Through teamwork, negotiation, and decision-making in diverse groups, young individuals cultivate emotional intelligence, empathy, and conflict-resolution skills qualities crucial for inclusive leadership in the 21st century (Astin & Sax, 1998; Roberts, 2008). These experiences promote social maturity, as youth learn to work alongside individuals of different ages, backgrounds, and belief systems.

Moreover, NGOs create value-driven environments where youth engage with ethical questions and develop a stronger moral compass. Interactions in these spaces nurture a growing awareness of social justice and community needs values that are not always comprehensively integrated into formal education (Ballard, Cohen, & Littenberg-Tobias, 2016). Youth exposed to these environments come to see themselves not merely as students, but as active citizens and agents of change.

Ultimately, this synergy between NGO experience and formal education helps produce well-rounded, socially conscious leaders. Through real-world engagement, young people gain practical skills, ethical insight, and emotional resilience all of which are critical for leadership in both civic and professional arenas. NGO participation enhances the traditional learning journey, preparing youth to lead with both competence and conscience in an increasingly complex and interconnected world (Bessant, Farthing, & Watts, 2017).

5.4 Barriers to Equitable Participation and Realizing Empowerment

Despite their transformative potential, NGOs are not equally accessible to all youth. Multiple structural and institutional barriers limit participation and hinder the full realization of the Empowerment stage in the EEE model. Factors such as geographic location, economic status, and educational background significantly shape access to NGO programs (Zeldin, Camino, & Calvert, 2007). Youth from rural or low-income areas often face logistical and financial constraints, such as transportation challenges or the need to prioritize income generating activities over unpaid volunteer work. These limitations reduce their chances of engaging in meaningful civic experiences.

In addition, NGO participation is often undervalued or unrecognized by formal educational and employment systems. When schools or employers do not formally acknowledge NGO involvement through credits, certifications, or pathways to career advancement young people may perceive such engagement as time consuming with limited return (Lewis, 2020). This lack of institutional integration diminishes the incentive for sustained participation and reduces the visibility of civic contributions in broader development frameworks.

Organizational level barriers further inhibit youth engagement. Many NGOs operate with limited resources and staff, which restricts their capacity to provide consistent mentorship, structured training, or long-term leadership pathways (Banks, 2008). Some organizations may treat youth participation as symbolic or superficial, offering involvement without genuine decision-making power commonly referred to as tokenism (Checkoway, 2011; Wong, Zimmerman, & Parker, 2011). In such cases, young people may feel marginalized or discouraged from contributing meaningfully.

Hierarchical and adult-centric organizational cultures may also undermine youth agency. When young people are not seen as competent leaders or when their contributions are dismissed, this can suppress creativity, hinder empowerment, and reduce the appeal of continued involvement (Wagner, 2006). Without inclusive leadership structures, the transformative potential of NGO work remains unrealized for many youth.

Moreover, the absence of structured mentorship programs weakens the developmental trajectory that is essential for building long-term leadership capacity. Youth often lack role models or support systems that help them translate experiential learning into sustained civic commitment and professional growth (Komives et al., 2006; Roberts, 2008).

These interconnected challenges constrain the ability of NGOs to fully serve as equitable platforms for youth leadership and social responsibility. To maximize the developmental impact of NGO participation, there is a pressing need for Institutional recognition of NGO experiences in educational and career development systems, Policy integration of NGO engagement within national youth development frameworks, Increased funding and capacity building for NGOs to expand access and improve mentorship and Inclusive, youth-centered governance that empowers young people as partners in decision-making. By addressing these barriers, NGOs can evolve into more inclusive, accessible, and effective ecosystems that nurture the next generation of socially responsible leaders—regardless of socioeconomic background or geographic location.

Acknowledgements

The authors sincerely appreciate National Defence University of Malaysia's financial assistance in publishing this article.

AI Declaration: This work involved the use of AI tools to assist with [e.g., grammar checking, idea generation, formatting, summarization]. The final content was reviewed and edited by the author(s) to ensure accuracy, originality, and adherence to academic standards. No AI-generated content was submitted without critical human oversight.

References

- Astin, A. W., & Sax, L. J. (1998). How undergraduates are affected by service participation. *Journal of College Student Development*, 39(3), 251–263.
- Ballard, P. J., Cohen, A. K., & Littenberg-Tobias, J. (2016). Action civics for promoting civic development: Main findings from a mixed-method evaluation of Citizen Schools' program. *Journal of Youth Development*, 11(3), 56–71.
- Banks, N. (2008). Leadership in NGOs: A framework for the development of ethical and effective leaders. *Third World Quarterly*, 29(1), 179–189.
- Bessant, J., Farthing, R., & Watts, R. (2017). *The precarious generation: A political economy of young people*. Routledge.
- Brown, L. D., & Jagadananda. (2007). *Civil society legitimacy and accountability: Issues and challenges*. Hauser Center for Nonprofit Organizations Working Paper.

- Checkoway, B. (2011). What is youth participation? *Children and Youth Services Review*, 33(2), 340–345.
- Eyler, J., & Giles, D. E. (1999). *Where's the learning in service-learning?* Jossey-Bass.
- Gibson, C. (2021). Leadership development through experiential learning. *Journal of Leadership Studies*, 15(2), 87–102.
- Green, M. (2015). The necessity of cross-cultural leadership in global NGO settings. *International Journal of Leadership in Education*, 18(2), 203–216.
- Kiely, R. (2005). A transformative learning model for service-learning: A longitudinal case study. *Michigan Journal of Community Service Learning*, 12(1), 5–22.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.
- Komives, S. R., Owen, J. E., Longerbeam, S. D., Mainella, F. C., & Osteen, L. (2006). A leadership identity development model: Applications from a grounded theory. *Journal of College Student Development*, 47(4), 401–418.
- Lewis, D. (2020). Non-governmental organizations and leadership development. *Nonprofit Management & Leadership*, 30(4), 567–582.
- Pancer, S. M. (2015). *The psychology of citizenship and civic engagement*. Oxford University Press.
- Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. Simon & Schuster.
- Roberts, D. C. (2008). *Deeper learning in leadership: Helping college students find the potential within*. Jossey-Bass.
- Scales, P. C., & Benson, P. L. (2004). The contribution of developmental assets to the prediction of thriving among adolescents. *Applied Developmental Science*, 8(1), 40–50.
- Sherrod, L. R., Flanagan, C., & Youniss, J. (2002). Dimensions of citizenship and opportunities for youth development: The what, why, when, where, and who of citizenship development. *Applied Developmental Science*, 6(4), 264–272.
- Wagner, W. (2006). *The social change model of leadership development: A guidebook for leadership educators*. Jossey-Bass.
- Wong, N. T., Zimmerman, M. A., & Parker, E. A. (2011). A typology of youth participation and empowerment for child and adolescent health promotion. *American Journal of Community Psychology*, 46(1–2), 100–114.
- Zeldin, S., Camino, L., & Calvert, M. (2007). Toward an understanding of youth in community governance: Policy priorities and research directions. *Análise Psicológica*, 25(1), 77–95.

Digital Transformation in Human Resource Development in Malaysia: Emerging Trends and Strategic Implications

Norhasni Zainal Abiddin¹, Ihsan Ro'is², Zahimi Zainol Abidin¹ and Junita Sulaiman

¹National Defence University of Malaysia, Kuala Lumpur, Malaysia

²Universitas Mataram, Mataram, Indonesia

norhasni@upnm.edu.my (corresponding author)

ihsanrois@unram.ac.id

zahimi@upnm.edu.my

junesoo310@gmail.com

Abstract: The rapid advancement of digital technologies has significantly reshaped the landscape of human resource development (HRD) in Malaysia. Despite increased digital adoption across sectors, many organizations continue to face challenges in aligning workforce competencies with digital transformation initiatives. This concept paper addresses the gap by exploring current trends, challenges, and strategic approaches in digitalizing HRD practices within the Malaysian context. The primary objective is to examine how digital tools and platforms are conceptually integrated into core HRD functions, such as training, performance management, and talent development, and to evaluate their theoretical effectiveness in enhancing organizational capabilities. Adopting a concept paper methodology, this study relies on an extensive review and synthesis of existing literature, policy documents, and recent industry reports related to HRD and digital transformation. Through theoretical analysis, the article outlines a strategic framework for digital HRD implementation, identifies critical success factors, and discusses conceptual barriers such as digital skill gaps, resistance to change, and disparities in digital infrastructure across organizations. The article contributes to the field by proposing a holistic framework for digital HRD strategy formulation and implementation. It provides actionable insights and policy considerations for HR leaders, educators, and government agencies to strengthen Malaysia's readiness for a digitally driven economy.

Keywords: Human resource development (HRD), Digital transformation, Malaysia, Workforce competency, Talent management

1. Introduction

Like many other countries, Malaysia is not exception; the fast development of digital technology has fundamentally changed several areas all around. In the field of Human Resource Development (HRD), digitization has brought fresh ideas for handling and growing human resources. The Malaysia Digital Economy Corporation (MDEC) (2021) claims that growing digitization of companies has changed the way companies handle HRD from talent acquisition to staff development. Growing digital economy means that Malaysian companies must improve the digital skills of their employees if they are to stay competitive. New HRD practice trends such the integration of artificial intelligence (AI) in hiring procedures and the usage of e-learning platforms for employee skill development have been sparked by this metamorphosis Human Resources Online, 2024.

Even with the growing focus on digitization, many companies still have major obstacles in completely using these technical developments. The digital skill gap in which employees, particularly in smaller businesses, struggle to keep up with the evolving technological scene is a significant barrier (Human Resources Online, 2025). This disparity puts company performance at risk as workers can lack the knowledge required to correctly apply digital technology. The growing reliance on digital technologies has underscored the need of HR professionals not only deploying new technology but also providing their employees with continuous development (Fahmy et al., 2023). This paper explores the evolving trends in HRD within Malaysia's digital transformation environment by analyzing the integration of digital tools and platforms in HRD practices and their ramifications for organizational performance and employee development.

2. Background of Study

Both outside pressure and the need for a nimbler workforce have driven HRD in Malaysia's digital revolution. To fit the industry 4.0 (I4.0) age, Malaysian companies have realized during the last several years they require a workforce with sophisticated digital capabilities. This has resulted in a greater emphasis on digital skill development and the acceptance of digital technologies within HR operations like training, performance management, and recruiting as well as Siradjuddin, Putra, & Lutfi, 2024. Studies have demonstrated that integrating digital technology into HRD operations may help HR operations to be more efficient and effective, therefore improving the corporate performance (Ming & Kamaruddin, 2024). For instance, artificial intelligence

applications in recruiting have grown to be a major trend providing solutions for applicant success prediction and simplifying of hiring procedures (Hays, 2024).

The Malaysian government has started projects such the MyDIGITAL Blueprint, which seeks to improve digital infrastructure and boost the digital economy by 2030 (MDEC, 2021) in response to the rising need for digital expertise. With initiatives meant to assist employees learn required competences in sectors such data analytics, software development, and cybersecurity, MDEC (2021) claims that the strategy emphasizes digital skills development as one of its core pillars. Efforts nonetheless still present difficulties. While some Malaysian companies especially small and medium-sized businesses (SMEs) still face major challenges including limited resources and unwillingness to change, even if others have made great progress in digitalizing their HR operations (Human Resources Online, 2025). Randstad Malaysia's 2022 study on the rising need for Learning and Development (L&D) initiatives with an eye on digital skills emphasizes. However, only a tiny proportion of Malaysian workers have access to such programs, indicating a mismatch between industry requirements and accessible training possibilities. This imbalance between demand and supply highlights the need for intentional HRD initiatives to overcome the digital skills gap that occurs across several industries. Furthermore, firms must engage in digital literacy programs to guarantee that their employees have the skills needed to flourish in an increasingly digital environment (Rahmat et al., 2022).

3. Methods

Using a concept paper methodology, this article addresses theoretical analysis and synthesis of current research, policy reports, and industry views on digital transformation in Human Resource Development (HRD). In a fast-changing sector like HRD, where empirical data may be scarce or yet in development, the concept paper technique is especially appropriate for investigating developing trends and difficulties. It enables thorough theoretical knowledge of the topic and the creation of models that direct further studies and application. This paper combines ideas from many industry reports, including the Digital Talent Survey 2021 (MDEC, 2021) and Human Resources Online (2024), which provide vital information on the difficulties and prospects for HR professionals in Malaysia, so ensuring the relevance and timeliness of the conclusions. Important trends such the increasing dependence on e-learning platforms and the incorporation of artificial intelligence in recruiting were found by use of these sources (Jayabalan et al., 2021). The paradigm put up by Li Ming and Kamaruddin (2024), who underlined the need of digital capabilities in HR operations and their part in improving organizational performance, underpins the study in this research.

A thorough assessment of literature is the first and most important component of this approach. Examining a broad spectrum of scholarly papers, corporate reports, and government publications on HRD policies in the digital age both internationally and inside Malaysia the review looks establishing a strong basis from which the conceptual framework of the article may be developed depends on this review. The literature addresses several important subjects, including digital HRD systems, issues and constraints Malaysian companies encounter, and the strategic alignment of HRD with more general corporate objectives. Examining digital HRD systems, the research shows how companies are incorporating digital technologies such artificial intelligence (AI), e-learning platforms, and big data analytics into conventional HRD operations. Among these roles are those of recruiting, talent management, performance assessment, and employee development. The study emphasizes how these instruments are transforming HRD processes, increasing their efficiency, personalizing nature, and data-driven character.

The part of the literature analysis on the problems and obstacles section concentrates on the difficulties Malaysian companies face implementing digital HRD solutions. We address issues like digital skill shortages, change reluctance, and inadequate infrastructure especially for small and medium-sized businesses (SMEs). Though their value is being more acknowledged, these obstacles prevent the full fulfillment of the possibilities of digital HRD tools. Furthermore, the study of the literature looks at strategic alignment, stressing in the framework of digital transformation the requirement of HRD being in line with corporate objectives. This connection guarantees that digital HR projects really support worker flexibility and corporate success. Examining the strategic function of HRD in enabling digital transformation helps one to understand how HR policies could change to satisfy the needs of a company environment becoming more and more digital. Drawing on these realizations, the research creates a conceptual framework for putting digital HRD ideas into action. Theoretical models of digital transformation, HRD capabilities, and organizational change are synthesized in this framework. It is intended to provide HR managers and legislators with a methodical way to match HR operations with the objectives of digital transformation. Particularly in developing digital skills, the framework stresses the

requirement of ongoing education and upskilling to make sure companies remain competitive in a corporate environment undergoing quick change.

In addition to the literature synthesis, the study incorporates an analysis of government policies and national strategies aimed at enhancing digital workforce readiness. This includes the MyDIGITAL Blueprint, which is Malaysia's strategic initiative for transforming the country into a digitally-driven economy. By evaluating the effectiveness of these policies in addressing the challenges of digital HRD, the paper identifies areas where the government's efforts could be improved. The study ends with legislative suggestions meant to enable public and commercial sector companies to get over obstacles to digital HRD adoption. Particularly for SMEs, these suggestions center on growing digital skills training programs, more investments in HR technology infrastructure, and more industry-leader, academic institution, government body cooperation. This paper presents a thorough theoretical basis and pragmatic insights utilizing a concept paper technique that may direct HR managers, corporate owners, and legislators in Malaysia in furthering digital HRD plans.

4. Results and Findings

The study revealed several key findings: Adoption of Digital Tools: A significant number of organizations have adopted digital platforms for recruitment, training, and performance management; Skill Gaps: Despite the adoption of digital tools, there is a notable gap in digital skills among employees, hindering the full utilization of these technologies; Resistance to Change: Organizational culture and employee resistance pose significant barriers to the successful implementation of digital HRD strategies; and Strategic Alignment: Organizations that align their HRD strategies with digital transformation goals report higher levels of employee engagement and organizational performance.

4.1 Increased Adoption of Digital Tools in HRD Functions

Digital tools are increasingly transforming the delivery and design of HRD practices in Malaysia. Among these, e-learning platforms have become one of the most widely adopted technologies. Large companies with geographically scattered teams notably find online learning interesting as it lets workers grow skills free from time or place restrictions (Putra, Siradjuddin, & Lutfi, 2024). Multimedia materials, interactive modules, and gamification tools that improve student involvement and retention abound on these sites. Artificial intelligence (AI) is being used in the context of talent acquisition to automate resume screening, chatbot-based behavioral analysis, and more precisely match applicants to job descriptions. This technical change lowers human bias, speeds up the hiring process, and raises the quality of candidates (Jayabalan et al., 2021). Notwithstanding these developments, the adoption of such technologies is still unequal; bigger companies embrace them much quicker than small and medium-sized businesses (SMEs). The main causes of this difference are small companies' lack of internal digital skills and expensive upfront investment expenses (Fahmy et al., 2023).

Furthermore, Learning Management Systems (LMS) and Human Resource Information Systems (HRIS) are being implemented to facilitate knowledge sharing, track learning progress, and maintain employee training records. These systems support a more structured and data-driven approach to workforce development, which is crucial in a knowledge-based economy (MDEC, 2021).

4.2 Growing Use of Data Analytics in Performance Management

The application of data analytics in performance management marks a significant departure from traditional appraisal systems, which often relied on subjective evaluations (Rahmat et al., 2022). Using analytics systems, companies are creating real-time dashboards with detailed insights into employee performance indicators like productivity, cooperation, attendance, and engagement rates. These measures let managers create customized growth plans, provide evidence-based advice, and make evidence-based choices (Putra, Siradjuddin, & Lutfi, 2024). Identifying trends and patterns that can indicate possible HR problems such as employee disengagement, fatigue, or possibility of turnover also helps predictive analytics. In certain sophisticated scenarios, analytics technologies may even assist with estimate future performance depending on prior behavior and capabilities (Dahalin et al., 2006). These features improve strategic workforce planning and help to build a more open and responsible performance culture as well.

Since HR departments lack analytical abilities and HR and IT systems are not integrated, many companies find it difficult to completely use these technologies. Data analytics is often underused or substituted with hand-made tracking systems in smaller companies, therefore restricting its strategic usefulness (Mustafa Kamil et al., 2023). Particularly when companies gather even more exacting data on staff, ethical issues and data privacy are also causing rising worry (Human Resources Online, 2024).

4.3 Persistent Digital Skills Gap

Despite Malaysia's push toward digitalization, the gap between the skills required in a digital economy and those possessed by the current workforce remains a significant concern (Human Resources Online, 2025). Digital literacy today covers a broad spectrum of competences including data analysis, digital communication, cybersecurity awareness, and mastery of industry-specific software programs, not just of simple computer skills. Many workers especially those in non-technical or administrative roles find it difficult to meet these new expectations (Jayabalan et al., 2021). A mismatch between the output of universities and industry's demands aggravates this skills gap. While colleges are starting to provide more courses in digital technologies, the speed of curriculum reform generally behind the speed of technology development (Ming & Kamaruddin, 2024). Graduates therefore enter the workforce without the skills required to significantly support initiatives on digital transformation. Time restrictions and restricted availability to reasonably priced training courses further challenge mid-career professionals in their ability to upskill (Fahmy et al., 2023).

Addressing this issue requires a multi-stakeholder approach that includes industry partnerships, continuous learning incentives, and stronger alignment between national education policy and digital economic goals (MDEC, 2021). While some progress has been made through government-led initiatives such as the Digital Skills Training Directory and MDEC's digital training programs, coverage remains uneven and access is still limited in rural areas (Mustafa Kamil et al., 2023).

4.4 Organizational Resistance to Digital Change

The conceptual review highlights that organizational resistance is one of the most entrenched barriers to successful digital HRD transformation. Resistance can stem from both structural and cultural factors. Many companies lack explicit digital transformation roadmaps structurally, which causes employee uncertainty and scattered application (Putra, Siradjuddin, & Lutfi, 2024). Culturally, many people worry about job displacement brought on by automation, which fuels mistrust and employee reluctance to embrace new systems or procedures (Rahmat et al., 2022). Digital change may either be facilitated or hampered in great part by leadership as well. Initiatives may lose momentum or be seen as secondary rather than essential to corporate strategy in circumstances where senior management lacks digital fluency or commitment (Fahmy et al., 2023). Key in promoting change from the bottom up, middle managers might potentially object if they believe digital technologies compromise their jobs or increase their burden without enough support (Human Resources Online, 2024).

Inadequate management techniques provide even with another problem. Many companies undervalue the need to explain the reasons for, advantages of, and predicted results of digital transformation. Employees are not likely to accept new technology without involvement and openness. Consequently, the change stays at a surface-level and does not result in long-lasting HRD practice improvement (Dahalin et al., 2006).

4.5 Infrastructure and Resource Constraints in SMEs

Small and medium-sized enterprises (SMEs), which represent over 97% of Malaysian businesses, face unique constraints in embracing digital HRD. Many SMEs operate with limited budgets, making it difficult to invest in advanced digital infrastructure such as cloud-based LMS platforms, AI recruitment systems, or data analytics software (MDEC, 2021). Additionally, they often lack internal IT teams capable of supporting the deployment and maintenance of digital tools (Jayabalan et al., 2021). Geographical disparities also play a role, with rural-based SMEs facing even greater challenges due to inconsistent internet connectivity and limited access to digital service providers. These restrictions affect not only the capacity of workers to engage in online training or remote work possibilities but also the use of digital HR instruments (Mustafa Kamil et al., 2023). Furthermore, less known among SMEs are government incentives, subsidies, and support initiatives meant to help with digital adoption. Even in cases where such initiatives are well-known, administrative loads or limited competence to negotiate application procedures might discourage participation (Human Resources Online, 2024). These companies lag behind bigger companies in terms of HR innovation, hence generating a digital gap that compromises national productivity and inclusive development (Putra, Siradjuddin, & Lutfi, 2024).

4.6 Policy Momentum, but Gaps in Execution

Malaysia has showed great policy-level dedication to producing a workforce with digital competency. Nationwide digital transformation (MDEC, 2021) has been set in motion by the MyDIGITAL Blueprint, Pelan Jana Semula Ekonomi Negara (PENJANA), and Digital Upskilling Incentives of HRD Corp.). These measures seek to improve digital literacy, encourage digital inclusion, and provide focused help for reskilling and training.

Notwithstanding this momentum, the way these policies are carried out usually falls short of expectations. Limited effect of fragmented cooperation between government agencies, mismatch with industry demands, and a lack of monitoring systems has resulted from (Putra, Siradjuddin, & Lutfi, 2024). For instance, while financial incentives for training exist, many companies either lack knowledge of them or cannot efficiently use them because of qualifying requirements or lack of direction (Human Resources Online, 2024).

Underutilization of public-private alliances is another problem. To guarantee that training materials are current and in line with market need, stronger cooperation among academics, government, and business is necessary. Moreover, policy execution usually emphasizes short-term deliverables instead of long-term workforce transformation, therefore restricting the durability of results (Dahalin et al., 2006). A more integrated policy ecosystem is needed to close this divide one that fosters lifelong learning paths, strengthens feedback loops amongst all the players engaged in Malaysia's digital HRD scene (Ming & Kamaruddin, 2024).

5. Discussion

The results of this article highlight important problems in the digital transformation of Human Resource Development (HRD) in Malaysia, therefore stressing both possibilities and constraints. One of the most clear-cut changes is the increasing adoption of digital technologies like artificial intelligence (AI) in e-learning platforms in training courses and recruitment tools. Artificial intelligence (AI) could significantly increase HR efficiency by means of massive data analysis revealing the best-fit persons; this is shown by Hays (2024). This shift toward artificial intelligence matches global HR trends and emphasizes the rising role of data-driven decision-making in HR processes (Hays, 2024). Moreover, by means of targeted feedback and data analytics, employing digital technologies in performance management and recruitment may allow firms to boost employee development (Putra, Siradjuddin, & Lutfi, 2024; Li Ming & Kamaruddin, 2024).

However, the transition to digital HRD is not without challenges. The most significant of these is the persistent digital skills gap. Many employees in Malaysia, particularly those in small and medium-sized enterprises (SMEs), lack the competencies necessary to effectively utilize digital tools (Human Resources Online, 2025). According to Human Resources Online (2024), 40% of Malaysian companies acknowledge that their employees lack digital skills, therefore aggravating the difficulty of a good digital transition. Particularly SMEs suffer with limited resources that make it difficult for them to commit in thorough training courses (Mustafa Kamil, Abd Rani, & Hasnan, 2023). Therefore, companies that want to properly use digital technologies must give the digital skills gap top importance (Human Resources Online, 2025; Randstad Malaysia, 2022). Despite these obstacles, numerous Malaysian companies have effectively negotiated the digital revolution by making training and development investments. Randstad Malaysia (2022) emphasizes how companies with strong learning and development initiatives are more suited to address the digital skills gap and improve employee performance. As stated in the MyDIGITAL Blueprint (MDEC, 2021), the dedication of the Malaysian government to the development of digital skills promotes the acceleration of digital adoption across sectors, therefore helping to close current digital competence gaps (MDEC, 2021).

The integration of digital HRD strategies also has profound implications for organizational performance. Leveraging data analytics for HR decision-making enables organizations to optimize recruitment processes, identify skill gaps, and enhance productivity (Dahalin et al., 2006; Li Ming & Kamaruddin, 2024). For example, performance management systems that incorporate digital platforms allow for real-time feedback and personalized development plans (Dahalin et al., 2006). Maintaining competitiveness in the digital economy depends on these technical developments, so they are vital for Malaysian companies (Putra, Siradjuddin, & Lutfi, 2024). Although using digital technologies has interesting prospects, HR policies must also be thoroughly reexamined. Digitalization is a strategic change that calls for a rethink of how companies approach human capital development (Human Resources Online, 2025), not just a technical one. Growing awareness of the advantages of data-driven, agile, and learner-centered HR approaches (Putra, Siradjuddin, & Lutfi, 2024) is shown in the rising dependence on digital technologies in training, recruiting, and performance management). Hallmarks of current HR systems, these technologies help companies to increase the efficiency and personalizing of learning, build a culture of constant growth, and improve decision-making (Li Ming & Kamaruddin, 2024).

However, the success of digital transformation in HRD hinges on integrating technology with appropriate organizational structures, cultures, and competencies (Human Resources Online, 2025). The digital skills gap observed in Malaysia reflects a disconnect between technological advancements and workforce preparedness (Mustafa Kamil, Abd Rani, & Hasnan, 2023). From a human capital theory perspective, this gap poses risks to national productivity and innovation, particularly in labor-intensive or knowledge-driven sectors (Human

Resources Online, 2024; Putra, Siradjuddin, & Lutfi, 2024). Therefore, it is very necessary to have organized investments in human capital development (MDEC, 2021). Furthermore, complicating the shift to digital HRD is organizational resistance to change. Based on change management theories such as Lewin's Change Model and Kotter's 8-Step Process, it is abundantly evident that effective digital transformation calls for more than just new technology deployment. It calls for intentional cultural changes and stakeholder involvement as well as visionary leadership (Lewin, 1951; Kotter, 1996). Many Malaysian companies, especially SMEs and public institutions, lack digital leadership and change management skills, which hinders the acceptance and institutionalization of innovative HR practices (Mustafa Kamil, Abd Rani, & Hasnan, 2023). This is consistent with research on organizational behavior that stresses the need of leadership buy-in and employee participation for maintaining long-term change (Kotter, 1996; Randstad Malaysia, 2022). Further raising questions regarding digital inclusiveness and equality are the financial and infrastructure limitations SMEs face. Should the advantages of digital HRD only reach well-funded companies, a digital gap might develop, therefore accentuating already existing economic inequalities (Human Resources Online, 2024). This finding emphasizes the importance of focused measures to assist underrepresented groups in the digital economy (MDEC, 2021) including small businesses. Although progressive, Malaysia's policy measures have to change to be more responsive, easily available, and outcomes-driven to narrow this disparity (Human Resources Online, 2025; MDEC, 2021).

Additionally raising ethical and governance questions is HR's increasing dependence on data analytics and artificial intelligence in decision-making. Carefully controlled issues like data privacy, algorithmic bias, and openness in automated evaluations can help to build employee confidence by following international norms of justice and responsibility (Putra, Siradjuddin, & Lutfi, 2024). While many Malaysian companies still lack internal governance systems to guarantee the appropriate use of technology an area that is still underdeveloped organizations must also build these systems concurrently. Another important area of attention is strategic alignment between HRD projects and national development objectives. The capacity of Malaysia to build a workforce that is technologically literate, flexible, creative, and internationally competitive will determine whether it can become a regional digital center (MDEC, 2021). Policymakers, teachers, and HRD professionals must cooperate more closely to create comprehensive, future-oriented plans that link labor market demands with educational results (Human Resources Online, 2024).

Finally, the conceptual framework suggested in this study supports a system-thinking perspective of digital HRD. This strategy stresses the interdependence of important players, government agencies, businesses, training providers, staff members, and digital HR practices to match long-term organizational and national plans (Putra, Siradjuddin, & Lutfi, 2024). This would include building dynamic alliances between academics and industry, developing integrated systems for certification and training, and always tracking HRD results (MDEC, 2021). In essence, even if Malaysia is headed toward digital transformation in HRD, much more must be done. Along with technological investments, the shift calls for careful leadership, inclusive policy design, and ongoing capacity development in every industry of the economy (Human Resources Online, 2025).

6. Conclusion

The transformation of Human Resource Development (HRD) through digital technologies represents one of the most significant shifts in the way organizations develop, manage, and retain talent in the 21st century. In the Malaysian setting, this metamorphosis is both strategic need and necessity. Digital technologies such as e-learning platforms, artificial intelligence, and data analytics are starting to alter HRD operations, providing fresh efficiencies, insights, and capabilities for improving organizational performance and employee engagement as this concept paper has shown. Still, Malaysia's path toward entirely computerized HRD systems is not straightforward. Although certain industries and bigger companies have achieved significant development, many small and medium-sized businesses (SMEs) still have great obstacles like insufficient infrastructure, lack of digital competences, and resource limits. These differences run the danger of generating a digital gap that compromises national workforce development targets and stunts inclusive economic progress.

Further underlining the need of digitization as a whole transformation rather than merely technical improvement is the ongoing digital skills gap, organizational resistance to change, and inadequate change management strategies. Only when they complement more general organizational goals, ingrained in a supporting culture, and supported by leaders dedicated to innovation and ongoing development will digital HRD projects be successful. Particularly via the MyDIGITAL Blueprint and HRD Corp's projects, national policy measures show a noteworthy dedication to creating a technologically competent workforce. Still, more dynamic, demand-driven training ecosystems, better support for SMEs, and greater public and private sector collaboration are sorely needed. To guarantee that Malaysia's workforce stays competitive in an ever-digitized

global economy, more focus should be on encouraging alliances across government agencies, businesses, and educational institutions.

Considering these insights, this concept paper proposes a comprehensive framework for digital HRD that emphasizes strategic alignment, inclusivity, adaptability, and ethical governance. Such a framework may help companies and legislators create HRD policies that not only have advanced technology capability but also react to the intricate human and organizational dynamics engaged in digital transformation. Malaysia's capacity to create a strong, future-ready workforce will ultimately greatly influence its success in switching to a digital economy. This calls for a long-term commitment to reevaluating HRD from the bottom up and concentrate national and organizational development plans on people, purpose, and technology.

Acknowledgements

The authors sincerely appreciate National Defence University of Malaysia's financial assistance in publishing this article.

Ethics declaration: The authors declare that they have no competing interests.

AI declaration: This work involved the use of AI tools to assist with [e.g., grammar checking, idea generation, formatting, summarization]. The final content was reviewed and edited by the author(s) to ensure accuracy, originality, and adherence to academic standards. No AI-generated content was submitted without critical human oversight.

References

- Dahalin, M. Z., Ali, J., Segumpan, R. G., Abdullah, R. Z., Siraj, F., Mat Junoh, M. Z., & Ahmad, I. (2006). *Human Resource Development: Technology and ICT Adoption in Industrial Sector, Malaysia*. Universiti Utara Malaysia.
- Fahmy, S., Asyikin, N. E., Aziana, N., & Haslinda, N. (2023). A Review of Digital Talent Systems for Malaysian Industries. *International Journal of Synergy in Engineering and Technology*, 4(1), 46-53. Retrieved from <https://tatiuc.edu.my/ijset/index.php/ijset/article/view/172>
- Hays. (2024). AI in 2024. Retrieved from <https://www.hays.com.my/press-release/content/ai-in-2024>
- Hays. (2024). Navigating AI in Recruitment: Top Challenges for HR in Malaysia and How to Solve Them. Retrieved from <https://www.hays.com.my/press-release/content/top-five-challenges-faced-by-human-resources-professionals-in-malaysia-for-ai-implementation-in-recruitment>
- Human Resources Online. (2024). 40% of Malaysia employers surveyed say there's a lack of digital skillset among their employees. Retrieved from <https://www.humanresourcesonline.net>
- Human Resources Online. (2025). 37% of Malaysians feel they do not possess the right skills for digital economy. Retrieved from <https://www.humanresourcesonline.net/37-of-malaysians-feel-they-do-not-possess-the-right-skills-for-digital-economy>
- Human Resources Online. (2025). 40% of Malaysia employers surveyed say there's a lack of digital skillset among their employees. Retrieved from <https://www.humanresourcesonline.net/businesses-surveyed-in-malaysia-remain-optimistic-despite-growing-operational-costs>
- Human Resources Online. (2025). 85% of firms in Malaysia see the need to equip employees with digital skills. Retrieved from <https://www.humanresourcesonline.net/85-of-firms-in-malaysia-see-the-need-to-equip-employees-with-digital-skills>
- Human Resources Online. (2025). Digital adoption landscape in Malaysia. Retrieved from <https://www.humanresourcesonline.net/businesses-surveyed-in-malaysia-remain-optimistic-despite-growing-operational-costs>
- Human Resources Online. (2025). War for Talent in Malaysia. Retrieved from <https://www.humanresourcesonline.net/businesses-surveyed-in-malaysia-remain-optimistic-despite-growing-operational-costs>
- Jayabalan, N., Makhbul, Z. K. M., Nair, S., Subramaniam, M., & Ramly, N. A. B. (2021). The Impact of Digitalization on Human Resource Management Practices in the Automotive Manufacturing Industry. *Journal of Southwest Jiaotong University*, 56(5), 48-60.
- Li Ming, & Kamaruddin, B. H. (2024). The Changing Function of Human Resource Management in an Era of Digital Transformation. *Educational Administration: Theory and Practice*, 30(6), 1974–1980.
- Malaysia Digital Economy Corporation (MDEC). (2021). *Digital Talent Survey 2021*. Retrieved from <https://www.mdec.my>
- Malaysia Digital Economy Corporation (MDEC). (2021). *Digital Skills Training Directory*. Retrieved from <https://www.mdec.my/digital-skills-training-directory>
- Malaysia Digital Economy Corporation (MDEC). (2021). *MyDIGITAL Blueprint*. Retrieved from <https://www.mdec.my/mydigital>
- Malaysia Digital Economy Corporation (MDEC). (2021). *Malaysia Artificial Intelligence Roadmap 2021-2025 (AI-Rmap)*. Retrieved from <https://www.mdec.my/ai-rmap>

- Ming, L., & Kamaruddin, B. H. (2024). The Changing Function of Human Resource Management in an Era of Digital Transformation. *Educational Administration: Theory and Practice*, 30(6), 1974–1980.
- Mustafa Kamil, B. A., Abd Rani, S. H., & Hasnan, N. (2023). Talent Management and Digital Transformation in the Malaysian SMEs' Manufacturing Sector. *European Proceedings*, 2023(11), 12-23.
- Putra, T. W., Siradjuddin, S., & Lutfi, M. (2024). Digital Transformation and Human Resource Development Strategies to Enhance the Global Competitiveness of the Halal Industry. *Journal of Management and Business Innovations*, 6(2), 45-59.
- Rahmat, A. M., Mohd, I. H., Omar, M. K., Kamalludeen, R., Wan Zahari, W. M. Z., Azmy, N., & Adnan, A. H. M. (2022). Integrating Socio-Digital Skills in the Industry 4.0 Era for Graduates' Employability: An Employers' Perspective. *Journal of Positive School Psychology*, 6(3), 5115. Retrieved from <https://www.journalppw.com/index.php/jpsp/article/view/5115>
- Randstad Malaysia. (2022). 97% of Malaysians are Interested in Learning and Development, Only 36% Have Access to It. Retrieved from <https://www.randstad.com.my>

Leadership and Empathy: A Bibliometric Review of Two Decades of Research

Sanja Zivkovic

Heartist Center, Zagreb, Croatia

sanja.zivkovic@heartistcenter.com

Abstract: Empathy in leadership is a reflection of humanity. The more artificial intelligence is used in business and work environments, the greater the need to humanize leadership with empathy as a key emotional intelligence competency. Due to the multifaceted and multilevel effects of empathy in leadership, further research on this topic could contribute to both leadership theory and practice. Bibliometric reviews can advance a research field by providing objective and reproducible overviews of published research. This paper aimed to provide a bibliometric review of the research field of leadership and empathy and offer insights into its past, present, and future. Science mapping was conducted using three bibliometric techniques: co-citation analysis, bibliographic coupling, and co-word analysis. A systematic bibliometric review of two decades of research on leadership and empathy is provided based on articles from the Web of Science Core Collection database published from 2004 to 2024 in areas relevant to management and organizational behavior in a business context. The study includes co-word analyses conducted separately for the periods before and after the declaration of the pandemic, when there was a significant increase in the number and thematic scope of research on leadership and empathy. The findings indicate that the past of the research field was mostly concerned with the construct of emotional intelligence and the multifaceted effects of empathy in leadership. The present is focused on employee-level outcomes, crisis management and communication, and ethical, servant, transformational, responsible, and women's leadership. The future of the research field could be directed toward advancing knowledge on the effects of leader empathy on organizational-level outcomes, the impact of enhancing empathy through leadership development programs, and the role of empathy in inclusive and adaptive leadership. The findings of this study could also raise awareness among leadership practitioners that empathy is not only inherent to what is labeled as empathetic or compassionate leadership, but can also contribute to humanizing various leadership approaches.

Keywords: Leadership, Empathy, Bibliometric review, Science mapping

1. Introduction

Empathy in leadership is a reflection of humanity. The more artificial intelligence is used in business and work environments, the greater the need to humanize leadership with empathy. As an emotional intelligence competency, empathy can be reflected in leadership in its three forms: cognitive empathy, emotional empathy, and empathic concern or compassion (Goleman et al., 2017). It refers to understanding the perspectives and emotions of others, as well as acting on an inclination to alleviate another person's distress. The multifaceted effects of empathy in leadership are reflected in various leadership approaches. In addition to being central to the constructs of empathetic and compassionate leadership (Kock et al., 2019; Ramachandran et al., 2024), empathy is recognized in the literature as an important aspect of ethical leadership (Li, 2024; Kalshoven, Den Hartog and De Hoogh, 2013; Mahsud, Yukl and Prussia, 2010), servant leadership (Jit, Sharma and Kawatra, 2017; Linuesa-Langreo, Ruiz-Palomino and Elche, 2016), transformational leadership (Hensel and Visser, 2018; Skinner and Spurgeon, 2005), responsible leadership (Voegtlin et al., 2020), and sustainability leadership (Hallin and Mantel, 2018). A systematic literature review of the impact of empathy on leadership effectiveness in the field of business management indicated that empathy enhances leadership effectiveness through its extensive effects on the level of the leader, followers, and organization (Zivkovic, 2022).

Due to the multifaceted and multilevel effects of empathy in leadership, further research on this topic could contribute to both leadership theory and practice. Bibliometric reviews can advance a research field by providing a systematic, objective, and reproducible overview of the scientific literature (Donthu et al., 2021). A search of available sources and databases showed that currently there is no bibliometric review of the research field of leadership and empathy.

To address this gap in the literature, this paper aims to provide a bibliometric review of the research field of leadership and empathy and offer insights into its past, present, and future. For this purpose, science mapping was conducted based on the triangulation of three bibliometric techniques: co-citation analysis, bibliographic coupling, and co-word analysis. The study covers the period from 2004 to 2024 and includes co-word analyses conducted separately for the periods before and after the declaration of the COVID-19 pandemic, when there was a significant increase in the number and thematic scope of research on leadership and empathy. The review did not include publications classified solely into nursing, health sciences, and education due to the focus on

research published in areas relevant to management and organizational behavior in a business context. Thus, this study presents a systematic bibliometric review of two decades of research on leadership and empathy.

2. Methods

Bibliometric reviews can contribute to the advancement of a research field by providing a systematic, objective, and reproducible overview of the literature based on a quantitative approach, and by generating ideas for future research and applications (Donthu et al., 2021). In this study, a bibliometric review was focused on science mapping, which is used to examine the intellectual and conceptual structure, as well as the development of a particular line of research (Zupic and Cater, 2015). Science mapping was conducted using three bibliometric techniques: co-citation analysis, bibliographic coupling, and co-word analysis. Co-citation analysis derives thematic clusters based on cited publications "to construct measures of similarity between documents, authors or journals" (Zupic and Cater, 2015, p. 3). Bibliographic coupling "uses the number of references shared by two documents as a measure of the similarity between them" (Zupic and Cater, 2015, p. 5), and thematic clusters are based on the citing publications. Co-word analysis "uses the words in documents to establish relationships and build a conceptual structure of the domain" (Zupic and Cater, 2015, p. 6). The triangulation of these three bibliometric techniques can contribute to revealing the past, present, and future of the research field by uncovering foundational, periodical, and emerging themes (Donthu et al., 2021; Lamovšek and Černe, 2023).

The search of publications included in this bibliometric review was conducted in the Web of Science Core Collection database on August 28, 2024. The searched terms were "leadership" AND "empathy" included in the title, abstract, and/or keywords. The search included journal articles in English only. It was limited to the period from 2004 to 2024 to present a systematic overview of the literature on leadership and empathy in the last two decades. To focus on research relevant to management and organizational behavior in a business context, the search was limited to the following research fields (with the resulting number of publications): Business Economics (317), Psychology (188), Social Sciences Other Topics (88), and Behavioral Sciences (8). The total number of articles found and included in this bibliometric review amounts to 503. VOSviewer software (version 1.6.18), developed by Van Eck and Waltman (2010), was used to conduct bibliometric analyses and create visualizations of bibliometric maps.

3. Results

3.1 Co-Citation Analysis

The unit of analysis was cited references, and the minimum number of citations of a cited reference was set to 15. The full counting method was applied. Of the 28,508 cited references, 33 items met the threshold. After removing one item marked as "anonymous, thesis", the total strength of the co-citation links with other cited references was calculated for each of the 32 items. The items "anonymous, 1985, leadership and performance beyond expectations" and "anonymous, 2006, working with emotional intelligence" were not removed since they represent seminal works in the fields of transformational leadership (Bass, 1985) and emotional intelligence (Goleman, 2006). Figure 1 illustrates the resulting co-citation map.

Cluster 1: Individual differences in empathy, ethical leadership and transformational leadership. Cluster 1 marked in red includes 13 items. The themes of the most influential cited publications refer to the individual differences in empathy (Davis, 1980, 1983) and ethical leadership (Brown, Trevino and Harrison, 2005; Brown and Trevino, 2006). This cluster also includes publications of Bass (1985), Burns (1978), and Bass and Steidlmeier (1999), which are related to transformational leadership.

Cluster 2: Emotional intelligence in leadership and multifaceted effects of empathy. Cluster 2 marked in green includes 10 items. It encompasses publications that represent the knowledge base related to the construct of emotional intelligence (Goleman, 2006, 2020; Salovey and Mayer, 1990). Other cited publications in this cluster examine the role of emotional intelligence and empathy in leadership (George, 2000; Holt and Marques, 2012), as well as the effects of empathy on the emergence of leaders (Kellet et al., 2006), leader and follower attitudes and performance (Kellet et al., 2002; Wong and Law, 2017), and leader-member exchange quality (Mahsud, Yukl and Prussia, 2010).

Cluster 3: Methods. Cluster 3 marked in blue includes 9 items. The cited publications in this cluster describe various methods related to structural equation modeling, mitigation of biases, and moderation and mediation analysis.

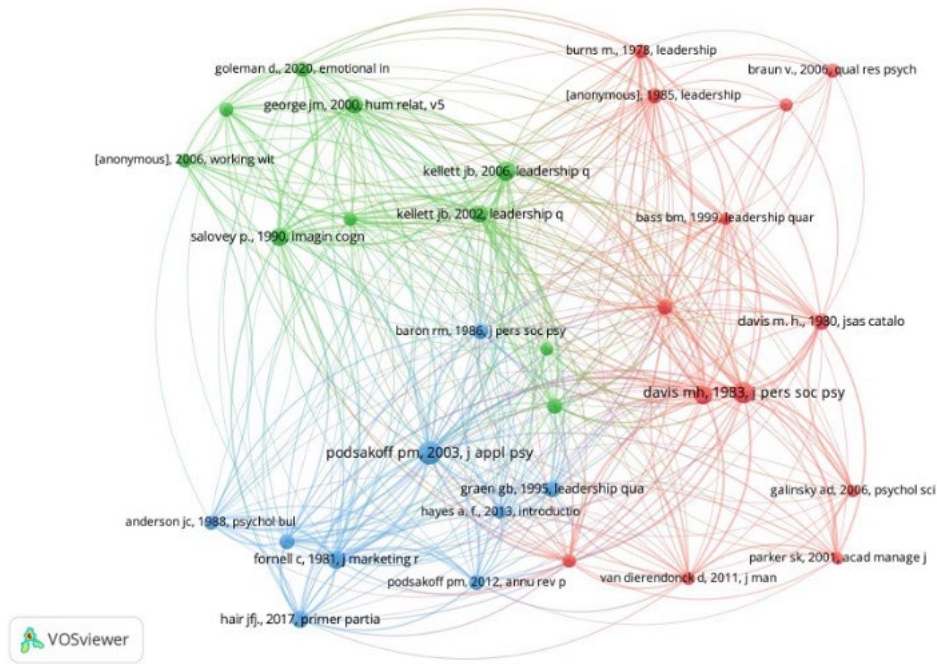


Figure 1: Co-citation map

3.2 Bibliographic Coupling

The unit of analysis was documents, and the minimum number of citations of a document was set to 35. The full counting method was applied. Of the 503 articles documents, 73 items met the threshold for which the total strength of the bibliographic coupling links with other documents was calculated. Given that 4 items were not connected to others, the bibliographic coupling map was created for 69 items (Figure 2).

Cluster 1: Perspective-taking, ethical leadership, employee attitudes and behaviors. Cluster 1 marked in red includes 33 items. The most influential citing publications examine the role of empathy in perspective-taking (Ku, Wang and Galinsky, 2015; Longmire and Harrison, 2018), ethical leadership (Kalshoven, Den Hartog and De Hoogh, 2013; Mahsud, Yukl and Prussia, 2010; Tumasjan, Strobel and Welp, 2011), and follower performance (Kock et al., 2019). The publications in this cluster, published in a more recent period (2020-2024), explore the influence of a leader's expression of empathy through empathetic language and compassion on various employee attitudes and behaviors, such as work engagement (Rabiul and Yean, 2021), workplace bullying (Ahmad et al., 2022), trust (Men, Qin and Jin, 2022), organizational identification (Yue, Men and Ferguson, 2021), and voluntary pro-environmental behavior (Raza et al., 2021).

Cluster 2: Emotional intelligence, leadership emergence, performance and approaches. Cluster 2 marked in green includes 14 items. The most influential citing publications explore the role of emotional intelligence and empathy in leadership emergence (Cote et al., 2010; Kellet et al., 2006) and the performance of both leaders (Sadri, Weber and Gentry, 2011) and followers (Miao, Humphrey and Qian, 2018). Other publications in this cluster mainly discuss the role of emotional intelligence in organizations (Cote, 2014) and in various leadership approaches (Maamari and Majdalani, 2017), particularly transformational leadership (Barbuto and Burbach, 2006; Clarke, 2010), ethical leadership and servant leadership (Lumpkin and Achen, 2018).

Cluster 3: Crisis management and communication, responsible leadership, and women's leadership. Cluster 3 marked in blue includes 12 items. The citing publications in this cluster published mostly in a more recent period focus on the three key themes: crisis management and communication (Gartzia et al., 2012; Konig et al., 2020; McGuire et al., 2020), responsible leadership (Stahl and Sully de Luque, 2014; Voegtlin et al., 2020) and women's leadership (Gartzia et al., 2012; Javidan, Bullough and Dibble, 2016; Pullen and Vachhani, 2021; Sergent and Stajkovic, 2020).

Cluster 4: Narcissism, leader traits, behaviors and outcomes. Cluster 4 marked in yellow includes 10 items. Empathy in leadership is not the central theme of the citing publications in this cluster. One stream of research examines the impact of narcissistic leaders and managers described as those who lack empathy (Ackerman et al., 2011; Ong et al., 2016; O'Reilly et al., 2014). Other publications explore empathy or empathic concern in the

context of various leader traits, behaviors, and outcomes (Jiang et al., 2019; Ogunfowora et al., 2022; Sosik et al., 2019).

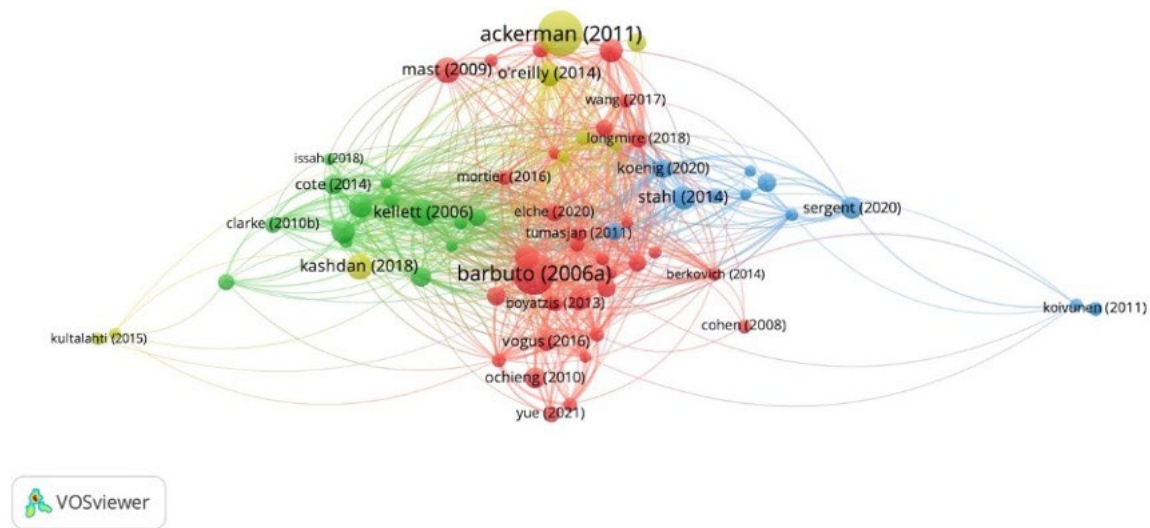


Figure 2: Bibliographic coupling map

3.3 Co-Word Analysis

To offer insight into the conceptual structure and the development of research on leadership and empathy before and after the declaration of the COVID-19 pandemic, the co-word analysis of published research is divided into two periods: 2004-2019 and 2020-2024.

For the period 2004-2019, the co-word analysis encompassed 243 articles. The minimum number of occurrences of an author keyword was set to 3. Of the 788 keywords, 37 met the threshold for which the total strength of the co-occurrence links with other keywords was calculated. The keyword "meta-analysis" was removed before forming the co-word map. Given that 2 items were not connected to others, the co-word map for the period 2004-2019 was created for 34 items (Figure 3).

Cluster 1: Transformational and authentic leadership. Cluster 1 marked in red includes 14 keywords. Most of the keywords with the highest link strength in the period 2004-2019 are included in this cluster: "transformational leadership", "intelligence", "emotion", "mindfulness", "authentic leadership", "perspective taking", "social intelligence", "compassion", and "empathic concern". Except for transformational and authentic leadership, these keywords are used to define and describe the construct of empathy. The emerging themes in this cluster are "ethical leadership", "coaching", and "well-being".

Cluster 2: Ethics and applications. Cluster 2 marked in green includes 13 keywords. Both "leadership" and "empathy" as the searched terms in this bibliometric study are included in this cluster, as well as "gender". The other keywords are mainly related to ethics ("ethics", "responsibility", "ethics of care", "justice") and areas of application of empathy in leadership ("higher education", "communication", "entrepreneurship", "nursing").

Cluster 3: Emotional intelligence, narcissism and servant leadership. Cluster 3 marked in blue includes 7 keywords. Its main keywords are "emotional intelligence", "servant leadership", "cross-culture", and "narcissism". The emerging keywords in this cluster are "motivation", "human resource management", and "service quality".

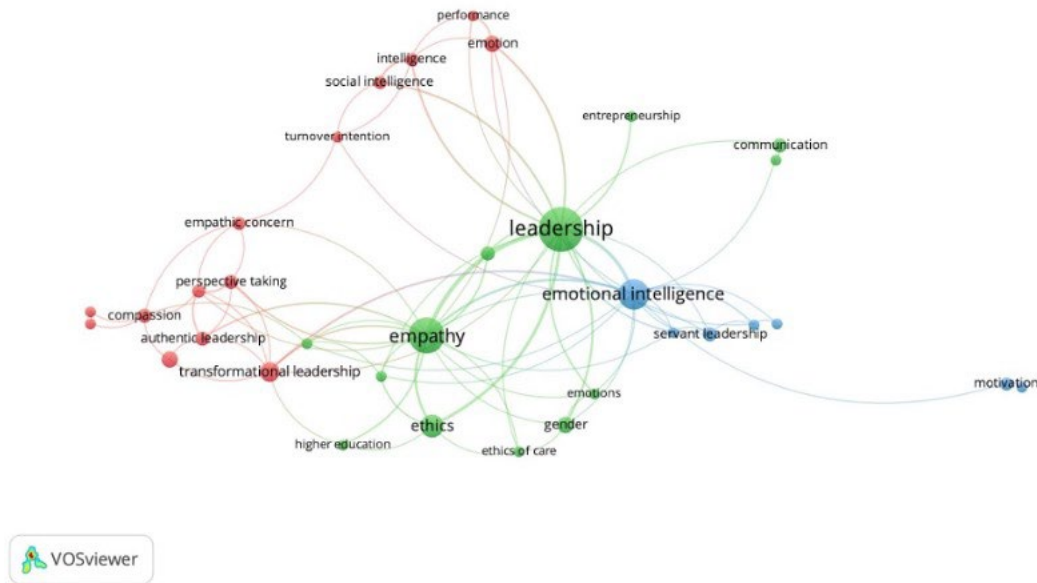


Figure 3: Co-word map, 2004-2019

For the period 2020-2024, the co-word analysis encompassed 260 articles. The minimum number of occurrences of an author keyword was set to 3. Of the 996 keywords, 55 met the threshold. Given that the keywords "india" and "qualitative" were removed, the co-word map for the period 2020-2024 was created for 53 items (Figure 4).

Cluster 1: Servant, inclusive, compassionate and transformational leadership. Cluster 1 marked in red includes 16 keywords. This cluster focuses on research on the influence and role of empathy and compassion in various leadership approaches, such as "servant leadership", "inclusive leadership", "compassionate leadership", and "transformational leadership". It also includes the keywords "diversity", "collaboration", "motivating language", "perspective-taking", and "work engagement", which can be considered related to these leadership approaches.

Cluster 2: Mindfulness, resilience and gender. Cluster 2 marked in green includes 14 keywords. The keywords included in this cluster mainly refer to topics related to mindfulness ("mindfulness", "emotional intelligence", "self-awareness") and resilience ("resilience", "emotions", "stress", "self-regulation", "personality"). This cluster also includes the keywords "leadership" and "gender" as key research themes, as well as "coaching" as an emerging theme.

Cluster 3: Crisis, trust and communication. Cluster 3 marked in blue includes 12 keywords. The keywords with the highest link strength are "COVID-19" and "trust". The other keywords related to both of these themes are "crisis", "pandemic", "leadership communication", "crisis communication", and "internal communications". The emerging keywords in this cluster are "ethical leadership" and "adaptive leadership".

Cluster 4: Responsibility, performance, well-being and empathetic leadership. Cluster 4 marked in yellow includes 11 keywords. It refers to the themes related to an organization's responsibility ("corporate social responsibility"), performance ("job performance", "performance", "innovative behavior"), well-being ("well-being", "job satisfaction", "affective commitment", "work-life balance"), and empathetic leadership.

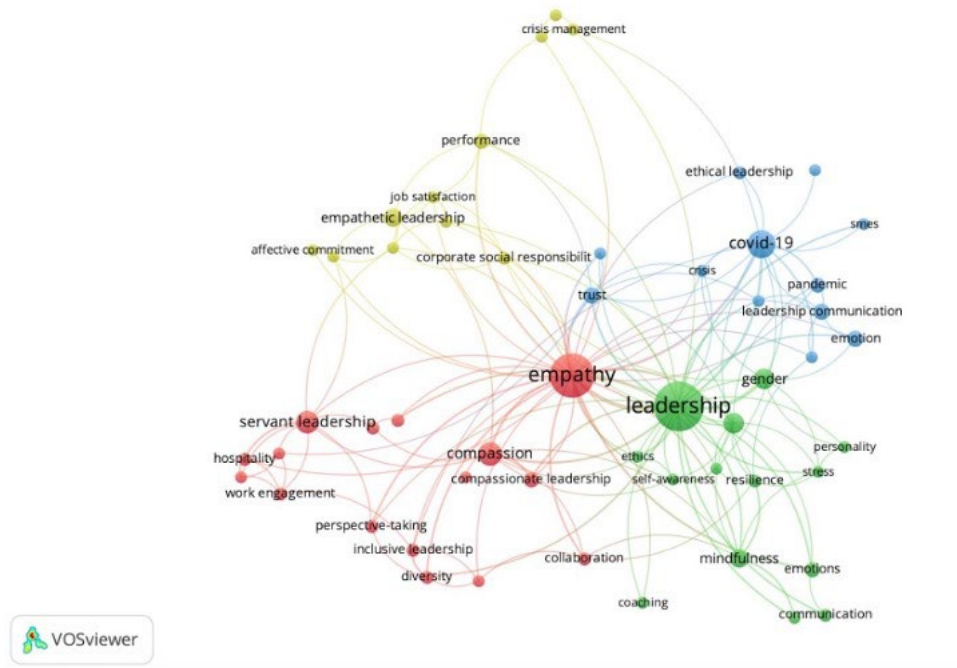


Figure 4: Co-word map, 2020-2024

4. Discussion

In this bibliometric study, the content of the most influential publications identified through co-citation analysis and bibliographic coupling was reviewed to determine the main themes of clusters, and the co-word analysis was conducted separately for two periods. Such a comprehensive approach to examining the research field was applied to allow for a greater understanding of its structure and development. The analyses showed significant developments after the declaration of the COVID-19 pandemic in terms of an increased number of publications and research themes, which indicates the particular importance of empathy in leadership in times of crisis, uncertainty, and change. Insights into the past, present, and future of the research field of leadership and empathy could contribute to its further advancement.

Past of the research field. The co-citation analysis indicated that the development of the research field of leadership and empathy started by gaining an understanding of the construct of emotional intelligence, individual differences in empathy, and the effects of empathy on the emergence of leaders, leader and follower attitudes and performance, and leader-member exchange quality. The findings also showed that the themes of early research in the field included ethical leadership and transformational leadership. Although empathy is not explicitly mentioned as a dimension of these leadership constructs, it can be considered relevant for moral conduct in ethical leadership and individualized consideration in transformational leadership. Following the above, it can be concluded that the past of the research field was mostly concerned with the construct of emotional intelligence and the multifaceted effects of empathy in leadership.

Present of the research field. Bibliographic coupling showed that researchers continued to examine the effects of empathy in leadership with an emphasis on employee-level outcomes. Cluster 1 most closely reflects the present of the research field, considering that it encompasses research on employee attitudes and behaviors published in a more recent period (2020-2024), including themes such as trust, work engagement, organizational identification, and voluntary pro-environmental behavior. In addition, one of the key themes of more recent citing publications is crisis management and communication, which is mostly related to research on the impact of leader empathy during the COVID-19 pandemic. The bibliographic coupling also indicated that the current research highlights the role of empathy in various leadership approaches. The findings of the co-word analysis for the period 2020-2024 are consistent with the main current research themes identified through the bibliographic coupling. Thus, the present of the research field of leadership and empathy is focused on employee-level outcomes, crisis management and communication, and ethical, servant, transformational, responsible, and women's leadership.

Future of the research field. The co-word analysis indicated that the key themes of research on leadership and empathy in the period 2004-2019 were more general, referring mostly to emotional intelligence, ethics, and a

few leadership approaches (transformational, authentic, and servant). After the declaration of the COVID-19 pandemic, the research themes in the period 2020-2024 have become more specific and diverse. While the effects of empathy have been explored on the level of a leader and employees, the outcomes on the level of an organization have been under-researched. Since empathy can be considered a prerequisite for a leader's caring attitude toward wider society and the environment, it can influence organizational effectiveness in meeting the demands of various organizational stakeholders. Even though "corporate social responsibility" was one of the keywords with the highest total link strength in the period 2020-2024, it would be useful to explore how leader empathy contributes to building the organizational culture of care and creating positive social and environmental outcomes. Furthermore, the co-word analysis showed that "coaching" is one of the emerging themes and that leadership development was not among the key research themes. Future research could examine the impact of leadership development programs focused on enhancing the leadership capability to express empathy on the outcomes on the level of the leader, employees, and organization. One of the emerging keywords is also "adaptive leadership," which is increasingly important in continuously and rapidly changing environments, while further research on the importance of empathy in inclusive leadership could be expected due to the growing diversity of business and work environments. Therefore, the future of the research field could be directed toward advancing knowledge on the effects of leader empathy on organizational-level outcomes, the impact of enhancing empathy through leadership development programs, and the role of empathy in inclusive and adaptive leadership.

5. Conclusion

This study contributes to the leadership literature by providing a systematic bibliometric review of two decades of research on leadership and empathy in areas relevant to management and organizational behavior in a business context. To the best of our knowledge, this is the first bibliometric review of the research field of leadership and empathy. Its main limitation is that it is based exclusively on articles from the Web of Science Core Collection database. Science mapping based on the triangulation of three bibliometric techniques offered insights into the past and present of the research field and provided ideas in which direction it could develop in the future. The findings of this study could also raise awareness among leadership practitioners that empathy is not only inherent to what is labeled as empathetic or compassionate leadership, but can also contribute to humanizing various leadership approaches.

Ethics declaration: Ethical clearance was not required for the research.

AI declaration: AI tools were not used in the creation of the paper.

References

- Ackerman, R. A., Witt, E. A., Donnellan, M. B., Trzesniewski, K. H., Robins, R. W. and Kashy, D. A. (2011) "What Does the Narcissistic Personality Inventory Really Measure?", *Assessment*, 18(1), 67-87.
- Ahmad, S., Islam, T., D'Cruz, P. and Noronha, E. (2022) "Caring for Those in Your Charge: The Role of Servant Leadership and Compassion in Managing Bullying in the Workplace", *International Journal of Conflict Management*, 34(1), 125-149.
- Barbuto, J. E. and Burbach, M. E. (2006) "The Emotional Intelligence of Transformational Leaders: A Field Study of Elected Officials", *The Journal of Social Psychology*, 146(1), 51-64.
- Bass, B. M. (1985) *Leadership and Performance Beyond Expectations*, Free Press, New York.
- Bass, B. M. and Steidlmeier, P. (1999) "Ethics, Character, and Authentic Transformational Leadership Behavior", *The Leadership Quarterly*, 10(2), 181-217.
- Brown, M. E. and Trevino, L. K. (2006) "Ethical Leadership: A Review and Future Directions", *The Leadership Quarterly*, 17(6), 595-616.
- Brown, M. E., Trevino, L. K. and Harrison, D. A. (2005) "Ethical Leadership: A Social Learning Perspective for Construct Development and Testing", *Organizational Behavior and Human Decision Processes*, 97(2), 117-134.
- Burns, J. M. (1978) *Leadership*, Harper and Row, New York.
- Clarke, N. (2010) "Emotional Intelligence and its Relationship to Transformational Leadership and Key Project Manager Competences", *Project Management Journal*, 41(2), 5-20.
- Cote, S. (2014) "Emotional Intelligence in Organizations", *Annual Review of Organizational Psychology and Organizational Behavior*, 1, 459-488.
- Cote, S., Lopes, P. N., Salovey, P. and Miners, C. T. (2010) "Emotional Intelligence and Leadership Emergence in Small Groups", *The Leadership Quarterly*, 21(3), 496-508.
- Davis, M. H. (1980) "A Multidimensional Approach to Individual Differences in Empathy" *JSAS Catalog of Selected Documents in Psychology/American Psychological Association*, 10, 85.
- Davis, M. H. (1983). "Measuring Individual Differences in Empathy: Evidence for a Multidimensional Approach", *Journal of Personality and Social Psychology*, 44(1), 113-126.

- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N. and Lim, W. M. (2021) "How to Conduct a Bibliometric Analysis: An Overview and Guidelines", *Journal of Business Research*, 133, 285-296.
- Gartzia, L., Ryan, M. K., Balluerka, N. and Aritzeta, A. (2012) "Think Crisis–Think Female: Further Evidence", *European Journal of Work and Organizational Psychology*, 21(4), 603-628.
- George, J. M. (2000) "Emotions and Leadership: The Role of Emotional Intelligence", *Human Relations*, 53(8), 1027-1055.
- Goleman, D. (2006) *Working With Emotional Intelligence*, Bantam.
- Goleman, D. (2020) *Emotional Intelligence: Why It Can Matter More Than IQ*, Bantam.
- Goleman, D., Boyatzis, R., Davidson, R. J., Druskat, V. and Kohlrieser, G. (2017) *Building Blocks of Emotional Intelligence: Empathy: A Primer*, More Than Sound.
- Hallin, J. and Mantel, N. A. (2018) "Swedish Business Leaders Prospecting Sustainability - Finding the Future With Purpose, Systems Approach, Empathy and Transformation", *Business and Management Studies*, 4(1), 59-67.
- Hensel, R. and Visser, R. (2018) "Shared Leadership in Entrepreneurial Teams: The Impact of Personality", *International Journal of Entrepreneurial Behavior and Research*, 24(6), 1104-1119.
- Holt, S. and Marques, J. (2012) "Empathy in Leadership: Appropriate or Misplaced? An Empirical Study on a Topic That Is Asking for Attention", *Journal of Business Ethics*, 105, 95-105.
- Javidan, M., Bullough, A. and Dibble, R. (2016) "Mind the Gap: Gender Differences in Global Leadership Self-Efficacies", *Academy of Management Perspectives*, 30(1), 59-73.
- Jiang, W., Wang, L., Chu, Z. and Zheng, C. (2019) "Does Leader Turnover Intention Hinder Team Innovation Performance? The Roles of Leader Self-Sacrificial Behavior and Empathic Concern", *Journal of Business Research*, 104, 261-270.
- Jit, R., Sharma, C. S. and Kawatra, M. (2017) "Healing a Broken Spirit: Role of Servant Leadership", *Vikalpa - The Journal for Decision Makers*, 42(2), 80-94.
- Kalshoven, K., Den Hartog, D. N. and De Hoogh, A. H. (2013) "Ethical Leadership and Follower Helping and Courtesy: Moral Awareness and Empathic Concern as Moderators", *Applied Psychology*, 62(2), 211-235.
- Kock, N., Mayfield, M., Mayfield, J., Sexton, S. and De La Garza, L. M. (2019) "Empathetic Leadership: How Leader Emotional Support and Understanding Influences Follower Performance", *Journal of Leadership and Organizational Studies*, 26(2), 217-236.
- Konig, A., Graf-Vlachy, L., Bundy, J. and Little, L. M. (2020) "A Blessing and a Curse: How CEOs' Trait Empathy Affects Their Management of Organizational Crises", *Academy of Management Review*, 45(1), 130-153.
- Ku, G., Wang, C. S. and Galinsky, A. D. (2015) "The Promise and Perversity of Perspective-Taking in Organizations", *Research in Organizational Behavior*, 35, 79-102.
- Lamovšek, A. and Černe, M. (2023) "Past, Present and Future: A Systematic Multitechnique Bibliometric Review of the Field of Distributed Work", *Information and Organization*, 100446, 1-36.
- Li, Q. (2024) "Ethical Leadership, Internal Job Satisfaction and OCB: The Moderating Role of Leader Empathy in Emerging Industries", *Humanities and Social Sciences Communications*, 11, 901, 1-9.
- Linuesa-Langreo, J., Ruiz-Palomino, P. and Elche, D. (2016) "Servant Leadership, Empowerment Climate, and Group Creativity: A Case Study in the Hospitality Industry", *Ramon Llull Journal of Applied Ethics*, 7, 9-36.
- Longmire, N. H. and Harrison, D. A. (2018) "Seeing Their Side Versus Feeling Their Pain: Differential Consequences of Perspective-Taking and Empathy at Work", *Journal of Applied Psychology*, 103(8), 894-915.
- Lumpkin, A. and Achen, R. M. (2018) "Explicating the Synergies of Self-Determination Theory, Ethical Leadership, Servant Leadership, and Emotional Intelligence", *Journal of Leadership Studies*, 12(1), 6-20.
- Maamari, B. E. and Majdalani, J. F. (2017) "Emotional Intelligence, Leadership Style and Organizational Climate", *International Journal of Organizational Analysis*, 25(2), 327-345.
- Mahsud, R., Yukl, G. and Prussia, G. (2010) "Leader Empathy, Ethical Leadership, and Relations-Oriented Behaviors as Antecedents of Leader-Member Exchange Quality", *Journal of Managerial Psychology*, 25(6), 561-577.
- McGuire, D., Cunningham, J. E., Reynolds, K. and Matthews-Smith, G. (2020) "Beating the Virus: An Examination of the Crisis Communication Approach Taken by New Zealand Prime Minister Jacinda Ardern During the COVID-19 Pandemic", *Human Resource Development International*, 23(4), 361-379.
- Men, L. R., Qin, Y. S. and Jin, J. (2022) "Fostering Employee Trust via Effective Supervisory Communication During the COVID-19 Pandemic: Through the Lens of Motivating Language Theory", *International Journal of Business Communication*, 59(2), 193-218.
- Miao, C., Humphrey, R. H. and Qian, S. (2018) "A Cross-Cultural Meta-Analysis of How Leader Emotional Intelligence Influences Subordinate Task Performance and Organizational Citizenship Behavior", *Journal of World Business*, 53(4), 463-474.
- O'Reilly III, C. A., Doerr, B., Caldwell, D. F. and Chatman, J. A. (2014) "Narcissistic CEOs and Executive Compensation", *The Leadership Quarterly*, 25(2), 218-231.
- Ogunfowora, B. T., Nguyen, V. Q., Steel, P. and Hwang, C. C. (2022) "A Meta-Analytic Investigation of the Antecedents, Theoretical Correlates, and Consequences of Moral Disengagement at Work", *Journal of Applied Psychology*, 107(5), 746.
- Ong, C. W., Roberts, R., Arthur, C. A., Woodman, T. and Akehurst, S. (2016) "The Leader Ship Is Sinking: A Temporal Investigation of Narcissistic Leadership", *Journal of Personality*, 84(2), 237-247.
- Pullen, A. and Vachhani, S. J. (2021) "Feminist Ethics and Women Leaders: From Difference to Intercorporeality", *Journal of Business Ethics*, 173(2), 233-243.

- Rabiul, M. K. and Yean, T. F. (2021) "Leadership Styles, Motivating Language, and Work Engagement: An Empirical Investigation of the Hotel Industry", *International Journal of Hospitality Management*, 92, 102712, 1-10.
- Ramachandran, S., Balasubramanian, S., James, W. F. and Al Masaeid, T. (2024) "Whither Compassionate Leadership? A Systematic Review", *Management Review Quarterly*, 74(3), 1473-1557.
- Raza, A., Farrukh, M., Iqbal, M. K., Farhan, M. and Wu, Y. (2021) "Corporate Social Responsibility and Employees' Voluntary Pro-Environmental Behavior: The Role of Organizational Pride and Employee Engagement", *Corporate Social Responsibility and Environmental Management*, 28(3), 1104-1116.
- Sadri, G., Weber, T. J. and Gentry, W. A. (2011) "Empathic Emotion and Leadership Performance: An Empirical Analysis Across 38 Countries", *The Leadership Quarterly*, 22(5), 818-830.
- Salovey, P. and Mayer, J. D. (1990) "Emotional Intelligence", *Imagination, Cognition and Personality*, 9(3), 185-211.
- Sergent, K. and Stajkovic, A. D. (2020) "Women's Leadership Is Associated With Fewer Deaths During the COVID-19 Crisis: Quantitative and Qualitative Analyses of United States Governors", *Journal of Applied Psychology*, 105(8), 771.
- Skinner, C. and Spurgeon, P. (2005) "Valuing Empathy and Emotional Intelligence in Health Leadership: A Study of Empathy, Leadership Behaviour and Outcome Effectiveness", *Health Services Management Research*, 18(1), 1-12.
- Sosik, J. J., Chun, J. U., Ete, Z., Arenas, F. J. and Scherer, J. A. (2019) "Self-Control Puts Character Into Action: Examining How Leader Character Strengths and Ethical Leadership Relate to Leader Outcomes", *Journal of Business Ethics*, 160, 765-781.
- Stahl, G. K. and Sully de Luque, M. (2014) "Antecedents of Responsible Leader Behavior: A Research Synthesis, Conceptual Framework, and Agenda for Future Research", *Academy of Management Perspectives*, 28(3), 235-254.
- Tumasjan, A., Strobel, M. and Welpe, I. (2011) "Ethical Leadership Evaluations After Moral Transgression: Social Distance Makes the Difference", *Journal of Business Ethics*, 99, 609-622.
- Van Eck, N. and Waltman, L. (2010) "Software Survey: VOSviewer, a Computer Program for Bibliometric Mapping", *Scientometrics*, 84(2), 523-538.
- Voegtlin, C., Frisch, C., Walther, A. and Schwab, P. (2020) "Theoretical Development and Empirical Examination of a Three-Roles Model of Responsible Leadership", *Journal of Business Ethics*, 167(3), 411-431.
- Wong, C. S. and Law, K. S. (2017) "The Effects of Leader and Follower Emotional Intelligence on Performance and Attitude: An Exploratory Study", in *Leadership perspectives*, Routledge, 97-128.
- Yue, C. A., Men, L. R. and Ferguson, M. A. (2021) "Examining the Effects of Internal Communication and Emotional Culture on Employees' Organizational Identification", *International Journal of Business Communication*, 58(2), 169-195.
- Zivkovic, S. (2022) "Empathy in Leadership: How it Enhances Effectiveness", in *Book of Proceedings of the 80th International Scientific Conference on Economic and Social Development and 10th International OFEL Conference "Diversity, Equity and Inclusion: The Essence of Organisational Well-Being"*, 454-467.
- Zupic, I. and Cater, T. (2015) "Bibliometric Methods in Management and Organization", *Organizational Research Methods*, 18(3), 429-472.

Operationalizing of DCV Microfoundations: A Behavioral Model for a Transforming System Integrator Firm

Anastasia Znobina, Konstantin Bagrationi and Olga Tunkevichus

Graduate School of Business, HSE University, Frankfurt am Main, Germany

apznobina@edu.hse.ru

kbagrationi@hse.ru

oagordienko@hse.ru

Abstract: The company in question, as one of the market leaders, aims to maintain competitiveness and increase the share of its own high-margin IT products and complex IT projects to 80% of revenue within three years, doubling the gross margin. Based on Teece's sensing–seizing–reconfiguring model, this study analyzes which individual and team factors activate the company's dynamic capabilities at different stages and support its strategic flexibility. A mixed method was used: (1) a Likert scale survey (n=86; 35 statements) covered seven constructs: systems, creative and visionary thinking; strategic consensus at the team level; attitudes toward change, technology and mistakes; and orientation toward "execution as learning"; (2) Nine semi-structured interviews with team leaders and HR business partners supplemented the quantitative data. The Mann–Whitney U test revealed statistically significant differences in the level of dynamic capabilities between the innovation-oriented units (Transformation Office, Corporate University, Creative Class) and the routine-oriented IT systems support team ($p < 0.05$). Qualitative analysis showed that the key, but unevenly developed drivers of change are psychological safety and the maturity of knowledge sharing processes within and between teams. The central contribution of the study was the empirical confirmation of the two-factor model of team microfoundations, reflecting the behavioral drivers of dynamic capabilities: (1) Team Strategy Foresight (TSF) - cognitive alignment, collective strategic vision, and scenario thinking; (2) Learn Failure (LF) - a culture of meaningful attitude to errors and reflective learning. Both factors demonstrated high internal consistency, moderate interrelationships, and distinct roles across phases of the DCV cycle. Together, they explain key differences in team adaptability and provide an operationalization of the theoretical model. The paper also provides practical recommendations tailored to each team's profile. In summary, the study demonstrates how the development of TSF and LF transforms the abstract concept of dynamic capabilities into a practical model that ensures strategic adaptability in the face of macroeconomic turbulence and increasing competition in the IT sector.

Keywords: Dynamic capabilities, Microfoundations, Strategic thinking, Execution-as-learning, IT-Services transformation

1. Introduction

The concept of dynamic capabilities (Dynamic Capabilities View, DCV) is already recognized as one of the key paradigms of strategic management, which explains the ways of companies adapting to changes in the external environment and maintaining competitive advantages in conditions of high uncertainty. In highly dynamic industries (e.g. high technology, Internet services, software, etc.), long-term success is determined not so much by a one-time purchase of "rare" resources, but by the company's ability to flexibly restructure and effectively coordinate internal and external competencies (Teece, 2007; Teece, Pisano & Shuen, 1997). However, the number of attempts to operationalize the theoretical model of the sensing, seizing, and reconfiguring processes remains small (a rare example of exceptions is, for example, Kump et al., 2019). Toward a dynamic capabilities scale: measuring organizational sensing, seizing, and transforming capacities. *Industrial and Corporate Change*, 28(5), 1149-1172.).

Microfoundation studies (Felin et al., 2012) provide an opportunity to focus on individual and team practices that shape high-level capabilities. However, most empirical work is aimed at studying either narrow competencies or qualitative case approaches.

This study aims to operationalize the foundation of DCV and is based on a mixed methodology. The practice of one of the leaders in system integration in Europe is taken on a basis. Technological market trends force system integrators to radically change their business model from the traditional resale of equipment and licenses to bringing their own high-tech solutions to the market and implementing innovative integrated solutions based on flexible contracts. Thus, the share of the company's service revenue increased from 45% (2021) to 56% (2024) and should reach 80% by 2027. Such dynamics are possible only with the development of behavioral patterns that accelerate the market signals sensing and internal resources reconfiguring. Recent field evidence shows, however, that tightly knit informal networks ("blat") can actively block those very patterns, derailing digital-transformation projects even in otherwise favourable strategic contexts (Aksiutin et al., 2022). The purpose of this study is to identify which patterns are critical for the development of DCV processes and how they are grouped. First, we validate a tool that reduces seven theoretical clusters to an

empirically stable two-factor model. Second, we compare these bundles with the types of teams within the company and offer a practical roadmap of recommendations. Thus, the work contributes to both the DCV methodology and the management practice of transforming a company using DCV.

2. Literature Review

2.1 Dynamic Capabilities and Their Microfoundations

The DCV was developed in response to the inadequacy of the Resource-Based View (RBV), which could not fully explain the sustainable competitive advantage of organizations in the face of uncertainty and rapid change in the external environment (Teece, 2007). According to the DCV, a company's ability to adapt to change depends on three main processes: sensing (identifying opportunities and threats), seizing (mobilizing resources to realize opportunities), and reconfiguring (restructuring and transforming internal processes and resources) (Teece et al., 1997; Eisenhardt & Martin, 2000). Strong dynamic capabilities facilitate the development of innovative products and entry into new markets, providing a company with a sustainable competitive advantage. Unlike static capabilities, they rely not only on efficiency, but also on learning, flexibility, and entrepreneurial activity. As a result, a company must consciously and continuously identify, develop, and protect key internal competencies. To solve this problem, it is important not to make a one-time strategic decision, but rather an ongoing management process that includes assessing external and internal changes, flexibly adjusting the internal structure with an understanding of all the interrelations of the elements and maintaining the ability to experiment and learn quickly. One recent mixed-methods study of a consulting firm in strategic transition mapped three distinct employee clusters – “Active Supporters,” “Cautious Appraisers,” and “Conservative Skeptics” – and demonstrated how differentiated, change-oriented leadership interventions convert micro-level readiness into macro-level capability activation (Diakova et al., 2024). However, despite the theoretical popularity and prevalence of DCV, researchers note the excessive abstractness of this concept and difficulties with its operationalization (Arndt, F., Galvin, P., Jansen, R. J. G., Lucas, G. J. M., & Su, P., 2022; Wilden, R., Devinney, T. M., & Dowling, G. R., 2016). To overcome these shortcomings, a tendency has formed in scientific literature to study the so-called microfoundations - basic behavioral and cognitive elements that underline the formation of dynamic capabilities (Felin et al., 2012; Helfat & Peteraf, 2015).

2.2 Micro-Fundamental Categories

In this study, we draw on a wide body of literature (Edmondson, 1999; Helfat & Peteraf, 2015; Pisano, 2019; Teece, 2007; Thomke, 2020) to identify the following microfundamental categories: strategic thinking at the individual and team level, attitude to mistakes (smart failures), new technologies and changes, as well as the application of the execution-as-learning concept in practice.

Even though these categories are most often analyzed separately in the literature, we consider it important to study them in their interrelation as complex behavioral bundles. Such an integrative approach is consistent with the position of Helfat and Martin (2015), who emphasize that microfundamentals are more effective in combination, interacting and strengthening each other's influence on the ability of organizations to successfully adapt to changes in the external environment.

There are different views on the components of strategic thinking in the scientific community, however, in this paper we rely on the approach of I. Bonn (2001), according to which strategic thinking should be considered as a complex and multi-level management competence, including both cognitive and behavioral elements. Based on this framework, we focus on a number of key components that are critical for the formation of strategic thinking in conditions of high uncertainty. Systems thinking is defined as the ability to perceive the organization and its environment holistically, to take into account the interrelations and consequences of decisions at different levels (Goldman et al., 2015). Creativity and innovative thinking are associated with the generation and application of new ideas, approaches and solutions, which is a key factor in the implementation of adaptive strategies in conditions of uncertainty (Anderson, N., Potočník, K., & Zhou, J., 2014; Basadur, M., Gelade, G., & Basadur, T., 2014). Visionary thinking is the next element of strategic thinking, which allows you to form long-term goals and adapt to constant changes in the external and internal environment. Visionary thinking is considered by us as the ability to anticipate the future and bring it into the present (Nuntamanop, P., Kauranen, I., & Igel, B., 2013).

The organizational level of strategic thinking consolidates the sum of individual abilities, which also ensures a high synergistic effect arising from the combination of diverse ideas and the depth of interdisciplinary knowledge (Bonn, I., 2001). We consider the attitude to new technologies as technological foresight, which is

the process of forecasting and assessing future technological trends and development scenarios, allowing organizations to proactively respond to changes (Bagrationi & Gordienko, 2024) and use emerging opportunities before competitors (Rohrbeck & Gemünden, 2011). Thus, technological foresight is not merely a scanning routine but an institutionalized capability, especially in fast-moving tech domains (Gordienko & Bagrationi, 2024)

One of the approaches within the framework of the integration of the knowledge system and dynamic capabilities of companies is associated with the formation of capabilities of the knowledge management process, which reflect the ability of the organization to identify, analyze and control the necessary and available knowledge for their further expansion and achievement of strategic goals (Kaur, V., Mehta, S., 2018), whereas deliberately designed learning architectures institutionalize that knowledge-management spine (Zinchenko et al., 2024). According to other authors, the evolution of the company's dynamic capabilities is based on a combination of relatively passive processes of experience accumulation and targeted processes of analysis, articulation and codification of knowledge, allowing the organization to actively develop and adapt its operational practices (Winter, S., 2003)

Acceleration of the development of dynamic capabilities is associated with how the organization learns from each project, how it records and disseminates best practices, that is, the influence of the development of learning capabilities is emphasized. At the same time, training is of a collective nature (routine practices, organizational interaction), and its results are consolidated in organizational processes. Within the framework of the concept of "performance as training", employees undergo constantly repeating training cycles as part of their daily activities. Thus, the attitude towards errors and the concept of execution-as-learning emphasizes the importance of perceiving errors and failures as a valuable source of knowledge and experience for further improvement and adaptation of organizational processes (Sitkin, S.B. 1992; Edmondson & Lei, 2014).

2.3 Limitations of Current Theoretical and Empirical Models

Despite the existence of individual studies on the above-mentioned microfoundations, there are still a number of significant unexplored aspects in scientific literature.

First, there are no comprehensive validated scales and models that integrate various microfoundational constructs into a single measurement structure, especially regarding dynamic capabilities in rapidly changing technological environments.

Second, most studies were conducted on samples of Western companies, while literature lacks data on the microfoundations of dynamic capabilities in post-socialist countries that require special adaptive strategies. Our context aligns with prior evidence that digital transformation trajectories are strongly shaped by existing social-capital configurations; informal networks can both enable and derail change by rerouting attention and resources (Bagrationi et al., 2021; 2022).

This study aims to overcome these limitations by integrating quantitative and qualitative approaches to construct and validate a comprehensive model of the microfoundations of dynamic capabilities using the example of a large system integrator in Eastern Europe

3. Methodology

3.1 Design and Sample

The methodological approach used was a mixed research design, combining (1) a quantitative survey — 35 statements grouped into 7 clusters, and (2) qualitative semi-structured interviews with team leaders and HR managers, the purpose of which was to clarify the quantitative results and obtain information about the specifics of internal processes, inter-team interaction, and organizational culture. This approach allowed, on the one hand, to quantitatively confirm the factor structure of the microfoundations, and on the other, to qualitatively describe their practical manifestation in teams. The mixed approach ensured both the breadth of coverage and the depth of analysis. The study included four teams: (1) Corporate University, responsible for developing leadership and professional competencies, forming a learning culture; (2) Transformation Office, coordinating transformation initiatives and strategic change planning; (3) Creative Class — a group of the company's "talents" based on the monitoring results, implementing the most innovative digital products and services of the company; (4) IT-Support Team, responsible for production activities and current support of infrastructure with less pronounced innovative activity. The respondents were selected purposefully (according to the criterion of functional relevance) - mainly from teams actively involved in transformation initiatives (corporate university, Transformation Office, creative class), one team with predominantly

supporting, standardized processes (IT-Support Team) were also selected to test the hypothesis about statistically significant differences in the manifestation of behavioral microfoundations between innovation units and the operational group.

3.2 Research Tools

Our goal was to empirically validate a construct that simultaneously considers elements of strategic thinking, readiness for change, and execution-as-learning practices. This required the development of an original questionnaire with a focus on an interdisciplinary set of behavioral indicators reflecting team microfoundations of dynamic capabilities. Ready-made methods did not allow us to specify these aspects.

For the quantitative stage, a questionnaire was developed consisting of 35 statements based on seven theoretically substantiated clusters proposed by the authors: (1) systems thinking; (2) creativity and intuitive thinking; (3) team strategic thinking; (4) technological awareness and digital competencies; (5) readiness for change, foresight, and uncertainty management; (6) continuous learning and the concept of execution-as-learning; (7) attitude towards mistakes and psychological safety. Respondents rated the degree of agreement with each statement on a 7-point Likert scale (from “completely disagree” to “completely agree”).

3.3 Quantitative Analysis

To test and confirm the presence of statistically significant differences between independent groups (teams of the corporate university, Transformation Office, creative class group and team-corporate systems), we used the Mann-Whitney U-test. To test the significance, the obtained U values were compared with the critical value from the table of critical values of the Mann-Whitney U-test for a given significance level (α) and sample sizes ($n_1 = n_2 = 7$). For $\alpha = 0.05$ and $n_1 = n_2 = 7$, the critical value of U (U_{cr}) = 8. The results of the study allowed us to identify statistically significant differences between two types of teams - those focused primarily on innovative processes (Corporate University, Transformation Office, creative class) and a team with predominantly routine processes (corporate IT systems support team). Next, a factor analysis (EFA) was conducted using the principal component method with Promax rotation, which allowed us to identify latent factors. As a result, items with loadings below 0.55 or with cross-loadings above 0.30 were removed. After cleaning the scale, 16 statements remained, grouped into two stable factors. Preliminary analysis of the polychoric correlation matrix showed excellent factorability of the sample: KMO = 0.90, Bartlett $\chi^2(210) = 683$, $p < 0.001$. This corresponds to the ‘marvelous’ level according to Kaiser’s classification (1974).

Confirmatory factor analysis (CFA) was performed using the Diagonally Weighted Least Squares (DWLS) method, which is optimal for ordinal data. The resulting model demonstrated an excellent level of fit to the data: $\chi^2(103) = 75.3$; CFI = 1.000; TLI = 1.008; RMSEA = 0.020; SRMR = 0.044.

A statistically significant positive relationship ($\rho = 0.77$; $p < 0.001$) was found between the two latent factors TSF and LF, which indicate their functional connectivity in real team practices. Despite the moderately high correlation, the confidence interval [0.656; 0.883] does not include the value 1, which indicates the presence of discriminant validity: the constructs are not redundant and reflect different aspects of DCV. Their combination is typical for highly adaptive teams and represents complementary microfoundations of the sensing, seizing and reconfiguring processes.

3.4 Qualitative Analysis

Qualitative data was collected through semi-structured interviews with team leaders and HR managers lasting between 40 and 60 minutes. The aim of this stage was to obtain information for interpreting quantitative data, as well as identifying specific team practices related to the formation and implementation of dynamic capabilities. The interview guide was developed taking into account the structure of the questionnaire and the conceptual framework of DCV and included (1) a discussion of the survey results (interpretation of the overall results, analysis of discrepancies, discussion of each cluster and their manifestations in team practice); (2) identification of DCV practices (identification of empirical manifestations of the sensing, seizing and reconfiguring processes in the daily activities of teams and (3) a discussion of organizational learning and culture (aspects of mentoring, knowledge dissemination, execution as learning, cross-functional interaction, etc.). The analysis of the interview results was carried out using content analysis. The interview transcripts were initially coded manually, after which the categories were clarified and structured in the MAXQDA software environment, which ensured transparency, consistency and reproducibility of the analytical procedure. The categories were formed inductively - based on repeating semantic units in the respondents' statements, with subsequent aggregation into generalized thematic blocks.

4. Results

4.1 Factor Structure

Factor analysis allowed us to identify two stable behavioral bundles (latent factors) that combine several initially proposed theoretical categories.

Factor 1. TSF: This bundle combines three interrelated microfoundations of team behavior: (1) Collective strategic vision (coordinated formation of long-term goals and the semantic “north star” of the project); (2) Scenario-analytical scanning of the external environment (group monitoring of market trends, regulatory changes, and client requests); (3) Readiness for organizational shifts (cognitive attitude toward rapid restructuring of roles and processes when new opportunities arise). Thus, TSF includes statements regarding collective vision, analysis of external trends, and rapid adaptation to change.

The factor serves as a behavioral microfoundation of the Sensing phase and initiates the early Seizing-1 subphase (Teece, 2007): collective strategic vision increases sensitivity to external “weak signals”, minimizes the delay between trend detection and the development of primary hypotheses, readiness for restructuring reduces time-to-pivot. The construct is related to the team foresight capability (Schoemaker, 2020) and strategic issue diagnosis (Nadkarni & Barr, 2008) models. Standardized factor loadings ranged from 0.556 to 0.749, which confirms the internal consistency and validity of this factor.

Factor 2. LF: The second factor describes the culture of open discussion of errors, psychological safety and learning from experience (“execution-as-learning”). It includes items reflecting support for experiments, the perception of errors as a resource for learning and continuous improvement based on them. The construct captures the quality of collective handling of errors and supports the “double loop” of organizational learning and integrates: (1) Psychological safety (no sanctions for voicing doubts or failures); (2) Execution-as-Learning (setting for fast cycles hypothesis → experiment → lesson, where even negative results are converted into reliable knowledge).

Learn Failure supports the Reconfiguring phase, ensuring the plasticity of the business architecture when changing the project portfolio, and helps in the implementation of late Seizing-2. The construct resonates with the error management climate (Van Dyck, 2005) and execution-as-learning (Edmondson, 2011) theories. The loadings on this factor ranged from 0.601 to 0.786, confirming the high homogeneity of the construct. Thus, the hypothesis about the package structure of microfoundations was confirmed, which created the basis for analyzing the differences between the types of teams and further development of recommendations.

Qualitative interviews were conducted not for the purpose of statistical comparison of teams, but to understand the features of the manifestation of the studied behavioral patterns and the formation of practical recommendations for the development of microfoundations. Analysis of the interview results revealed key topics and practices that are critical for the successful development of dynamic capabilities, among which the most pronounced were (1) a high level of competition in the company, which reduces the level of psychological safety (the ability of employees to freely discuss errors and problems without fear of punishment); (2) insufficient knowledge and experience sharing (structures and rituals that support learning within the team), among which the most pronounced were: (1) high level of competition in the company, reducing the level of psychological safety (the ability of employees to freely discuss mistakes and problems without fear of punishment) and (2) insufficient knowledge and experience sharing (structures and rituals that support learning within teams and between departments).

Table 1: Two empirical bundles (TSF and LF) support the four key sub-processes of the DCV

DCV Model Element	Process Features	Microfoundation (bundle)
Sensing (early sensing/ scanning)	- Systematic collection and analysis of market information, including weak signals and early signs of change. - Joint formation of a “map of the future”: discussion of possible scenarios and external trends. - Generation of hypotheses about potential windows of opportunity to which the organization can respond.	TSF promotes active strategic sensitivity of the team: a high level of collective thinking, including a systemic and scenario approach, allows participants to more accurately interpret a complex external environment and promptly identify important opportunities.
Seizing-1 (early selection and trial)	- Making decisions on launching prototypes (MVP), testing business hypotheses with minimal investment. - Initial distribution of resources between competitive initiatives and formation of teams for new tasks.	TSF ensures strategic alignment of the team: having a common understanding of goals and priorities facilitates choosing among alternatives, minimizes disagreements and accelerates the transition from idea to action. Teams quickly determine what to test, how to do it and which indicators are considered significant.
Reconfiguring (resource transformation)	- Flexible adaptation of organizational processes and redistribution of roles in accordance with new strategic tasks. - Embedding acquired knowledge and experimental developments in everyday practices.	LF supports a culture of meaningful attitude to mistakes and continuous learning from experience. Discussing and systematizing failures allows the team to adapt its activities without fear and resistance, rebuild processes in a timely manner, avoid repeating mistakes and strengthen internal flexibility.
Seizing-2 (scaling and value extraction)	- Making decisions on expanding the scale of successfully tested solutions: additional investments, entering new markets, increasing the team and resources. - Integrating new business models into standard operating activities.	LF promotes sustainable scaling due to the team's ability to reflect on its own path and record key findings Helps to avoid repeating mistakes, disseminate best practices and thereby increase the effectiveness of the implementation and sales of new solutions.

Taken together, a high level of TSF facilitates the formation and launch of early strategic initiatives, increasing the likelihood of timely response to external signals and trends. At the same time, a developed LF culture ensures the integration of lessons learned into organizational processes, strengthening the ability to adapt and accelerating subsequent opportunity recognition cycles. Thus, the identified bundles are not only statistically reliable, but also theoretically sound micro-foundations that form a stable cycle of dynamic capabilities: “recognize an opportunity → initiate a project → adapt the structure and consolidate new knowledge”. Based on the analysis of quantitative and qualitative data, we were able to identify the specifics of each of the teams and formulate bottlenecks in the context of developing dynamic capabilities of flexibility and transformation. To improve the level of bundles, we developed differentiated recommendations for each of the teams studied.

For the corporate IT systems support team, the measures are based on the theory of group awareness with an emphasis on predictive practices.

Table 2: Recommended Team-Level Interventions Informed by Diagnostics and Theory for Building Dynamic Capabilities

Team	Diagnostic assessments of bundles	Recommended interventions (team level)	The theoretical framework
Corporate University	TSF = 4,9; LF = 5,0	1. Transparent career tracks and a competency model 2. Working groups: trend monitoring + foresight 3. Quarterly AAR (After Action Review) with other HR teams	Team foresight (Schoemaker, 2020); Transactive memory (Sargis & Larson, 2002); Double-loop learning (Argyris, 1999)
Transformation Office	TSF = 6,0; LF = 5,0	1. Development of an interactive map of transformational flows, a dashboard with feedback loops 2. Design sprints/brainstorms in the initial phase of each project 3. Quarterly Moonshot sprints (mini accelerator 4. "Fuckup Nights" with top managers	Knowledge integration routines (Srivastava & Mahoney, 2010); Collective sense-making (Maitlis & Christianson, 2014)
Creative Class	TSF = 5,0; LF = 5,2	1. Quarterly foresight sessions + retrospective forecasting. 2. Monthly internal "Trend watch digest" 3. Internal technical demos + hackathons 4. Panel discussions with partners/competitors	Experimental culture (Thomke, 2020); Team psychological safety (Edmondson, 1999)
IT-Support	TSF = 3,2; LF = 3,1	The measures are based on the theory of collective mindfulness with an emphasis on predictive practices: 1. Simulating incidents 2. Discussing weak signals 3. Creating a knowledge base based on real cases	Error management climate (Fischer et al., 2018); Collective mindfulness (Bagrationi, K. 2017)

5. Discussion and Conclusion

This study set out to operationalize the microfoundations of the Dynamic Capabilities View (DCV) in a transforming system-integrator and, in doing so, to clarify how concrete team behaviors differentially activate Teece's sensing–seizing–reconfiguring cycle. Our mixed-methods evidence supports a parsimonious, two-bundle structure – TSF and LF – that is both psychometrically robust and practically legible for managers. The EFA/CFA results show that sixteen items reliably load on two distinct yet complementary factors, thereby addressing long-standing concerns that DCV research relies on abstract labels that are difficult to diagnose or intervene upon in teams. By mapping TSF onto sensing and early seizing-1 and LF onto reconfiguring and late seizing-2, we translate capability talk into observable, coachable routines.

First, our findings offer construct clarity for DCV microfoundations. Rather than a diffuse list of attitudes and skills, we show that two behavioral bundles parsimoniously organize the variance in team-level capability activation. This bundle logic complements the DCV literature by specifying where in the cycle each bundle does its work, thereby sharpening causal stories about capability enactment under uncertainty.

Second, we add empirical texture to the execution-as-learning thesis. While prior work treats "learning from failure" as a desirable climate, our evidence positions LF as a late-cycle engine that stabilizes reconfiguration and amplifies value extraction from validated initiatives (seizing-2). In other words, LF does not merely reduce blame, it institutionalizes retrospectives, codification, and cross-team diffusion so that every prototype and

incident becomes a reusable asset. This clarifies why organizations with strong TSF but weak LF often show fast starts yet struggle to scale: without LF, sensing wins do not compound into architectural change.

Third, the Mann–Whitney comparisons between innovation-oriented units (Transformation Office, Corporate University, Creative Class) and a routine-oriented IT support team revealed significantly higher capability levels in the former, consistent with the bundle–cycle mapping. This discriminant evidence strengthens our claim that the two bundles are sensitive to task environments that demand sensing and reconfiguring (not merely to generic “good team” variance).

Forth, the bundles translate into a diagnose-target-intervene pathway. Teams with low TSF need structured foresight (trend-watch rituals, scenario clinics) and shared strategic maps to compress the lag from signal to first experiment. Teams with low LF need explicit error-management routines (incident simulations, “small-loss” experiments) and codification forums to ensure that experimental learning propagates beyond project silos. We tried to operationalize this logic and align it with the distinct role each unit plays in the portfolio.

We offer a concise, validated two-bundle microfoundations model that turns DCV from an abstract ideal into an actionable diagnostic for teams undergoing transformation. TSF equips teams to see together and start together – to detect weak signals, forge a common “north star,” and move quickly into disciplined trials – while LF enables them to learn together and scale together – to normalize intelligent failures, codify lessons, and reconfigure processes for durable advantage. In short, building dynamic capabilities is less about exhorting agility and more about engineering two repeatable bundles of behavior that power each phase of sensing, seizing, and reconfiguring.

Ethical declarations: Ethical clearance was not required for the research

AI declarations: AI: (ChatGPT o3) was used to enhance language quality

References

- Aksiutin, A., Bagrationi, K., Morozov, M., Trochin, I. (2022). Non-formal social ties as threat to the implementation of innovations. *European Conference on Innovation and Entrepreneurship, ECIE*, 17(1), 1–7.
- Anderson, N., Potočník, K., & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management*, 40(5), 1297-1333.
- Arndt, F., Galvin, P., Jansen, R. J. G., Lucas, G. J. M., & Su, P. (2022). Dynamic capabilities: New ideas, microfoundations, and criticism. *Journal of Management & Organization*. Advance online publication.
- Bagrationi K, Gordienko O. (2024). Dynamics of organisational change: resistance, readiness, and the road ahead. *European Conference on Innovation and Entrepreneurship, ECIE*, 19(1), 81–88.
- Bagrationi, K., Thurner, T. W., & Gordienko, O. (2021, September). Resistance to digital transformation and the destruction of social capital. In *Proceedings of the European Conference on Innovation and Entrepreneurship, ECIE* (pp. 47-53).
- Bagrationi, K., Thurner, T. W., & Gordienko, O. (2022, August). Resistance to Digital Transformation: The Role of Middle Management Personal Networks. In *European Conference on Knowledge Management* (Vol. 23, No. 1, pp. 52-59).
- Basadur, M., Gelade, G., & Basadur, T. (2014). Creative problem-solving process styles, cognitive work demands, and organizational adaptability. *The Journal of Applied Behavioral Science*, 50(1), 80-115.
- Bonn, I. (2001). Developing strategic thinking as a core competency. *Management Decision*, 39(1), 63-71.
- Cannon, M. D., & Edmondson, A. C. (2005). Failing to learn and learning to fail (intelligently): How great organizations put failure to work to innovate and improve. *Long Range Planning*, 38(3), 299-319.
- Diakova, A., Bagrationi, K., & Gordienko, O. (2024). Change-oriented Leadership in the Context of Transitioning to Strategic Autonomy. *European Conference on Management, Leadership & Governance*, 114–123.
- Edmondson, A. C. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44(2), 350-383.
- Edmondson, A. C. (2011). Strategies for learning from failure. *Harvard Business Review*, 89(4), 48-55.
- Edmondson, A. C., & Lei, Z. (2014). Psychological safety: The history, renaissance, and future of an interpersonal construct. *Annual Review of Organizational Psychology and Organizational Behavior*, 1, 23-43.
- Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: What are they? *Strategic Management Journal*, 21(10-11), 1105-1121.
- Felin, T., Foss, N. J., Heimeriks, K. H., & Madsen, T. L. (2012). Microfoundations of routines and capabilities: Individuals, processes, and structure. *Journal of Management Studies*, 49(8), 1351-1374.
- Fischer, S., Frese, M., Mertins, K., & Hardt-Gawron, B. (2018). The role of error management culture for firm and individual innovativeness. *Applied Psychology*, 67(1), 234-260.
- Goldman, E. F., Scott, A. R., & Follman, J. M. (2015). Organizational practices to develop strategic thinking. *Journal of Strategy and Management*, 8(2), 155-175.
- Gordienko, O., Bagrationi, K. (2024). Global integration of artificial intelligence in higher education sector: a bibliometric analysis. *European Conference on Knowledge Management, ECKM*, 25(1), 270–276.

- Helfat, C. E., & Martin, J. A. (2015). Dynamic managerial capabilities: Review and assessment of managerial impact on strategic change. *Journal of Management*, 41(5), 1281-1312.
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1), 31-36.
- Kaur, V., & Mehta, S. (2018). Knowledge management process capabilities: A systematic review and future research agenda. *The Learning Organization*, 25(5), 317-336.
- Kump, B., Engelmann, A., Kessler, A., & Schweiger, C. (2019). Toward a dynamic capabilities scale: Measuring organizational sensing, seizing, and transforming capacities. *Industrial and Corporate Change*, 28(5), 1149-1172.
- Maitlis, S., & Christianson, M. (2014). Sensemaking in organizations: Taking stock and moving forward. *Academy of Management Annals*, 8(1), 57-125.
- Nadkarni, S., & Barr, P. S. (2008). Environmental context, managerial cognition, and strategic action: An integrated view. *Strategic Management Journal*, 29(13), 1395-1427.
- Nuntamanop, P., Kauranen, I., & Igel, B. (2013). A new model of strategic thinking competency. *Journal of Strategy and Management*, 6(3), 242-264.
- Pisano, G. P. (2019). The hard truth about innovative cultures. *Harvard Business Review*, 97(1), 62-71.
- Rohrbeck, R., & Gemünden, H. G. (2011). Corporate foresight: Its three roles in enhancing the innovation capacity of a firm. *Technological Forecasting and Social Change*, 78(2), 231-243.
- Sargis, E. G., & Larson, J. R., Jr. (2002). Informational centrality and member participation during group decision making. *Group Processes & Intergroup Relations*, 5(4), 331-345.
- Schoemaker, P. J. H., & Day, G. S. (2020). Determinants of organizational vigilance: Leadership, foresight, and adaptation in three sectors. *Futures & Foresight Science*, 2(1), e24.
- Sitkin, S. B. (1992). Learning through failure: The strategy of small losses. *Research in Organizational Behavior*, 14, 231-266.
- Srivastava, S. B., & Mahoney, J. T. (2010). Resource-based and agency perspectives on interfirm collaboration: The role of knowledge integration routines. *Journal of Management Studies*, 47(8), 1619-1643.
- Thomke, S. (2020). *Experimentation works: The surprising power of business experiments*. Harvard Business Review Press.
- Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319-1350.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533.
- Van Dyck, C., Frese, M., Baer, M., & Sonnentag, S. (2005). Organizational error management culture and its impact on performance: A two-study replication. *Journal of Applied Psychology*, 90(6), 1228-1240.
- Wilden, R., Devinney, T. M., & Dowling, G. R. (2016). The architecture of dynamic capability research: Identifying the building blocks of a configurational approach. *Academy of Management Annals*, 10(1), 997-1076.
- Winter, S. G. (2003). Understanding dynamic capabilities. *Strategic Management Journal*, 24(10), 991-995.
- Zinchenko, M., Bagrationi, K., & Gordienko, O. (2024). Development of Corporate University Evolution Scenarios. European Conference on E-Learning, 451-457.

PhD Research Papers

Soft Skills to Enhance Team Performance: A Systematic Review of Diverse Teamwork

Saman Abbaszadeh, Nasrullah Khilji and Konstantin Nikolic

University of West London, London, UK

33117409@student.uwl.ac.uk

Nasrullah.khilji@uwl.ac.uk

Konstantin.nikolic@uwl.ac.uk

Abstract: In today's world, when reviewing business trends and key themes alongside the latest academic studies in the field of team dynamics, two significant trends overshadow all others. On the one hand, soft skills are increasingly recognised as essential drivers of both employees' personal growth and organisations' success by both business leaders and academic scholars. On the other hand, due to globalisation, team structures have shifted from being more homogeneous to more diverse, leading to the formation of multicultural teams. However, reviewing the existing literature reveals there is a lack of studies on the role of soft skills in culturally diverse work environments. Indeed, most research in the context of soft skills mainly examined the role of these skills in academic settings among students or within homogenous workplace settings. This paper addresses the research question: *"How do soft skills influence team performance and help address challenges within multicultural teams?"* using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines. Initially, we extracted approximately 1100 papers which have been published since 2014 from valid databases such as Web of Science and Scopus. After applying the inclusion and exclusion criteria, 19 papers were found relevant and selected for this review. Then, a thematic analysis approach was used to synthesise findings from the selected papers. This enabled us to identify key soft skill categories, their definitions, and reported impacts on multicultural team dynamics. Through this study, a broad range of soft skills explicitly or implicitly discussed in the literature were identified, with particular emphasis on four core soft skills, communication, emotional intelligence, cultural intelligence, and adaptability, as essential for enhancing effectiveness in multicultural teams. The identified soft skills were found to improve team interaction, collaboration and trust as well as reduce conflicts within culturally diverse work environments.

Keywords: Soft skills, Globalisation, Team dynamics, Multicultural teams, Team performance

1. Introduction

Globalisation is often understood as a phenomenon in which nations are becoming more connected in the global economy through increased interaction between people, flow of information, technological development, and cultural blending (Li and Reuveny, 2003). Considering the migration statistics for the past two decades, the increasing pace of globalisation can be understood more clearly. From 2000 to 2020, international migration reached 281 million, demonstrating an increase of nearly 110 million (United Nations, 2020). Further supporting this, just in the case of the UK, the number of granted work visas has increased by 130% since 2019 (Home Office, 2024). As a result, in today's workplaces, teams within organisations and projects have become more diverse, creating teams consisting of representatives of various cultures (Szpilko et al., 2022).

One of the key characteristics of multicultural teams (MTs) is the presence of cultural differences among members known as cultural gap. These differences can be better understood through Hofstede's cultural dimensions theory, which outlines six key value patterns across societies. These dimensions influence how individuals with various national and cultural backgrounds relate to authority, deal with uncertainty, balance group and individual interests, or even define emotional and social roles (Hofstede, 2011). In a team context, this means that members may approach communication, collaboration, and decision-making in different ways. While this heterogeneity is often celebrated as a driver of creativity and innovation, it can equally give rise to misunderstandings, conflicts and a lack of trust (Bouncken *et al.*, 2016; Gross-Gołacka and Martyniuk, 2024). Thus, cultural diversity is often identified as a double-edged sword in the context of team effectiveness (Stahl et al., 2010).

Meanwhile, soft skills which often refer to a combination of interpersonal and intrapersonal competencies are increasingly considered as the main driver for the effectiveness and performance of the organisation (Robles, 2012; Cimatti, 2016). Indeed, these skills are recognised not only as an impactful competency in the quality of people's interaction but also as their ability to manage and understand their own and others' feelings and emotions (Laker & Powell, 2011). These skills include a vast range of individual skills such as communication,

leadership, creative thinking, and problem-solving, supplementing the technical skills in contributing towards professional accomplishment (Cimatti, 2016; World Economic Forum [WEF], 2025).

Therefore, as organisations increasingly rely on culturally diverse teams due to globalisation and technological advancement, the dynamics between team members and the soft skills required to navigate them have grown in complexity and importance. In such work settings, soft skills become not just valuable but essential. However, in the absence of comprehensive studies or systematic literature reviews on this topic, this study seeks to explore the role of soft skills in diverse teams' (e.g., global virtual teams, MTs) processes and outcomes through addressing the following research questions:

RQ1: Which soft skills are most commonly discussed in literature in the MTs context?

RQ2: How do these core soft skills influence team performance and help address challenges within MTs?

2. Methodology

This study used thematic analysis to structure and analyse the existing research on the role of soft skills in culturally diverse workplaces by following a transparent methodology to search and examine the relevant studies. Based on inclusion and exclusion criteria (Table 1), all relevant studies were collected through a search of Scopus and Web of Science. Google Scholar was also used as a supplementary source to capture grey literature.

Table 1: Search String

Databases	Search String
Scopus	("soft skills" OR "interpersonal skills" OR "intrapersonal skills" OR "socio-emotional skills")
Web of Science	AND ("multicultural teams" OR "cross-cultural teams" OR "diverse teams" OR "cultural diversity" OR "global teams")

2.1 Inclusion and Exclusion Criteria

To narrow the broader topic and to be able to extract more reliable, and relevant studies, inclusion and exclusion criteria for this study is designed as follow:

Table2: Inclusion and Exclusion Criteria

Characteristic	Inclusive	Exclusive
Context	Soft Skills in Multicultural Workplace	Documents which do not include Soft Skills in Multicultural Workplace Documents which focus on soft skills in academia
Type	Journal articles	Magazine Systematic reviews papers Reports Books Proceeding papers
Time	2014–2025	Before 2014
Language	English	Non-English
Availability	Open-access or accessible through institutional access	Access denied or chargeable

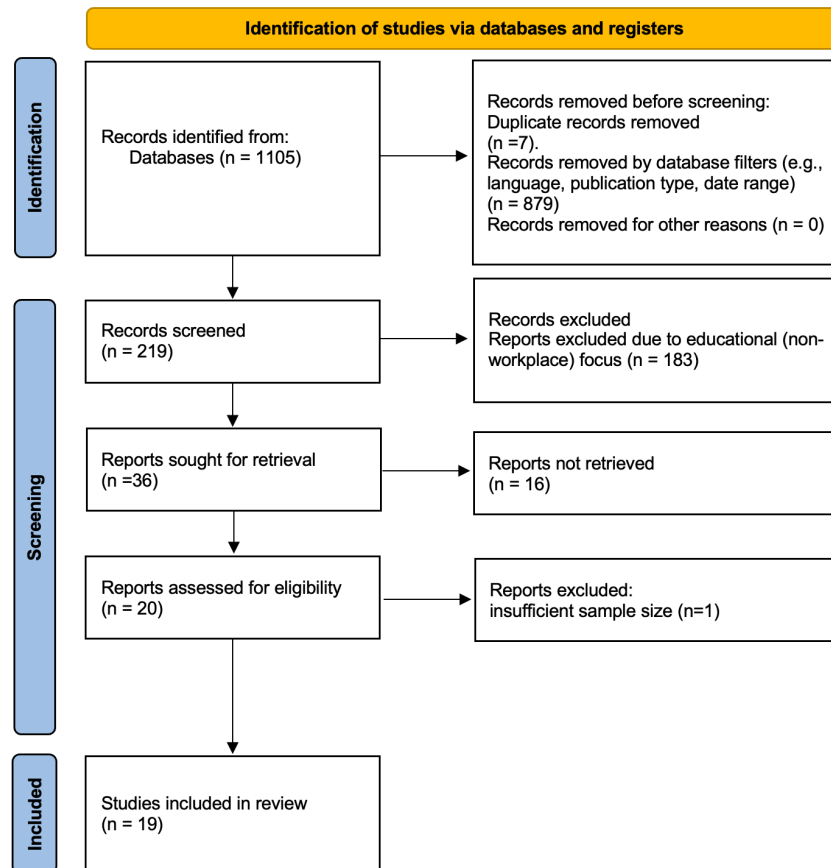


Figure 1: Paper selection process (PRISMA Flowchart)

3. Results

The included articles Table 3 (see Appendix) have been organised in this study to identify the essential soft skills and their role in culturally diverse teams. In this regard, we identified four key soft skills crucial for effective MTs' performance: communication, emotional Intelligence, cultural Intelligence and adaptability.

3.1 Cultural Intelligence

Cultural intelligence (CQ) is defined as "the individual's capability to function effectively in culturally diverse situations". It entails a set of knowledge, skills, and abilities that help individuals understand different cultural contexts and adapt their behaviour accordingly. Key components of CQ include cognitive understanding of cultural norms, motivational openness and curiosity, and behavioural flexibility to bridge cultural gaps (Earley & Ang, 2003).

The included papers in this study reveal that a higher level of CQ directly contributes to building trust, better knowledge sharing, and team performance in culturally diverse teams. Thirteen out of nineteen reviewed studies have discussed the role of CQ explicitly or implicitly which clearly shows its effective role in multicultural work environments, emerging as a crucial soft skill for both team members and leaders.

Stoermer et al. (2020) in their study which includes 1300 expatriates across 30 host countries, found that higher levels of CQ not only enhanced organisational embeddedness significantly but also improved knowledge-sharing behaviours among members. They found that culturally intelligent individuals were more likely to feel psychologically and socially integrated within their host organisations and this led to exchanging valuable knowledge with their colleagues. Their findings suggest that CQ not only influences interpersonal functioning but also plays a key role in how deeply expatriates connect with their organisations and how effectively they contribute to team knowledge dynamics.

Expanding the discussion to team-level outcomes, Afsar et al. (2020) further examine the role of CQ in diverse teams within multinational companies in Saudi Arabia. They found that individuals with high CQ demonstrate better performance when faced with cultural differences and are also highly motivated to engage and make significant contributions to their work. They found that both the level of work engagement and

trustworthiness among team members would mediate the effect of CQ on innovative work behaviour. Nevertheless, the research mainly highlights that CQ contributes not only to cultural adaptability but also to psychological safety and creativity, which in general, aligns closely with the broader literature on soft skills in MTs.

Furthermore, Mammadov and Wald (2025) in study of SME owner-managers introduced CQ as one of the essential skills for owner-managers. They found that leaders with a high CQ level demonstrated a better ability to navigate uncertainty, engage in risk-taking, and adapt to multicultural contexts. Moreover, higher levels of CQ among owner-managers have also significantly enhanced their degree of internationalisation, and this is maximised particularly when supported by managers' global mindset (GM). Indeed, similar to what Adamovic (2017) discussed, they have also highlighted the role of GM as a mediating factor. Although GM is defined as the people's ability to manage complex business environments across national boundaries effectively, this definition lacks specificity in both studies as it is not clear when talking about GM whether the emphasis is on individuals' openness to adopting new cultural norms and experiences, or on their practical experience working across borders and proficiency in foreign languages. However, their findings reinforce the idea that CQ is an important factor in influencing both MTs' effectiveness as well as the strategic orientation of multicultural work settings. Moreover, CQ was shown to influence initial intentions as well as sustained engagement across various stages of international development. These insights extend the relevance of CQ beyond immediate interpersonal interactions to long-term organisational success in global settings.

Studies on CQ are not just limited to examining the overall CQ effect on team process and job performance. For example, Schlaegel et al. (2021) went further and examined the incremental and dimensional contributions of each CQ components (cognitive, metacognitive, motivational, and behavioural). Their study confirmed previous studies' findings on the positive effect of CQ on work-related outcomes and highlighted that the CQ dimensions influence each other in a mutually reinforcing way. In other words, the combination of two or more dimensions of CQ can further enhance the positive effect on various work-related outcomes. Furthermore, based on their findings motivational CQ identified as the most effective component that impacts team outcomes such as expatriation intention, cross-cultural adjustment and job satisfaction, whereas cognitive and metacognitive dimension of CQ show smaller but still meaningful contributions. However, behavioural CQ often functions as a suppressor variable, meaning it overlaps with other CQ dimensions without directly explaining these outcomes. Their findings demonstrate that it is not sufficient to treat CQ as a single, unified concept; rather, the unique and joint contributions of its dimensions provide a richer and more accurate understanding of how CQ drives work-related outcomes.

Regarding the development of CQ within MT members, most of the reviewed studies have suggested cross-cultural training as one of the most effective methods for developing CQ as well as other essential soft skills in MTs. However, Alon et al. (2016) argued the possibility of enhancing an individual's CQ level by proposing a business cultural intelligence quotient (BCIQ) framework. They found that organisations which are seeking to operate in a global context and want to effectively address the complexities of cultural boundaries among team members are required to acquire individuals with experience living abroad, a high level of education and multilingual proficiency. In other words, based on their findings, these three factors significantly affect an individual's CQ. Presbitero and Toledano (2018), while emphasising the role of cross-cultural training in improving CQ among global team members, highlighted the effective role of contact intensity among team members. Their findings support the idea that organisations that provide opportunities for their employees to have intense interactions with colleagues from other cultural backgrounds can achieve better individual-level task performance and higher levels of CQ.

3.2 Communication

Communication is the second key soft skill consistently highlighted as a foundational skill for the success of culturally diverse teams, and it mainly refers to the combination of ability, knowledge, and motivation to exchange information and meaning across cultural boundaries effectively (Spitzberg and Changnon, 2009).

Othman et al. (2022) in research on developing a cultural diversity management framework to enhance the performance of architecture design firms in Egypt found that 78% of participants identified poor communication and a weak *"spirit of collaboration"* as major barriers to managing a culturally diverse workforce, clearly demonstrating the role of effective communication in MTs' performance. Indeed, communication breakdowns within these workplaces lead to frequent misunderstandings and decreasing synergy in workforce groups. In contrast, open and inclusive communication style was found to *"harmonise workplace diversity"* as it improves mutual understanding and trust between team members. Therefore, they

recommended clear communication channels, basic language training and considering cultural sensitivity particularly when messaging in order to improve communication and mitigate miscommunication and its negative effects in these work environments.

Tenzer, Pudelko, and Harzing (2014) explored how language barriers impact trust among members of multinational teams (MNTs). Language barriers were identified as the main factor limiting effective communication and leading to multiple misunderstandings in MNTs. Based on their findings, communication difficulties rooted in language barriers were shown to adversely affect trust-building among team members which in turn undermines collaboration and overall team performance. The authors further argued that effective communication in MNTs requires language awareness, clarity, and sensitivity to differing linguistic backgrounds. Similar to Othman et al. (2022) this study also recommended creating an open, inclusive and positive emotional work environment where members do not fear losing face due to language proficiency issues, in order to overcome language-based anxiety.

Lai et al. (2017) further support the key role of effective communication in the successful integration of immigrant professionals into Canadian workplace culture. Based on their findings from interviews with both immigrant professionals and immigrant employment service providers, among all the challenges raised by multicultural workplaces, communication is one of the most significant difficulties that immigrants frequently face. Therefore, they emphasised the crucial role of effective communication not just as language proficiency but as the ability to navigate unspoken social cues, adapt tone and formality to context, manage small talk and understand implicit cultural norms around assertiveness and deference. These findings further support the role of effective communication in MTs as a complex, adaptive soft skill that is critical for inclusion, relationship building, and workplace integration.

However, the role of effective communication in culturally diverse teams is not just limited to the team level. As Newman et al. (2020) provided an empirical contribution to the understanding of the role of communication within global virtual teams specifically focusing on how team leaders' effective use of communication tools and techniques, influences team performance. In their study, effective communication is defined and examined as the number of times a leader communicates to team members, the degree to which a leader's communication is predictable, the level of responsiveness in leader communication or how timely the leader is in responding to questions and inquiries, the degree to which leaders make their communications clear and the mode or tool which leaders choose for communication and delivering their expectations. Their findings reveal a positive relationship between virtual team members' perceptions of their leaders' effective use of communication techniques and team members' subjective perceived performance of their teams, meaning that when leaders are able to communicate well, team members feel their team performs better. However, the authors argued although leaders' effective communication positively affects how team members feel about their performance, to observe this enhanced team performance objectively (e.g. balanced scorecard), leaders need to make sure that their messages are not only clear and timely but also matched and aligned with organisational goals.

3.3 Emotional Intelligence

Emotional intelligence (EI) is defined in literature as the ability to recognise, understand, and manage one's own emotions, as well as to perceive and influence the emotions of others. Key dimensions of EI include self-awareness, self-regulation, empathy, and social skills for building relationships (Salovey and Mayer, 1990). The included studies in this category show that higher EI at both team and managerial level enhances cross-cultural adjustment (CCA), trust, and team interaction.

Koveshnikov et al. (2014), provide quantitative evidence based on collected data from 269 French expatriates across 133 countries on the role of EI in expatriate success in international assignments. They examined to what extent various dimensions of EI grounded in Salovey and Mayer's EI model influence expatriates' CCA. Their study revealed that all dimensions of EI, appraising emotions, regulating emotional responses, and utilising emotions in problem-solving positively predicted general living, interactional and work-related CCA. This means that expatriates with higher levels of EI feel psychologically comfortable and able to better function in the new environment, cooperate with locals, apply their competencies and knowledge, learn new things, and cope with uncertainty.

Further supporting these findings, Konanahalli and Oyedele (2016) explored the role of EI among British expatriates in the construction sector across 29 countries in the Global South. Following Goleman's mixed-trait model, which includes both cognitive and behavioural dimensions of EI (e.g., self-awareness, self-

management, social awareness, and relationship management), their structural equation modelling (SEM) results showed that EI positively influenced an expatriate's adjustment to work and interaction in the new environment and to some extent diminish the cultural differences. However, they identified expatriates' social awareness and self-management as the most influential components of EI. In essence, while social awareness enables expatriates to better interact with others and eventually achieve organisationally desired outcomes, self-management helps them effectively navigate stress, and to be more emotionally in control.

Additionally, Schreier et al. (2019) as part of their study investigating management competencies that facilitate the performance of diverse teams in the Swiss context, identified "emotional stability and intelligence" as one of the most important qualities for managers leading diverse teams. In their interviews, managers who succeeded in diverse environments tended to be calm under pressure (self-regulation), aware of their own biases (self-awareness), and capable of understanding colleagues' feelings. Interestingly, findings from team perspective also confirmed the significant role of the manager's EI, as team members stated that they expected managers to demonstrate self-awareness of their strengths and weaknesses fostering a team atmosphere of trust and psychological safety. Mammadov and Wald (2025), also found that senior managers with higher EI were better equipped to handle the emotional and psychological complexities of international interactions. In other words, EI in combination with a manager's global mindset, enhanced their ability to manage diverse teams and operate effectively in global markets. Although the study focuses on managerial-level competencies within SMEs, it provides strong evidence that emotionally intelligent leaders contribute to more adaptive, culturally responsive teams particularly when navigating high-stakes, uncertain, and fast-changing global contexts. Overall, these findings further support the essential role of EI not just in a team context but at the managerial level as well.

3.4 Adaptability

Adaptability is not only defined as an individual's capacity to make appropriate responses to changed or changing situations but also, as their ability to modify or adjust one's behaviour in meeting various circumstances or different people (VandenBos, 2007). Pulakos et al. (2000) conceptualised adaptability in the context of the workplace as an eight-dimensional construct including: (1) dealing with uncertain or unpredictable situations; (2) managing emergencies or crises; (3) solving problems creatively; (4) managing work stress; (5) learning new tasks, technologies, and procedures (enthusiasm for new approaches); (6) demonstrating interpersonal adaptability (flexibility, open-mindedness); (7) demonstrating cultural adaptability (respect); (8) demonstrating physically oriented adaptability.

According to "Eight Dimensions of Adaptive Performance", adaptability includes a wide and multifaceted set of individual behaviours in changed or uncertain situations. It is often treated as a complementary skill supporting other key soft skills rather than being examined as a standalone variable. However, this treatment may be due to its conceptual breadth: as it spans behavioural, emotional, and cognitive adjustments across a variety of contexts. In this review we position adaptability as a foundational skill that enables effective application of other soft skills. While its function may often be to support or reinforce other soft skills, its direct role in shaping team behaviour and outcomes requires further independent attention.

In this regard, Lai et al. (2017) found that immigrant professionals in Canadian workplaces relied heavily on behavioural and cognitive flexibility to navigate implicit expectations and social cues. They highlighted that an adaptability-driven process is critical to successful workplace integration. Afsar et al. (2020) similarly demonstrated that individuals with higher levels of CQ were more likely to exhibit innovative behaviour and trust-building in culturally diverse teams, particularly when they were behaviourally adaptable. These two examples clearly show that while both studies' primary focus was on other soft skills, adaptability functioned as the behavioural mechanism through which other soft skills translated into action.

Guzmán-Rodríguez et al. (2023) also provided further empirical support demonstrating the critical role of adaptability in MTs. They assessed the impact of four individual-level characteristics: adaptability, cultural sensitivity, cohesion and cultural diversity on MTs' performance. Among these, adaptability was identified as the most valued trait by team leaders. Meaning that, leaders associate adaptability with better conflict resolution, faster adjustment to evolving team roles, and more efficient integration of diverse viewpoints. Their findings highlighted that adaptability enables individuals to effectively manage the dynamic and ambiguous conditions of culturally diverse work environments. Indeed, the ability to adjust behavioural expectations, respond to cultural differences respectfully, and flexibly collaborate across varying interpersonal styles was found to directly support performance. Their study showed that adaptability plays both supportive and enabling role in facilitating effective behaviour across changing intercultural contexts, as it helps

individuals to understand shifting norms, adjust communication approaches, and align with divergent team expectations.

Taken together, these findings indicate that adaptability, while often intertwined with other soft skills, operates with distinct behavioural and psychological mechanisms that justify its treatment as a standalone and unique skill. In MTs where shifting cultural expectations, various communication styles and unfamiliar power dynamics are common, adaptability becomes an essential skill that enables team members not only to cope but also to thrive in fluid, diverse environments.

4. Proposed Framework

Although culturally diverse work environments often benefit from greater creativity, innovation and better decision-making, they frequently face challenges such as lack of trust, limited knowledge sharing, weak spirit of collaboration, reduced psychological safety (e.g. uncertainty, anxiety), and conflicts. (Stahl & Maznevski, 2010; Bouncken *et al.*, 2016; Gross-Golacka and Martyniuk, 2024) However, based on the synthesis of empirical evidence and theoretical insights from the included studies, this paper highlights the importance and influence of the four identified core soft skills and their interconnected roles in enhancing MTs' effectiveness through effectively navigating challenges. The framework conceptualises these soft skills as foundational enablers of key team processes such as trust-building, inclusion, knowledge sharing, and constructive conflict management. As a result, these processes contribute to positive team-level outcomes, including cohesion, performance, and retention.

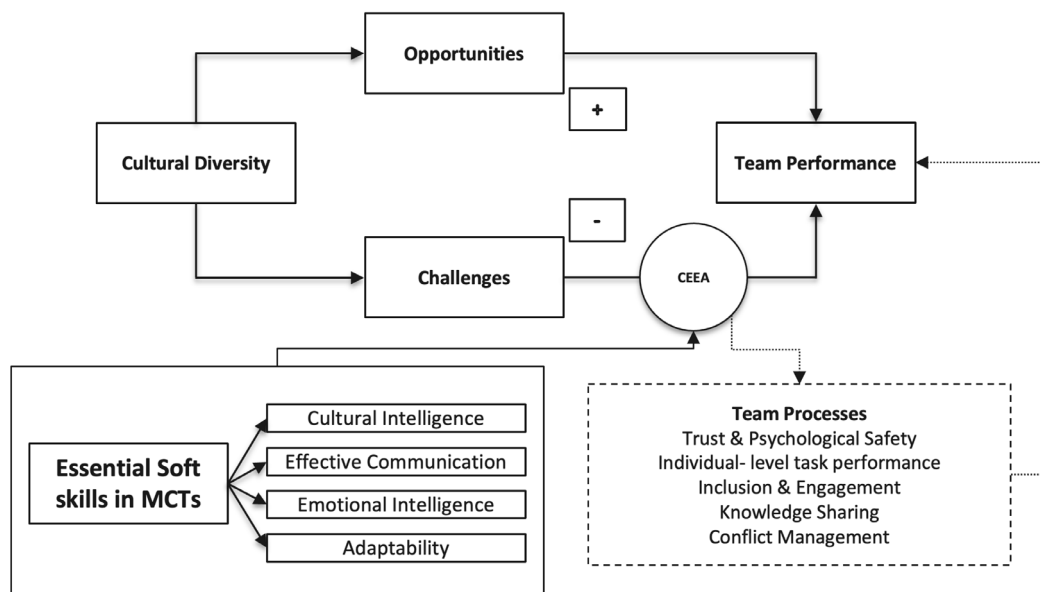


Figure 2: Theoretical Model of Soft Skills in Culturally Diverse Team Performance. [Source: Authors, 2025]

5. Conclusion

Through this study, we identified the significant role of communication, cultural intelligence, emotional intelligence, and adaptability in bridging the cultural gap, shaping team dynamics, and enhancing team performance in multicultural work environments. This study has shown that these soft skills, interact in complex ways that reinforce one another in enabling teams to manage the challenges that commonly arise in such workplaces ranging from language barriers and cultural misunderstandings to psychological safety and collaborative trust. Indeed, these soft skills as shown in a synergistic framework, determine whether cultural diversity becomes a driver of creativity and innovation or a source of conflicts and challenges. To maximise the benefits of MTs while effectively managing their inherent tensions, multinational and culturally diverse organisations must treat the development of these soft skills not as optional enhancements but as strategic imperatives.

6. Practical Implication

This review offers important implications for both leaders, and human resource professionals in effectively managing culturally diverse teams and maximising the opportunities of having a MT. Our findings through this review further support the importance of developing soft skills as a timely and strategic response to the challenges and opportunities of multicultural teamwork.

Organisations with culturally diverse teams as well as organisations which operate internationally should integrate soft skills specifically the four identified in this study into core human resource practices, including recruitment, selection, and performance evaluation. While studies in the field of cross-cultural management often treat intercultural competencies as post-entry trainable outcomes, this review supports a more integrated perspective. As many of the competencies underpinning intercultural effectiveness such as behavioural adaptability, empathy, emotional regulation, and cultural sensitivity can be assessed and identified at the pre-employment stage. Thus, we suggest that the recruitment process should include measures capturing soft skills through standard tests such as Mayer–Salovey EI, CQ Scale (CQS), to assess (potential) employees' soft skill levels. Additionally, organisations operating in a global context should actively seek out talents with a high Business Cultural Intelligence Quotient (BCIQ), which can be signalled through international experience, multilingual proficiency, and advanced education (Alon et al., 2016). Acquiring such individuals and providing opportunities to further enhance these capabilities through targeted development initiatives can improve both individual and organisational performance.

Therefore, to effectively address challenges within MTs, organisations are required to move toward embedding soft skills into both recruitment and development processes while also committing to systematic evaluation of these interventions and future empirical studies are needed to validate the effectiveness of such practices across industries, particularly in relation to MTs' outcomes.

Acknowledgements

I would like to express my sincere gratitude to my supervisors, Dr. Nasrullah Khilji and Prof. Konstantin Nikolic for their invaluable guidance, constructive feedback, and continuous support throughout the development of this research.

Ethics Declaration: This study is based on secondary data from published literature and all relevant ethical considerations were observed.

AI Declaration: AI tools were used in a limited capacity just to assist with language clarity and check grammar. We confirm that no AI tools were used to generate content, conduct analysis, or interpret findings.

References

- Abugre, J.B. and Debrah, Y.A. (2019). Assessing the impact of cross-cultural communication competence on expatriate business operations in multinational corporations of a Sub-Saharan African context. *International Journal of Cross Cultural Management*, [online] 19(1), pp.85–104. doi:<https://doi.org/10.1177/1470595819839739>.
- Adamovic, M. (2017). An employee-focused human resource management perspective for the management of global virtual teams. *The International Journal of Human Resource Management*, 29(14), pp.2159–2187. doi:<https://doi.org/10.1080/09585192.2017.1323227>.
- Afsar, B., Al-Ghazali, B.M., Cheema, S. and Javed, F. (2020). Cultural intelligence and innovative work behavior: the role of work engagement and interpersonal trust. *European Journal of Innovation Management*, ahead-of-print(ahead-of-print). doi:<https://doi.org/10.1108/ejim-01-2020-0008>.
- Alon, I., Boulanger, M., Elston, J.A., Galanaki, E., Martínez de Ibarreta, C., Meyers, J., Muñoz-Ferrer, M. and Vélez-Calle, A. (2016). Business Cultural Intelligence Quotient: A Five-Country Study. *Thunderbird International Business Review*, 60(3), pp.237–250. doi:<https://doi.org/10.1002/tie.21826>.
- Bouncken, R., Brem, A. and Kraus, S. (2016). Multi-cultural teams as sources for creativity and innovation: The role of cultural diversity on team performance. *International Journal of Innovation Management*, 20(01), p.1650012. doi:<https://doi.org/10.1142/s1363919616500122>.
- Cimatti, B. (2016). DEFINITION, DEVELOPMENT, ASSESSMENT OF SOFT SKILLS AND THEIR ROLE FOR THE QUALITY OF ORGANIZATIONS AND ENTERPRISES. *International Journal for Quality Research*, 10(1), pp.97–130. doi:<https://doi.org/10.18421/IJQR10.01-05>.
- Earley, P. C., & Ang, S. (2003). *Cultural intelligence: Individual interactions across cultures*. Stanford University Press.
- Gross-Gofacka, E. and Martyniuk, A. (2024). Globalisation and the Challenges of Managing Cultural Diversity: From Multiculturalism to Interculturalism. *Journal of Intercultural Management*, 16(3), pp.37–57. doi:<https://doi.org/10.2478/joim-2024-0010>.

- Groves, K.S., Feyerherm, A. and Gu, M. (2015). Examining Cultural Intelligence and Cross-Cultural Negotiation Effectiveness. *Journal of Management Education*, 39(2), pp.209–243.
doi:<https://doi.org/10.1177/1052562914543273>.
- Hofstede, G. (2011). Dimensionalizing Cultures: the Hofstede Model in Context. Online Readings in Psychology and Culture, [online] 2(1), pp.1–26. doi:<https://doi.org/10.9707/2307-0919.1014>.
- Konanahalli, A. and Oyedele, L. O. (2016) 'Emotional intelligence and British expatriates' cross-cultural adjustment in international construction projects', *Construction Management and Economics*, 34(11), pp. 751–768.
doi:<https://doi.org/10.1080/01446193.2016.1213399>
- Koveshnikov, A., Wechtler, H. and Dejoux, C. (2014). Cross-cultural adjustment of expatriates: The role of emotional intelligence and gender. *Journal of World Business*, 49(3), pp.362–371.
doi:<https://doi.org/10.1016/j.jwb.2013.07.001>.
- Lai, D.W.L., Shankar, J. and Khalema, E. (2017). Unspoken Skills and Tactics: Essentials for Immigrant Professionals in Integration to Workplace Culture. *Journal of International Migration and Integration*, 18(3), pp.937–959.
doi:<https://doi.org/10.1007/s12134-017-0513-5>.
- Laker, D.R. and Powell, J.L. (2011). The differences between hard and soft skills and their relative impact on training transfer. *Human Resource Development Quarterly*, 22(1), pp.111–122. doi:<https://doi.org/10.1002/hrdq.20063>.
- Li, Q. and REUVENY, R. (2002). Economic Globalization and Democracy: An Empirical Analysis. *British Journal of Political Science*, [online] 33(01), pp.29–54. doi:<https://doi.org/10.1017/s0007123403000024>.
- Mammadov, A. and Wald, A. (2025). The Role of Cultural Intelligence and Emotional Intelligence in the Internationalization of SMEs: Does Global Mindset Matter? *Management International Review*. doi:<https://doi.org/10.1007/s11575-024-00561-5>.
- Newman, S.A., Ford, R.C. and Marshall, G.W. (2020). Virtual team leader communication: Employee perception and organizational reality. *International Journal of Business Communication*, 57(4), pp.452–473.
doi:<https://doi.org/10.1177/2329488419829895>.
- Office, H. (2024). *Why do people come to the UK? To work*. [online] GOV.UK. Available at:
<https://www.gov.uk/government/statistics/immigration-system-statistics-year-ending-march-2024/why-do-people-come-to-the-uk-to-work>.
- Othman, A.A.E. and Ibrahim Fouda, N. (2022). A cultural diversity management framework for enhancing the performance of architectural design firms in Egypt. *Archnet-IJAR: International Journal of Architectural Research*, 16(2).
doi:<https://doi.org/10.1108/arch-08-2021-0231>.
- Presbitero, A. and Toledano, L.S. (2018). Global Team Members' Performance and the Roles of cross-cultural training, Cultural intelligence, and Contact intensity: the Case of Global Teams in IT Offshoring Sector. *The International Journal of Human Resource Management*, 29(14), pp.2188–2208.
doi:<https://doi.org/10.1080/09585192.2017.1322118>.
- Pulakos, E.D., Arad, S., Donovan, M.A. and Plamondon, K.E. (2000). Adaptability in the workplace: Development of a taxonomy of adaptive performance. *Journal of Applied Psychology*, 85(4), pp.612–624.
doi:<https://doi.org/10.1037/0021-9010.85.4.612>.
- Robles, M.M. (2012). Executive Perceptions of the Top 10 Soft Skills Needed in Today's Workplace. *Business Communication Quarterly*, 75(4), pp.453–465. doi:<https://doi.org/10.1177/1080569912460400>.
- Salovey, P. and Mayer, J.D. (1990). Emotional Intelligence. *Imagination, Cognition and Personality*, 9(3), pp.185–211.
doi:<https://doi.org/10.2190/DUGG-P24E-52WK-6CDG>.
- Schlaegel, C., Richter, N.F. and Taras, V. (2021). Cultural intelligence and work-related outcomes: A meta-analytic examination of joint effects and incremental predictive validity. *Journal of World Business*, 56(4), p.101209.
doi:<https://doi.org/10.1016/j.jwb.2021.101209>.
- Schreier, C., Udomkit, N & Capone, R 2019, 'A study on competencies for managing workforce diversity: Evidences from multi-national enterprises in Switzerland', *ABAC Journal*, vol. 39, no. 3, pp. 1-16.
- Spitzberg, B.H. and Changnon, G., 2009. Conceptualizing intercultural competence. In: D.K. Deardorff, ed. *The SAGE handbook of intercultural competence*. Thousand Oaks, CA: SAGE, pp.2–52.
- Stahl, G.K., Maznevski, M.L., Voigt, A. and Jonsen, K., 2010. Unraveling the effects of cultural diversity in teams: A meta-analysis of research on multicultural work groups. *Journal of International Business Studies*, 41(4), pp.690–709.
Available at: <https://doi.org/10.1057/jibs.2009.85>
- Stoermer, S., Davies, S. and Froese, F.J. (2020). The influence of expatriate cultural intelligence on organizational embeddedness and knowledge sharing: The moderating effects of host country context. *Journal of International Business Studies*, 52(3), pp.432–453. doi:<https://doi.org/10.1057/s41267-020-00349-3>.
- Szpilko, D., Szydło, J. and Samul, J. (2022). Challenges And Benefits of Working In Multicultural Teams: Evidence from Poland and Romania. *Journal of Organizational Management Studies*, 2022, pp.1–13.
doi:<https://doi.org/10.5171/2022.493446>.
- Tenzer, H., Pudelko, M. and Harzing, A.-W. (2014). The impact of language barriers on trust formation in multinational teams. *Journal of International Business Studies*, 45(5), pp.508–535. doi:<https://doi.org/10.1057/jibs.2013.64>.
- United Nations Department of Economic and Social Affairs, Population Division (2020). *International Migration 2020 Highlights* (ST/ESA/SER.A/452).
- VandenBos, G.R. (2015). *APA dictionary of psychology (2nd ed.)*. Washington: American Psychological Association.
doi:<https://doi.org/10.1037/14646-000>.

Winterbotham, M., Kik, G., Selner, S., Menys, R., Stroud, S. and Whittaker, S. (2020). *Employer Skills Survey 2019*. Department for Education (DfE) of the UK Government.

World Economic Forum, 2025. *The Future of Jobs Report 2025*. [pdf] Geneva: World Economic Forum. Available at: <https://www.weforum.org/reports/the-future-of-jobs-report-2025/>

IT: Business Strategic Alignment for Sustainable Performance in Saudi Government Institutions Systematic Literature Review

Jawaher Albarrak

Department of Business Administration, College of Business, King Faisal University, AlAhssa, Saudi Arabia

jalbarrak@kfu.edu.sa

Abstract: Aligning information technology (IT) with organisational strategy is crucial for achieving a competitive advantage and enhancing performance. However, evidence on how IT-business strategic alignment operates within Saudi government institutions remains limited. **Methods:** This study conducted a systematic literature review of research published in English between 2013 and 2023. Searches in Scopus, Web of Science, and EBSCO identified 555 scholarly articles. Network-based keyword analysis was used to map the literature and track the evolution of key themes over time. **Results:** Findings reveal a layered conceptual structure. Central themes such as IT strategy, strategic alignment, organisational performance, IT governance, and digital transformation form the core of the field. Additional influential areas include communication, IT infrastructure flexibility, sustainability, and cybersecurity. Keywords like innovation, change management, and knowledge management connect otherwise distinct topic clusters, reflecting the interdisciplinary nature of the field. Persistent challenges include communication gaps, weak IT governance, and rigid IT architecture, whereas successful alignment enhances efficiency, trust in IT, and organisational performance. **Contribution:** The study proposes a framework specific to IT-business strategic alignment in Saudi public institutions, integrating insights from literature and network analysis to model sustainable organisational performance. The framework supports Saudi Arabia's Vision 2030 digital transformation goals and offers practical guidance for policymakers and IT leaders.

Keywords: IT-Business alignment, Strategic IT alignment, Saudi public sector, Sustainable organisational performance, Digital transformation

1. Introduction

For more than 30 years, the alignment of information technology (IT) and business strategies has been recognised as a central concern for organisations (Gerow et al., 2014; Guillemette & Paré, 2012; Sternal Zabukovšek et al., 2023; Njanka et al., 2021). Researchers have examined how the integration of IT and business functions creates value and improves organisational performance (Al Jaafreh & Allouzi, 2023; Chan & Reich, 2007; Chtourou Ben Amar & Ben Romdhane, 2020). Successful alignment is linked to competitive advantage and profitability (Aversano et al., 2012; Baker et al., 2011; Jonathan et al., 2023; Mu et al., 2022), while misalignment often results in failed IT initiatives, wasted resources, and negative organisational consequences (Chen, 2010; Ravishankar, 2013).

Despite extensive research, most studies have been conducted in the private sector or Western contexts. There is limited empirical evidence on how IT-business alignment affects public sector organisations in Saudi Arabia, despite this sector undergoing rapid digital transformation under Vision 2030. This gap highlights the need to explore alignment not only as a management challenge but also as a driver of sustainability and long-term institutional performance in the Saudi context.

This study seeks to answer three key research questions:

- What factors influence IT-business strategic alignment?
- How does alignment affect organisational and sustainability performance in Saudi Arabia?
- How can IT-business alignment be systematically evaluated in relation to sustainability outcomes?

To address these questions, a systematic literature review (SLR) was conducted. Several scholars have proposed models to enhance the effectiveness of information systems (IS) in improving organisational performance. The Strategic Alignment Model (SAM) established by (Venkatraman et al., 1993) is widely recognised as the most prominent and extensively utilised among these models (Aversano et al., 2012, Gerow et al., 2014, Goepp and Avila, 2015, Luftman et al., 2012, Alghazi et al., 2017). The SAM model effectively facilitates strategic IT management by harmoniously coordinating four closely intertwined domains: business strategy, IT strategy, organisational infrastructure, and IT infrastructure, enabling seamless integration and operation (Colberg, 2022). Currently, SAM model holds an elevated level of respect in the field of management information systems (MIS) and is associated with ongoing research topics. Nevertheless, the SAM model has been subject to criticism due to its purely theoretical character, which hinders its ability to adequately analyse and evaluate degrees of alignment, as pointed out by (Gerow et al., 2015) and (Luftman et al., 2017). Although the SAM model has

several drawbacks, it has served as a benchmark for numerous researchers on this subject (Goepp and Avila, 2015, Ullah and Lai, 2013) . A review of studies shows that most scholars rely on the Strategic Alignment Model (SAM) as a foundation, often extending it with additional constructs.

The SAM model has limitations in Saudi Arabia's public sector. The way IT managers communicate and follow cultural norms in these organisations is unique compared to Western cultures. These differences directly affect how IT strategies are implemented, proving that a specific, tailored approach is needed. See Figure 1

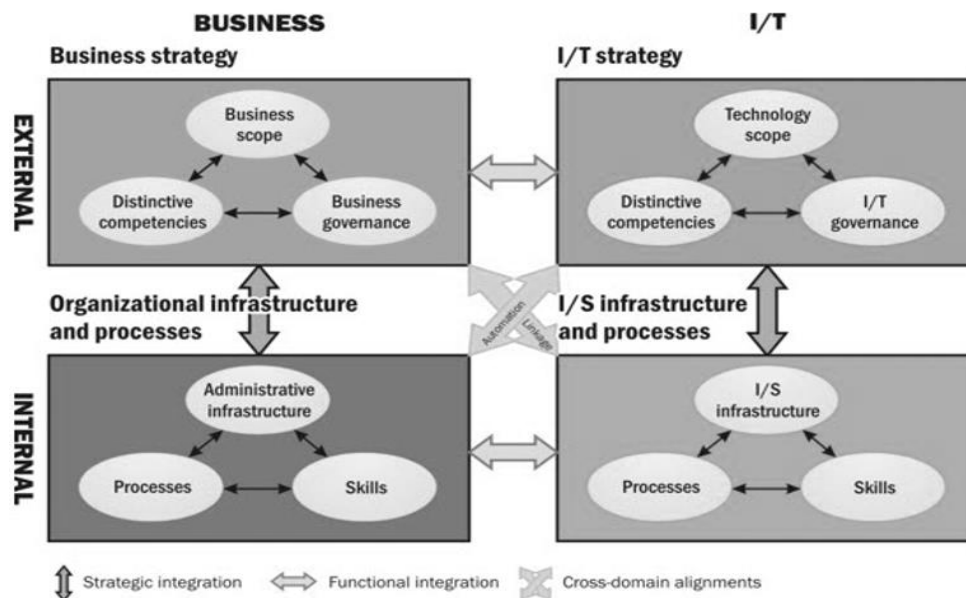


Figure 1: The Henderson and Venkatraman Strategic Alignment Model (SAM) ,1993

Moreover, this research builds on SAM but moves beyond it by identifying and integrating other critical elements highlighted in the literature. These include strategic flexibility, IT credibility and trust, IT governance, and IT infrastructure flexibility (Johnson & Lederer, 2010; Butler, 2022; Rivas-Asanza et al., 2018; Khuntia et al., 2024; Greulich et al., 2024). Such factors are particularly important in the public sector, where bureaucratic processes, evolving policies, and digital reforms shape how IT is adopted and aligned with institutional goals.

In summary, this study clarifies the roles of executive support, coordination, and knowledge sharing in alignment, focusing specifically on Saudi Arabia's public sector. By doing so, it contributes a more context-specific and sustainable perspective to the alignment debate.

2. Methodology

This study followed the Systematic Literature Review (SLR) approach, guided by the PRISMA 2020 framework (Liberati et al., 2009; Moher et al., 2009; Page et al., 2021). The process was informed by the scoping principles of Arksey and O'Malley (2005) and Levac et al. (2010), but it was executed as a full SLR to ensure methodological transparency and reproducibility.

The review was conducted in five main phases. First, the research questions were clearly defined to guide the study. Second, relevant studies were identified through systematic searches. Third, eligible studies were selected based on predefined inclusion and exclusion criteria. Fourth, data from the selected studies were extracted and thoroughly analysed. Finally, the results were synthesised and reported to provide a comprehensive overview of the findings.

2.1 Search Strategy

A comprehensive search was conducted across three major academic databases : Scopus, Web of Science (WOS), and EBSCOhost. Indeed, for studies published between 2013 and 2023. Only peer-reviewed journal articles written in English were included.

The final search syntax applied was:

(TITLE-ABS-KEY("information technology" OR "IT" OR "information systems"))

AND

(TITLE-ABS-KEY("business alignment" OR "IT-business alignment" OR "strategic alignment" OR "IT strategy"))

AND

(TITLE-ABS-KEY("sustainable" OR "sustainability" OR "organisational performance" OR "organizational performance"))

AND

(TITLE-ABS-KEY("public sector" OR "government" OR "Saudi Arabia"))

This search identified 3,259 records (1,265 from WOS, 1,361 from Scopus, and 633 from EBSCO). After removing 473 duplicates, 2,786 unique records remained for screening.

2.2 Screening and Selection

Full-text screening based on inclusion and exclusion criteria (Table 1).

Table 1: Inclusion and Exclusion Criteria

Criterion	Inclusion	Exclusion
Language	English	Non-English
Publication Type	Peer-reviewed journal articles	Conference papers, book chapters, reports
Period	2013-2023	Before 2013
Focus	IT–business alignment, organisational performance, sustainability, public/government sector	Non-organisational or technical IT studies
Country Context	Global and Saudi Arabia	Studies unrelated to organisational context

After screening, 555 papers met the inclusion criteria and were included in the final synthesis.

2.3 Quality Appraisal

Although the review was guided by scoping principles for the initial mapping, a light-weight quality appraisal was applied to maintain rigor. Each study was evaluated based on methodological clarity, relevance to IT–business alignment, and its theoretical or empirical contribution.

2.4 Data Extraction and Analysis

Figure 2 presents the PRISMA 2020 flow diagram, showing the number of records identified, screened, excluded (with reasons), and included in the final review

PRISMA 2020 flow diagram for new systematic reviews which included searches of databases and registers only

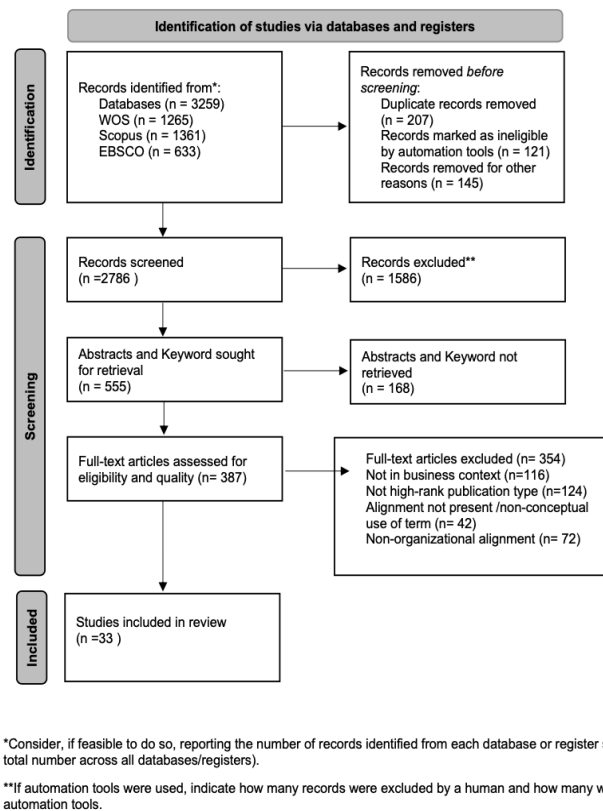


Figure 2: PRISMA 2020 flow diagram

In summary, researchers have shown considerable interest in examining the impact of information technology (IT) alignment across various sectors due to its significance and the advantages it offers in enhancing organizational sustainability (Johnson & Lederer, 2010). Conducting a Systematic Literature Review (SLR) covering the period 2013–2023 provides a contemporary perspective on research advancements and trends, ensuring that the findings are relevant and applicable to current research questions and methodologies while capturing the latest developments in the field (El Archi et al., 2023).

2.5 Analysis: Academic Disciplines, Journals, and Country Distribution

This study searched three major electronic databases *Scopus*, *Web of Science*, and *EBSCO* which collectively cover a wide range of disciplines, including business, management, social sciences, and humanities. Scopus provides broader coverage of natural sciences compared to the others (Mongeon & Paul-Hus, 2016). From this search, 555 articles published between 2013 and 2023 were analysed.

2.5.1 Academic disciplines

Table 2 shows the distribution of articles across disciplines. Management dominates with 102 articles (35.92%), reflecting the centrality of strategy and management in alignment research. Disciplines such as Green Sustainable Science and Technology (28.87%), Environmental Studies (28.17%), and Environmental Sciences (27.11%) also appear strongly, showing the increasing connection between IT alignment, sustainability, and environmental performance. By contrast, fields like Computer Science (2.82%), Economics (2.47%), and Industrial Engineering (2.11%) are less represented, but their contributions highlight technical and interdisciplinary dimensions often overlooked in mainstream alignment studies.

Table 2: Academic disciplines represented in alignment research (2013–2023)

No	Academic Discipline	Articles	% of Total
1	Management	102	35.92%
2	Green Sustainable Science & Technology	82	28.87%

No	Academic Discipline	Articles	% of Total
3	Environmental Studies	80	28.17%
4	Environmental Sciences	77	27.11%
5	Business	61	21.48%
6	Information Science & Library Science	56	19.72%
7	Computer Science: Information Systems	53	18.66%
8	Computer Science: Interdisciplinary Apps	8	2.82%
9	Economics	7	2.47%
10	Engineering: Industrial	6	2.11%

Note: Management dominates alignment research, but sustainability-related fields are increasingly prominent.

2.5.2 Journals

A wide range of journals contributed to the dataset (Table 3). The journal Sustainability published 69 articles (12.43%), making it the leading outlet. Information systems-focused journals, such as *Information Systems Research* (3.42%) and *Information Systems Frontiers* (2.70%), also play a key role, demonstrating the relevance of alignment research to IS theory and practice. Business-oriented journals like *Business Systems Research Journal* and *Information Management* further reflect the multidisciplinary nature of the topic.

Table 3: Leading journals publishing alignment research (2013–2023)

No	Journal Name	Articles	% of Total
1	Sustainability	69	12.43%
2	Information Systems Research	19	3.42%
3	Information Systems Frontiers	15	2.70%
4	Business Systems Research Journal	14	2.52%
5	Information Management	12	2.16%
6	Other journals (combined)	426	76.77%

Note: Sustainability dominates, but IS journals provide key conceptual contributions.

2.5.3 Countries

Research output is globally distributed across 41 countries (Table 4). The United States leads with 52 articles (9.37%), followed by China (7.39%) and England (5.95%). Australia, Spain, Brazil, and South Korea also make strong contributions. This diversity highlights the global relevance of IT-business alignment, though the dominance of the US and China suggests stronger research infrastructures and funding in those contexts.

Table 4: Country distribution of alignment research (2013–2023)

No	Country	Articles	% of Total
1	USA	52	9.37%
2	China	41	7.39%
3	England	33	5.95%
4	Australia	18	3.24%
5	Spain	18	3.24%
6	Brazil	17	3.06%
7	South Africa	14	2.52%
8	South Korea	13	2.34%
9	Taiwan	13	2.34%
10	India	11	1.98%

Note: Contributions are concentrated in the US, China, and England, reflecting established research hubs.

Simply, the research patterns show that developed economies like the US and China lead the way. Their strong research systems and funding allow them to publish more (Mongeon and Paul-Hus, 2016). The core of this research is still in management and IT, which makes sense given that alignment is a strategic issue (Chan and Reich, 2007). Interestingly, more studies are showing up in sustainability journals, pointing to a new focus on connecting IT alignment with environmental and social performance (Mio et al., 2020). Meanwhile, emerging economies like Saudi Arabia are not publishing as much, which means we really need more research tailored to their unique circumstances (Khalil and Belitski, 2020).

3. Proposed Framework: IT–Business Strategic Alignment for Sustainable Performance

The proposed framework extends the Strategic Alignment Model (SAM) and contextualises it within the Saudi public sector. It positions sustainability as a central organisational outcome. The framework integrates business and IT strategy, organisational infrastructure, and IT capabilities. This integration achieves strategic coherence and advances sustainable institutional performance in line with Vision 2030 objectives. Communication serves as a key mechanism. It minimises misalignment and facilitates knowledge exchange across organisational levels. Robust IT governance structures ensure accountability, effective risk management, and regulatory compliance. Trust in IT systems enhances user confidence. It also promotes the institutionalisation of digital transformation initiatives. Infrastructure flexibility enables agile technology deployment. It further supports the adoption of sustainable operational practices. Together, these factors reinforce strategic alignment and contribute to the long-term sustainability and digital maturity of Saudi public institutions. Table 5 presents the definitions of the key components of the proposed framework, aligned with the framework illustrated in Figure 3.

Table 5: Definitions of the proposed framework.

Factors	Definition	References
IT-business strategic alignment (SAM perspective)	<i>The degree to which IT strategy and business strategy are mutually supportive, ensuring that technology investments and initiatives enable the organisation's goals, improve performance, and create sustainable competitive advantage</i>	(Henderson & Venkatraman, 1993).
Communications	<i>the effective on-going exchange of knowledge and clear understanding between business and IT units within Organisations allowing them to comprehend the strategies, plans, risks, environments (both Business and IT) and priorities of the Organisation and the way to achieve them</i>	(Luftman, 2004, Luftman, 2003, Luftman et al., 2017)
IT infrastructure flexibility	<i>The definition of IT infrastructure flexibility emphasizes IT infrastructure's ability to easily and readily support a wide variety of hardware, software, and communication technologies, to distribute information to anywhere inside an Organisation and beyond, and to support the design, development, and implementation of a heterogeneity of business applications.</i>	(Chen and Siau, 2012, Byrd and Turner, 2001)
IT Governance	<i>The allocation of authority for IT decisions and the processes IT and business manager's use at strategic, tactical, and operational levels for setting IT priorities, allocating resources, and controlling activities.</i>	(Van Grembergen et al., 2004, Simonsson et al., 2010, Luftman et al., 2017)
Trust in IT	<i>The subjective probability by which Organisations believe that the underlying technology infrastructure can facilitate transactions according to their confident expectations.</i>	(Thatcher et al., 2010, Ratnasingam and Pavlou, 2003)
sustainability performance	<i>sustainability performance is the aggregate negative or positive bottom line of economic, environmental and social impacts of an entity against a defined baseline.</i>	(Wijethilake, 2017, Labuschagne et al., 2005, Development et al., 1992, Büyüközkan and Karabulut, 2018)

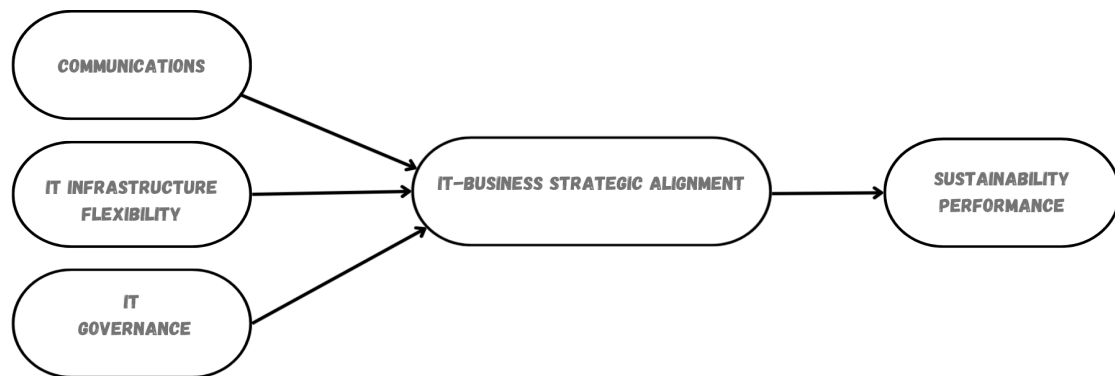


Figure 3: Proposed Framework: IT-Business Strategic Alignment for Sustainable Performance in Saudi Arabia

4. Discussion and Conclusion

This systematic literature review addresses a critical gap in understanding IT-business strategic alignment. It identifies core theoretical concepts and their interrelationships. The analysis confirms that IT strategy, strategic alignment, and IT governance are foundational elements. Factors such as communication, cybersecurity, innovation, and change management highlight the dynamic nature of the field. A key finding is the link between IT-business alignment and sustainability, as reflected in research published in environmental and sustainability journals. Most studies focus on developed countries. There is limited research from emerging economies in the Middle East, including Saudi Arabia. To address this, the study focuses on the Saudi public sector. This sector is undergoing rapid digital transformation under Vision 2030, highlighting the critical importance of alignment in driving sustainable outcomes.

The primary contribution of this study is a new conceptual framework for IT-business strategic alignment, tailored to Saudi public institutions yet applicable to similar Middle Eastern contexts. This framework synthesizes insights from the literature into a dynamic model supporting sustainable organisational performance, providing practical guidance for executives and IT leaders in implementing alignment initiatives and informing policy decisions. It also acknowledges persistent challenges, including communication gaps and rigid IT architectures, integrating these contextual factors to enhance theoretical understanding and deliver actionable insights for both practitioners and policymakers.

Building on the Strategic Alignment Model (SAM) (Henderson & Venkatraman, 1993), the framework is extended for the Saudi public sector by incorporating strategic flexibility, IT credibility and trust, governance mechanisms, and infrastructure flexibility, all critical for sustainable institutional performance. Strategic flexibility enables public institutions to adapt objectives to changing policy and regulatory demands, while IT credibility and trust strengthen stakeholder confidence in digital initiatives. Governance mechanisms ensure accountability and effective decision-making, and infrastructure flexibility allows IT systems to support evolving business needs. These extensions are expected to reinforce alignment between IT and business strategies, promoting sustainability outcomes consistent with Vision 2030. The framework is further supported by a concept map and testable propositions, providing a robust foundation for future empirical research. Practically, it guides CIOs and PMOs in enhancing strategic and IT capabilities, while policy implications emphasize governance requirements and performance metrics to reinforce sustainability objectives. Finally, the framework establishes a research agenda for measuring constructs such as IT credibility and governance maturity, and linking them to sustainable performance in public sector institutions.

Acknowledgement

I would like to express my sincere gratitude to my supervisors, **Dr. Mahmoud Abdelrahman** and **Dr. Cara Mulholland**, Faculty of Business and Law, Manchester Metropolitan University, Manchester, United Kingdom, for their invaluable guidance, support, and encouragement throughout the development of this research.

Ethics Declaration: Ethical approval for this research was previously obtained from the MMU Faculty of Business and Law Research Ethics and Governance Committee (Reference Number: 2024-68675-03674) and from King Faisal University (KFU-REC-2025-AUG – ETHICS3527).

AI Declaration: This paper was developed without the use of AI tools in generating the main content. AI assistance was used only for formatting guidance, and grammar correction.

References

- AL JAAFREH, M., & ALLOUZI, M. (2023). Smart cities adoption in Saudi Arabia: A comprehensive review and future drivers. *British Journal of Multidisciplinary and Advanced Studies*, 4, 20–39.
- ALGHAZI, A., LI, M., SHEN, J., & FOSSO WAMBA, S. (2017). Aligning business strategy with IT strategy from business model to enterprise in Saudi Arabia public sector.
- ARKSEY, H., & O'MALLEY, L. (2005). Scoping studies: Towards a methodological framework. *International Journal of Social Research Methodology*, 8, 19–32. <https://doi.org/10.1080/1364557032000119616>
- AVERSANO, L., GRASSO, C., & TORTORELLA, M. (2012). A literature review of business/IT alignment strategies. *Procedia Technology*, 5, 462–474. <https://doi.org/10.1016/j.protcy.2012.09.052>
- BAKER, J., JONES, D., CAO, Q., & SONG, J. (2011). Conceptualizing the dynamic strategic alignment competency. *Journal of the Association for Information Systems*, 12(2).
- BHARADWAJ, A., EL SAWY, O. A., PAVLOU, P. A., & VENKATRAMAN, N. V. (2013). Digital business strategy: Toward a next generation of insights. *MIS Quarterly*, 471–482. <https://doi.org/10.25300/MISQ/2013/37.2.01>
- BÜYÜKÖZKAN, G., & KARABULUT, Y. (2018). Sustainability performance evaluation: Literature review and future directions. *Journal of Environmental Management*, 217, 253–267. <https://doi.org/10.1016/j.jenvman.2018.03.084>
- BUTLER, M. J. (2022). A qualitative system dynamics perspective on the contribution of information technology credibility towards business and information technology alignment. *South African Journal of Business Management*, 53, 12.
- BYRD, T. A., & TURNER, D. E. (2001). An exploratory analysis of the value of the skills of IT personnel: Their relationship to IS infrastructure and competitive advantage. *Decision Sciences*, 32, 21–54. <https://doi.org/10.1111/j.1540-5915.2001.tb00941.x>
- CALLON, M., COURTIAL, J.-P., TURNER, W. A., & BAUIN, S. (1983). From translations to problematic networks: An introduction to co-word analysis. *Social Science Information*, 22, 191–235. <https://doi.org/10.1177/053901883022002003>
- CASTRIOTTA, M., LOI, M., MARKU, E., & MOI, L. (2021). Disentangling the corporate entrepreneurship construct: Conceptualizing through co-words. *Scientometrics*, 126, 2821–2863. <https://doi.org/10.1007/s11192-021-03884-x>
- CHAN, Y. E., & REICH, B. H. (2007). IT alignment: What have we learned? *Journal of Information Technology*, 22, 297–315. <https://doi.org/10.1057/palgrave.jit.2000107>
- CHEN, L. (2010). Business–IT alignment maturity of companies in China. *Information & Management*, 47, 9–16. <https://doi.org/10.1016/j.im.2009.09.006>
- Chen, X., & Siau, K. L. (2012). Effect of business intelligence and IT infrastructure flexibility on organizational agility. In *Proceedings of the Thirty Third International Conference on Information Systems (ICIS 2012)*, 3361–3379. Association for Information Systems.
- CHTOUROU BEN AMAR, N., & BEN ROMDHANE, R. (2020). Organizational culture and information systems strategic alignment: Exploring the influence through an empirical study from Tunisia. *Journal of Enterprise Information Management*, 33, 95–119. <https://doi.org/10.1108/JEIM-03-2019-0063>
- COLBERG, T. (2022). Organisational resilience: Creating ambidexterity in strategic and operational resilience.
- DEVELOPMENT, I. I. F. S., DELOITTE, TOUCHE, & DEVELOPMENT, B. C. F. S. (1992). *Business strategy for sustainable development: Leadership and accountability for the '90s*. International Institute for Sustainable Development.
- GEROW, J. E., GROVER, V., THATCHER, J., & ROTH, P. L. (2014). Looking toward the future of IT–business strategic alignment through the past: A meta-analysis. *MIS Quarterly*, 38, 1159–1186. <https://doi.org/10.25300/MISQ/2014/38.4.07>
- GEROW, J. E., THATCHER, J. B., & GROVER, V. (2015). Six types of IT-business strategic alignment: An investigation of the constructs and their measurement. *European Journal of Information Systems*, 24, 465–491. <https://doi.org/10.1057/ejis.2014.46>
- GOEPP, V., & AVILA, O. (2015). An extended-strategic alignment model for technical information system alignment. *International Journal of Computer Integrated Manufacturing*, 28, 1275–1290. <https://doi.org/10.1080/0951192X.2015.1012326>
- GREULICH, M., LINS, S., PIENTA, D., THATCHER, J. B., & SUNYAEV, A. (2024). Exploring contrasting effects of trust in organizational security practices and protective structures on employees' security-related precaution taking. *Information Systems Research*, 35, 1586–1608. <https://doi.org/10.1287/isre.2024.1210>

- GUILLEMETTE, M. G., & PARÉ, G. (2012). Toward a new theory of the contribution of the IT function in organizations. *MIS Quarterly*, 36, 529–551. <https://doi.org/10.2307/41703425>
- HOFFMAN, D. L., & HOLBROOK, M. B. (1993). The intellectual structure of consumer research: A bibliometric study of author cocitations in the first 15 years of the *Journal of Consumer Research*. *Journal of Consumer Research*, 19, 505–517. <https://doi.org/10.1086/209323>
- JOHNSON, A. M., & LEDERER, A. L. (2010). CEO/CIO mutual understanding, strategic alignment, and the contribution of IS to the organization. *Information & Management*, 47, 138–149. <https://doi.org/10.1016/j.im.2010.01.003>
- JONATHAN, G. M., YALEW, S. D., GEBREMESKEL, B. K., RUSU, L., & PERJONS, E. (2023). IT alignment: A path towards digital transformation success. *Procedia Computer Science*, 219, 471–478. <https://doi.org/10.1016/j.procs.2023.01.057>
- KESSLER, M. M. (1963). Bibliographic coupling between scientific papers. *American Documentation*, 14, 10–25. <https://doi.org/10.1002/asi.5090140103>
- KHALIL, S., & BELITSKI, M. (2020). Dynamic capabilities for firm performance under the information technology governance framework. *European Business Review*, 32, 129–157. <https://doi.org/10.1108/EBR-05-2019-0101>
- KHUNTIA, J., SALDANHA, T., KATHURIA, A., & TANNIRU, M. R. (2024). Digital service flexibility: A conceptual framework and roadmap for digital business transformation. *European Journal of Information Systems*, 33, 61–79. <https://doi.org/10.1080/0960085X.2023.2229842>
- LABUSCHAGNE, C., BRENT, A. C., & VAN ERCK, R. P. (2005). Assessing the sustainability performances of industries. *Journal of Cleaner Production*, 13, 373–385. <https://doi.org/10.1016/j.jclepro.2004.02.012>
- LEE, S. H., & ZHOU, Y. (2022). The outlook for sustainable development goals in business and management: A systematic literature review and keyword cluster analysis. *Sustainability*, 14, 11976. <https://doi.org/10.3390/su141811976>
- LEVAC, D., COLQUHOUN, H., & O'BRIEN, K. K. (2010). Scoping studies: Advancing the methodology. *Implementation Science*, 5, 69. <https://doi.org/10.1186/1748-5908-5-69>
- LIBERATI, A., ALTMAN, D. G., TETZLAFF, J., MULROW, C., GÖTZSCHE, P. C., IOANNIDIS, J. P., CLARKE, M., DEVEREAUX, P. J., KLEIJNEN, J., & MOHER, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: Explanation and elaboration. *BMJ*, 339, b2700. <https://doi.org/10.1136/bmj.b2700>
- LIN, F., CHEN, Y., MO, W., ZHOU, H., XIAO, Z., HU, S., SHI, X., LIU, M., WEI, J., & ZHU, W. (2022). A bibliometric analysis of autophagy in lung diseases from 2012 to 2021. *Frontiers in Immunology*, 13, 1092575. <https://doi.org/10.3389/fimmu.2022.1092575>
- LU, H. T., LI, X., & YUEN, K. F. (2023). Digital transformation as an enabler of sustainability innovation and performance: Information processing and innovation ambidexterity perspectives. *Technological Forecasting and Social Change*, 196, 122860. <https://doi.org/10.1016/j.techfore.2024.122860>
- LUFTMAN, J. (2003). Assessing IT/business alignment. *Information Systems Management*, 20, 9–15. <https://doi.org/10.1201/1078/43188.20.1.20030101/24807.3>
- LUFTMAN, J. (2004). Assessing business-IT alignment maturity. In *Strategies for information technology governance*. IGI Global.
- LUFTMAN, J., LYYTINEN, K., & ZVI, T. B. (2017). Enhancing the measurement of information technology (IT) business alignment and its influence on company performance. *Journal of Information Technology*, 32, 26–46. <https://doi.org/10.1057/jit.2016.16>
- LUFTMAN, J., ZADEH, H. S., DERKSEN, B., SANTANA, M., RIGONI, E. H., & HUANG, Z. (2012). Key information technology and management issues 2011–2012: An international study. *Journal of Information Technology*, 27, 198–212. <https://doi.org/10.1057/jit.2012.13>
- MIO, C., PANFILO, S., & BLUNDO, B. (2020). Sustainable development goals and the strategic role of business: A systematic literature review. *Business Strategy and the Environment*, 29, 3220–3245. <https://doi.org/10.1002/bse.2553>
- MOHER, D., LIBERATI, A., TETZLAFF, J., & ALTMAN, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *BMJ*, 339, b2700. <https://doi.org/10.1136/bmj.b2700>
- MONGEON, P., & PAUL-HUS, A. (2016). The journal coverage of Web of Science and Scopus: A comparative analysis. *Scientometrics*, 106, 213–228. <https://doi.org/10.1007/s11192-015-1765-5>
- MU, R., ZHANG, T., & LI, S. (2022). A rapid self-alignment strategy for a launch vehicle on an offshore launching platform. *Sensors*, 23, 339. <https://doi.org/10.3390/s23010339>
- NJANKA, S. Q., SANDULA, G., & COLOMO-PALACIOS, R. (2021). IT-business alignment: A systematic literature review. *Procedia Computer Science*, 181, 333–340. <https://doi.org/10.1016/j.procs.2021.01.191>
- PAGE, M. J., MCKENZIE, J. E., BOSSUYT, P. M., BOUTRON, I., HOFFMANN, T. C., MULROW, C. D., SHAMSEER, L., TETZLAFF, J. M., AKL, E. A., & BRENNAN, S. E. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>
- PESTA, B., FUERST, J., & KIRKEGAARD, E. O. (2018). Bibliometric keyword analysis across seventeen years (2000–2016) of intelligence articles. *Journal of Intelligence*, 6, 46. <https://doi.org/10.3390/jintelligence6040046>
- RATNASINGAM, P., & PAVLOU, P. A. (2003). Technology trust in internet-based interorganizational electronic commerce. *Journal of Electronic Commerce in Organizations (JECO)*, 1, 17–41. <https://doi.org/10.4018/jeco.2003010102>
- RAVISHANKAR, M. N. (2013). Public ICT innovations: A strategic ambiguity perspective. *Journal of Information Technology*, 28, 316–332. <https://doi.org/10.1057/jit.2013.14>

- RIVAS-ASANZA, W., CELLERI-PACHECO, J., ANDRADE-GARDA, J., GARCÍA-VÁZQUEZ, R., MATO-ABAD, V., RODRÍGUEZ-YÁÑEZ, S., & SUÁREZ-GARABOA, S. (2018). Environmental sustainability in information technologies governance. *Sustainability*, 10, 4792. <https://doi.org/10.3390/su10124792>
- Shi, W., Zheng, W., Yu, J. X., Cheng, H., & Zou, L. (2017). Keyphrase extraction using knowledge graphs. *Data Science and Engineering*, 2(4), 275–288. <https://doi.org/10.1007/s41019-017-0041-1>
- SIMONSSON, M., JOHNSON, P., & EKSTEDT, M. (2010). The effect of IT governance maturity on IT governance performance. *Information Systems Management*, 27, 10–24. <https://doi.org/10.1080/10580531003621350>
- THATCHER, J. B., MCKNIGHT, D. H., BAKER, E. W., ARSAL, R. E., & ROBERTS, N. H. (2010). The role of trust in postadoption IT exploration: An empirical examination of knowledge management systems. *IEEE Transactions on Engineering Management*, 58, 56–70. <https://doi.org/10.1109/TEM.2010.2045022>
- ULLAH, A., & LAI, R. (2013). A systematic review of business and information technology alignment. *ACM Transactions on Management Information Systems (TMIS)*, 4, 1–30. <https://doi.org/10.1145/2499770>
- VAN GREMBERGEN, W., DE HAES, S., & GULDENTOPS, E. (2004). Structures, processes and relational mechanisms for IT governance. In *Strategies for information technology governance*. IGI Global.
- VENKATRAMAN, N., HENDERSON, J. C., & OLDACH, S. (1993). Continuous strategic alignment: Exploiting information technology capabilities for competitive success. *European Management Journal*, 11, 139–149. [https://doi.org/10.1016/0263-2373\(93\)90004-4](https://doi.org/10.1016/0263-2373(93)90004-4)
- WIJETHILAKE, C. (2017). Proactive sustainability strategy and corporate sustainability performance: The mediating effect of sustainability control systems. *Journal of Environmental Management*, 196, 569–582. <https://doi.org/10.1016/j.jenvman.2017.03.070>

Sectoral Impact of Corporate Governance: Short-Term Profitability vs. Long-Term Value Creation

Michael Mansberger and Rodney Leitner

European Polytechnical University (EPU), Pernik, Bulgaria

michael.mansberger@gmx.at (corresponding author)

rodney.leitner@epubg.eu

Abstract: This paper investigates how financial performance influences corporate governance in several sectors, exposing significant results that vary depending on industry. These findings demonstrate the strategic importance of governance: effective governance encourages investment and enhances firm value in capital-intensive sectors (e.g., manufacturing, energy), while also boosting short-term profitability in heavily regulated sectors (e.g., healthcare, finance). A quantitative cross-industry analysis was conducted using financial performance and governance data. The findings underline the need for critical industry-specific regulations inside the more general Environmental, Social, and Governance (ESG) framework. Strong governance structures and efficiency are significantly correlated ($r = 0.354$) between governance and EBIT in the banking industry. Greater profitability follows from this. Similarly, a strong correlation between governance and EBITDA in the healthcare sector ($r = 0.495$) highlights the critical role of robust governance for operational resilience and financial stability, especially in a highly financially constrained and highly regulated environment such as healthcare. By contrast, the consumer sector shows a weaker correlation ($r = 0.223$), implying that various factors play a greater role in its profitability than enhancements in the operational efficiency of governance. In the energy industry, governance is more strongly correlated with long-term enterprise value ($r = 0.468$) than short-term profitability, indicating that strong governance drives long-term company value, even if costly in the short term. In the industrial sector, a significant correlation between governance and enterprise value ($r = 0.447$), consistent with past studies, underlines that effective governance is crucial for maximizing investment strategies and guaranteeing long-term firm value in capital-intensive sectors. These results illustrate that governance strategies must be tailored to these sectors' budgetary and regulatory contexts. While strong governance improves profitability in regulated sectors, it fosters long-term wealth development in capital-intensive businesses. Therefore, investors and company executives should modify their governance policies to the needs of their industry rather than rigorously following an ESG model.

Keywords: ESG, Corporate governance, Cross-Industry analysis, Leadership, Sustainable strategy

1. Introduction

Corporate governance is critical in determining a firm's performance and sustainable growth. Prior research generally finds that stronger governance structures are associated with better financial outcomes. For example, companies with shareholder-friendly governance enjoy higher valuations and stock returns over time (Gompers, Ishii & Metrick, 2003). However, the benefits of good governance may manifest differently across industries. Companies in specific sectors may experience immediate profitability enhancements from improved governance, while others may realize advantages in long-term value generation. This raises a critical question: does the impact of financial performance on corporate governance differ between short-term profitability and long-term firm value, depending on the industry sector?

Recent research on ESG performance yields inconclusive results and indicates that context is significant. Meta-analyses suggest a correlation between comprehensive ESG factors and financial performance. Governance is often a consistently strong positive predictor of firm performance across. At the same time, some work indicates that industry characteristics can moderate these effects. For instance, Brogi and Lagasio (2019) show that the relationship between ESG practices and profitability can differ for financial intermediaries compared to other companies. Similarly, Ioannou and Serafeim (2012) found that the institutional context leads to variation in corporate social performance across environments. These findings underscore the importance of understanding the context in the governance-performance relationship, hinting that a one-size-fits-all approach to corporate governance, which assumes that the same governance practices will work for all companies, may be suboptimal due to the unique characteristics and needs of different industries and that sector-specific analysis is necessary.

The ongoing debate over short-term profits versus long-term value creation has been a significant aspect of corporate strategy. The theory suggests that managers in environments with weak governance may prioritize short-term earnings, potentially neglecting long-term value. In contrast, strong governance helps align management with the long-term interests of shareholders (Jensen & Meckling, 1976). On the other hand, adopting long-term sustainable strategies can incur upfront expenses, which may temporarily reduce profitability (Porter & van der Linde, 1995). Efficient governance can help balance these competing demands by promoting responsible investment and accountability. Therefore, it is essential to investigate how governance

impacts short-term financial performance compared to long-term value creation and whether this balance varies across different industries, highlighting the corporate governance strategy's complexity and multifaceted nature.

This study addresses a significant gap in the literature by delivering a thorough analysis of how corporate governance affects firm performance across different sectors. It provides a distinct viewpoint by concentrating on five key sectors—finance, consumer, healthcare, industrial, and energy—and assessing governance's role in both short-term profitability and long-term firm value. This paper enhances the understanding of how the governance-performance relationship varies across industries. Its unique contribution is rooted in exploring corporate governance's sectoral effects, a topic that has been insufficiently examined in existing literature. The rest of this paper is structured as follows: Section 2 reviews pertinent literature and formulates expectations for each sector. Section 3 details the data and methodology used for the analysis. Section 4 showcases the empirical results from the cross-sector examination. Section 5 interprets the implications of these findings for theory and practice. Finally, Section 6 concludes the paper with suggestions and future research directions.

2. Literature Review

Extensive literature links corporate governance to financial performance, but findings have often been contingent on contextual factors. Early influential work by Gompers, Ishii & Metrick (2003) introduced a governance index and found that firms with stronger governance had significantly higher equity prices and better stock returns over the long run. This suggests that good governance generally enhances firm value. Subsequent research reinforced this positive link. For example, a meta-analysis by Orlitzky *et al.* (2003) covering 30 years of data showed a positive relationship between corporate social performance (which includes governance aspects) and financial outcomes on average. Friede *et al.* (2015) aggregated evidence from over 2,000 studies and concluded that roughly 90% found a non-negative relationship between ESG factors and financial performance, with a majority reporting a positive effect. Whelan *et al.* (2021) reviewed more than 1,000 studies from 2015–2020 and found that ESG integration tends to either benefit financial performance or at least does no harm in most cases. These studies underline that sound corporate governance and sustainability practices are broadly associated with improved financial metrics or stock returns.

However, researchers have also noted that the strength and nature of the governance-performance relationship can vary across contexts. Differences in regulatory environments, stakeholder expectations, and business models mean that governance might yield different outcomes in different industries. For instance, highly regulated sectors such as banking and healthcare face strict compliance requirements where governance and oversight can directly affect operational efficiency and risk management (Brogi & Lagasio, 2019). Improving governance (e.g., robust board oversight, risk controls) might quickly translate into better financial stability and profit margins in such sectors. In contrast, in fast-moving consumer markets, competitive advantage often stems from innovation and marketing, which could dilute the relative impact of internal governance on short-term profits. Some evidence suggests that governance and ESG practices have a weaker or more lagged effect on performance in consumer-facing companies, as customer preferences and product cycles dominate short-run outcomes (Khan, Serafeim & Yoon, 2016).

Industry characteristics also influence whether governance yields immediate benefits or longer-term advantages. Significant investments in capital-intensive sectors like energy and industrials have long payback periods. Here, governance quality can play a crucial role in guiding strategic investment decisions and ensuring accountability, which may not boost quarterly profits but can enhance firm value over time through better project outcomes and investor confidence. Past research on long-horizon returns supports this; Eccles *et al.* (2014) found that companies with strong sustainability and governance policies significantly outperformed peers regarding stock performance over many years. Likewise, governance is argued to reduce agency costs in large-scale investments and improve long-run value creation in heavy industries (Porter & van der Linde, 1995; Gompers, Ishii & Metrick, 2003). On the other hand, for firms in less capital-intensive sectors (e.g., services or consumer retail), governance improvements might manifest more in cost control or incremental efficiency gains, with a more minor impact on valuation.

In summary, the literature review suggests that while corporate governance generally enhances financial performance, its specific impact—short-term profitability or long-term value—may differ by sector. Regulated industries may experience more immediate performance gains from governance improvements, whereas capital-intensive industries may see governance as an investment in future value. These insights motivate this sectoral analysis of governance effects to empirically disentangle how governance influences Earnings Before Interest and Taxes (EBIT), Earnings Before Interest, Taxes, Depreciation, and Amortization (EBITDA), or other

profitability measures versus enterprise value across industries. The following section describes the approach to investigating these relationships.

3. Methodology

To explore the sector-specific impact of corporate governance on firm performance, this paper conducted a cross-sectional quantitative analysis using company data from five sectors: finance, consumer, healthcare, industrial, and energy. The sample comprises 124 large European companies from the Euro Stoxx 600 index. These sectors were chosen to represent a range of regulatory and economic conditions—from highly regulated (finance, healthcare) to consumer-driven (consumer discretionary/staples) to capital-intensive (industrial, energy). This research collected measures of corporate governance quality and financial performance for each company.

This paper proxied corporate governance quality using the Governance pillar score provided by Refinitiv in their ESG database (Refinitiv, 2024). This score captures various aspects of governance structures and practices, such as board structure, shareholder rights, transparency, and audit quality. A higher score indicates stronger governance according to ESG criteria. Focusing on this standardized governance metric allows consistent comparison across firms and sectors.

This study selected two types of financial performance indicators to capture short-term profitability and long-term firm value:

- **Short-Term Profitability:** Operating profit metrics such as EBIT and EBITDA were used to gauge current-period profitability. These metrics reflect a firm's core operating earnings. This study uses EBIT for most sectors; however, EBITDA is also considered for sectors where depreciation/amortization is high.
- **Long-Term Value:** Using Enterprise Value (EV) to indicate long-term firm value. EV (market capitalization plus debt minus cash) captures the market's valuation of the business's total worth and is influenced by expectations of future cash flows. It reflects the long-term value creation perceived by investors.

All financial data was obtained from Refinitiv Eikon, ensuring firm comparability. Before analysis, the data were checked for completeness and quality. Companies with missing key financial metrics were excluded or replaced with sector peers to maintain balanced sector samples. Extreme values were adjusted where necessary to reduce the influence of outliers on correlation estimates (Hair *et al.*, 2009).

Pearson correlation coefficients between the governance score and each performance measure within each sector. This approach identifies the strength and direction of the linear relationship between governance and performance for each industry group. Given relatively small sector samples ($N \approx 25$ per sector), correlation analysis provides an intuitive gauge of association. Correlation does not imply causation, but significant correlations can suggest a meaningful link for further investigation.

Additionally, to validate the robustness of the findings, the analysis ran simple ordinary least squares (OLS) regression models for each sector, regressing profitability and enterprise value measures on the governance score (and controlling for firm size using total assets or market cap as a control). These regressions help confirm whether governance has a statistically significant effect when accounting for firm scale differences. The regression results (coefficients and significance levels) were consistent with the correlation analysis, reinforcing the interpretations, but for brevity, this study primarily reports the correlation insights.

4. Results

The analysis reveals distinct patterns in how corporate governance relates to sector performance. Table 1 summarizes the correlation coefficients between governance scores and the financial performance metrics in each industry.

- **Finance Sector:** A positive correlation ($r = 0.354$) exists between finance's governance score and EBIT. This moderate, statistically significant correlation indicates that banks with stronger governance structures achieve higher operating profits. Strong governance in financial institutions—through rigorous risk management, compliance, and oversight—seems to enhance efficiency and profitability in the short term.
- **Healthcare Sector:** The governance score positively correlates with EBITDA ($r = 0.495$) in the healthcare sector. This is the most significant governance-profitability correlation among the sectors

studied. It indicates that healthcare firms' strong governance (e.g., effective boards and accountability mechanisms) is associated with substantially improved operational earnings. Given healthcare's highly regulated and stakeholder-sensitive nature, good governance likely aids in navigating compliance and cost controls, leading to enhanced financial stability and profit.

- **Consumer Sector:** In consumer-focused companies, the correlation between governance and operating profitability is weaker ($r = 0.223$) and not statistically significant. This low correlation implies that variations in governance quality do not strongly explain differences in short-term profit margins among consumer sector firms. Other factors—such as brand strength, innovation, and consumer trends—likely overshadow governance in driving the financial performance of retailers and consumer goods companies in the short term.
- **Energy Sector:** A substantial positive correlation ($r = 0.468$) is observed between the governance score and enterprise value in the energy sector. Unlike in banking or healthcare, governance in energy firms has a bigger impact on long-term valuation than immediate profits. Energy companies with higher governance standards tend to have markedly higher enterprise values, suggesting that investors place a premium on strong governance in this capital-intensive, high-risk industry. Good governance likely translates into better long-term project outcomes and risk management, which increases the firm's overall value.
- **Industrial Sector:** A notable positive correlation ($r = 0.447$) exists between industrial companies' governance scores and enterprise value. This indicates that manufacturers and industrial firms with stronger governance are valued significantly higher by the market in the long run. Effective governance in industries such as manufacturing may contribute to more prudent capital expenditures, improved strategic planning, and sustainable growth, thereby enhancing long-term enterprise value.

Table 1: Correlation of Governance Score with Performance Measures by Sector

Sector	Short-Term Profitability (EBIT/EBITDA) vs. Governance	Long-Term Value EV vs. Governance
Finance	$r = 0.354$ (EBIT)	$r = 0.290$ (EV) (<i>n.s.</i>)
Healthcare	$r = 0.495$ (EBITDA)	$r = 0.310$ (EV) (<i>n.s.</i>)
Consumer	$r = 0.223$ (EBIT) (<i>n.s.</i>)	$r = 0.180$ (EV) (<i>n.s.</i>)
Energy	$r = 0.180$ (EBIT) (<i>n.s.</i>)	$r = 0.468$ (EV)
Industrial	$r = 0.256$ (EBIT) ($p < .10$)	$r = 0.447$ (EV)

Notes: Correlations are significant at the 5% level (two-tailed). (*n.s.*) denotes not statistically significant. The sample size is 25 firms per sector except in energy. The profitability metric is EBIT, except where noted; EBITDA is used in healthcare due to high depreciation in that sector.

As shown above (Table 1), governance positively correlates with short-term profitability in the regulated sectors (finance and healthcare). In contrast, its strongest associations with long-term value are found in the capital-intensive sectors (energy and industrial). The consumer sector shows weak correlations in both cases, reinforcing that governance is not a primary driver of financial performance in that context. These results empirically support the notion that “one size does not fit all” for corporate governance impact—the benefits of governance manifest in different ways depending on industry dynamics.

5. Discussion

The findings provide nuanced insights into how corporate governance contributes to firm performance across industries. Strong governance pays off through improved short-term profitability in heavily regulated sectors like finance and healthcare. This is intuitive: banks and healthcare companies operate under strict oversight and complex compliance requirements, so effective governance and internal controls enhance efficiency, prevent costly missteps, and bolster earnings. This result shows that governance correlates with higher bank EBIT and aligns with prior observations that prudent governance can curb excessive risk-taking and improve financial outcomes in financial institutions (Brogi & Lagasio, 2019). Similarly, for healthcare firms, robust governance likely facilitates better management of operational processes and regulatory compliance, which improves their bottom line. These sector-specific findings underscore that governance mechanisms, such as diligent boards and transparent practices, can yield immediate tangible benefits when regulatory stakes are high.

In contrast, the consumer sector did not exhibit a strong governance-performance link in the short run. One interpretation is that in consumer-focused businesses, market forces and intangible assets dominate success: factors such as brand equity, marketing strategy, product innovation, and consumer sentiment drive profitability more than internal governance structures. Good governance remains essential as a baseline for preventing failures, but beyond a certain point, it may not noticeably boost quarterly profits in this sector. This does not imply that governance has no value for consumer companies; rather, its value may be more indirect or long-term. The weak correlation aligns with the idea that for firms in dynamic, consumer-driven markets, agility and creativity, often outside the purview of traditional governance metrics, are key performance drivers, potentially diluting the observable effect of governance quality on short-term financial results (Khan, Serafeim & Yoon, 2016).

The most interesting pattern is found in the energy and industrial sectors, where governance quality is strongly linked to enterprise value, unlike in regulated industries, where governance benefits appear quickly through efficiency gains. In these capital-intensive industries, the payoff from governance accrues over a longer horizon. Strong governance in sectors like energy and manufacturing may involve rigorous project evaluation, long-term risk management (e.g., environmental and safety oversight), and strategic investment decisions—actions that might entail significant upfront costs or restraint from pursuing every short-term opportunity. However, investors seem to reward these governance practices with higher valuations, likely because they expect them to lead to more sustainable and stable cash flows in the future. This finding aligns with the perspective that good governance is a critical foundation for long-term value creation in firms requiring significant investments. It echoes Eccles *et al.* (2014), who documented that companies with superior sustainability and governance policies delivered superior long-run stock performance. It also resonates with the Porter & van der Linde (1995) hypothesis that what might appear as a cost (like investing in better governance or environmental compliance) can enhance competitiveness and value in the long term. Energy and industrial companies with strong governance likely avoid value-destroying projects, optimize capital allocation, and mitigate significant risks, achieving higher enterprise values.

The disparate sectoral impacts observed here carry essential implications. They suggest that corporate governance best practices should be tailored to the industry context and the specific performance objectives most relevant to that context. For instance, boards and policymakers in regulated sectors might focus on governance improvements that yield efficiency gains and ensure compliance, thereby boosting profitability and stability. Tools such as rigorous internal auditing, clear risk oversight committees, and strong alignment of executive compensation with compliance goals could be particularly effective for banks and healthcare firms. On the other hand, in sectors like energy and industrials, governance efforts might prioritize strategic guidance, stakeholder engagement, and long-term risk assessments (such as environmental and safety governance), even if these do not immediately translate into higher quarterly profits. The market's recognition of these efforts in valuations suggests that such governance adds credibility and future value—a signal to executives that sacrificing some short-term earnings for long-term governance improvements can be worthwhile.

The results for the consumer sector imply that, while maintaining baseline good governance is necessary to avoid scandals or inefficiencies, extraordinary efforts in governance reforms may not yield substantial payoffs unless accompanied by strategies to drive demand and innovation. If governance is adequate, investors in these companies may prioritize growth prospects and brand strength over incremental differences in governance scores. Companies in this sector should ensure that governance is sound but recognize that performance gains will likely stem from market-oriented initiatives.

Another consideration is that this analysis was cross-sectional and concentrated on correlations; therefore, careful interpretation is warranted. The observed positive correlations do not establish causation; it is plausible that exceptionally profitable or highly regarded firms possess the resources to invest more significantly in governance enhancements. Nevertheless, the patterns that align with the theoretical expectations for each sector substantiate a causal narrative: it is plausible that governance influences performance in ways that correspond with the requisites of each industry. Future research could enhance causal inference by investigating alterations in governance and performance over time or by leveraging regulatory upheavals that affect governance mandates within specific industries.

These findings significantly contribute to theory and practice by illustrating the value of corporate governance. From a theoretical perspective, the results substantiate a contingency view of the effectiveness of corporate governance, aligning with stakeholder theory and resource-based perspectives, which assert that the impact of governance resources is context-dependent (Ioannou & Serafeim, 2012). This concept is expanded upon at the

industry level, positing that the value derived from governance mechanisms is not uniform but contingent upon industry-specific conditions, such as regulatory and capital intensity. From a practical perspective, boards and investors may discern that enhancements in governance will yield varying expected benefits, contingent on the sector in question. This understanding can guide the focus of governance reforms and inform strategies for communicating their value to stakeholders. For instance, a chief executive officer in an industrial firm may justify investments in governance (such as enhanced transparency or the incorporation of board expertise in sustainability) by referencing long-term value preservation. Conversely, a chief executive officer of a banking institution may emphasize how improvements in governance can avert compliance failures and enhance efficiency metrics in the short term.

6. Conclusion

This study examines the impact of corporate governance on firm performance in sector-specific contexts, particularly distinguishing between short-term profitability and long-term value creation. Cross-industry analysis of European companies provides clear evidence that the role of governance differs by sector. Strong corporate governance is associated with higher short-term profitability in industries where regulatory and operational oversight, such as finance and healthcare, are paramount. In contrast, in capital-intensive sectors like energy and industrials, strong governance is more strongly linked to enhanced long-term enterprise value, even if the immediate effect on profit metrics is less pronounced. Meanwhile, this research found only a weak link between governance and financial performance in consumer-oriented sectors, suggesting that other competitive factors dominate in the short run.

These findings reinforce that corporate governance should not be viewed as a monolithic value driver but as a context-dependent tool. Companies and their boards should align governance practices with their strategic context. For some, governance improvements will primarily safeguard and enhance current earnings, while for others, the payoff will be in sustained long-term growth and valuation. Investors analyzing firms across industries may also consider that a high governance rating could signify different advantages: in a bank, it might imply prudent management and reliable profits, whereas in an industrial firm, it might signal wise long-term investment stewardship.

From a policy and framework standpoint, these results suggest that broad ESG or governance codes (such as corporate governance guidelines or sustainability frameworks) might be more effective if they allow flexibility in emphasizing industry-specific aspects. Regulators and standard-setters could encourage sector-specific governance best practices, focusing on risk governance in finance, innovation governance in tech/consumer, and stakeholder governance in industries with significant long-term environmental impacts. Such tailoring would recognize that industry realities influence the path from governance to performance.

Finally, this study highlights avenues for further research. Future work could expand the sectoral comparison to other industries, such as technology and telecommunications, and include longitudinal data to assess how governance changes influence performance trajectories. It would also be valuable to examine which subcomponents of governance, such as board independence, shareholder rights, and ESG oversight committees, are most effective in which sectors. As regulatory focus on ESG intensifies—for instance, through initiatives like the European Green Deal (European Commission, 2019) and new corporate sustainability reporting mandates—understanding the nuanced role of governance across sectors will remain a pertinent issue.

Ethics Declaration: The authors confirm that this study did not involve research on human participants or personal data, and no ethical approval was required. The analysis was conducted using publicly available financial and ESG datasets. The authors declare no conflicts of interest in the publication of this research.

AI Declaration: No generative AI or automated writing tools were used in the research or writing of this paper. All content is the original work of the authors.

References

- Brogi, M. and Lagasio, V. (2019). Environmental, social, and governance, and company profitability: Are financial intermediaries different? *Corporate Social Responsibility and Environmental Management*, 26(3), pp.576–587. <https://doi.org/10.1002/csr.1704>
- Eccles, R.G., Ioannou, I. and Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science*, 60(11), pp.2835–2857. <https://doi.org/10.1287/mnsc.2014.1984>
- European Commission. (2019). *The European Green Deal*. Available at: https://ec.europa.eu/commission/presscorner/detail/en/ip_19_6691

- Friede, G., Busch, T. and Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, 5(4), pp.210–233. <https://doi.org/10.1080/20430795.2015.1118917>
- Gompers, P.A., Ishii, J.L. and Metrick, A. (2003). Corporate governance and equity prices. *The Quarterly Journal of Economics*, 118(1), pp.107–156. <https://doi.org/10.1162/00335530360535162>
- Hair, J.F., Black, W.C., Babin, B.J. and Anderson, R.E. (2009). *Multivariate Data Analysis* (7th ed.). Upper Saddle River, NJ: Prentice Hall.
- Ioannou, I. and Serafeim, G. (2012). What drives corporate social performance? The role of nation-level institutions. *Journal of International Business Studies*, 43(9), pp.834–864. <https://doi.org/10.1057/jibs.2012.26>
- Jensen, M.C. and Meckling, W.H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), pp.305–360. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- Khan, M., Serafeim, G. and Yoon, A. (2016). Corporate sustainability: First evidence on materiality. *The Accounting Review*, 91(6), pp.1697–1724. <https://doi.org/10.2308/accr-51383>
- Orlitzky, M., Schmidt, F.L. and Rynes, S.L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies*, 24(3), pp.403–441. <https://doi.org/10.1177/0170840603024003910>
- Porter, M.E. and van der Linde, C. (1995). Toward a new conception of the environment–competitiveness relationship. *Journal of Economic Perspectives*, 9(4), pp.97–118. <https://doi.org/10.1257/jep.9.4.97>
- Refinitiv. (2024). Data was retrieved from the Refinitiv Eikon database in June 2024.
- Whelan, T., Atz, U., Van Holt, T. and Clark, C. (2021). ESG and financial performance: Uncovering the relationship by aggregating evidence from 1,000+ studies (2015–2020). *NYU Stern Center for Sustainable Business*.

Analysing Management Capabilities Interface on Governance and Performance in Pharmaceutical Alliances Context

Foroozan Piroozi¹, Mário José Batista Romão¹, Carlos Costa¹ and Manuela Aparicio²

¹ISEG, Lisbon School of Economics and Management, Universidade de Lisboa, Lisbon, Portugal

²NOVA Information Management School (NOVA IMS), Universidade NOVA de Lisboa, Portugal

Foroozan.piroozi@aln.iseg.ulisboa.pt (Corresponding author)

Mario.romao@iseg.ulisboa.pt

cjcosta@iseg.ulisboa.pt

manuela.aparicio@novaims.unl.pt

Abstract: Strategic alliances have become a vital tool for organizations seeking competitive advantage, innovation, and market expansion—particularly in dynamic sectors such as pharmaceuticals. Despite their growing prevalence, many alliances fail to deliver expected outcomes, often due to insufficient alliance management capabilities (AMC) and ineffective alliance governance (AG). While AMC and AG have been examined individually in prior research, their combined impact on alliance performance remains underexplored. This study addresses this gap by investigating the interrelationships among AMC, AG, and Strategic Alliance Performance (SAP) in the pharmaceutical industry. Grounded in dynamic capabilities and governance theories, a conceptual model was developed and empirically tested using survey data from 193 alliance professionals in pharmaceutical firms. Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to evaluate the model and test the proposed hypotheses. The results indicate that AMC significantly influences both AG and SAP, while AG also positively affects SAP. Specifically, AMC accounts for 32.1% of the variance in SAP and 30.4% of the variance in AG, whereas AG explains 52.2% of the variation in SAP. These findings underscore the central role of AMC in shaping governance structures that enhance alliance performance. This research contributes to the literature by integrating AMC and AG into a unified framework, offering theoretical clarity on how capabilities translate into performance through governance mechanisms. The study also responds to recent calls for empirical tools to measure AMC and evaluate its strategic value. From a practical perspective, the results suggest that pharmaceutical firms can improve alliance outcomes by strengthening internal capabilities that support governance design and implementation. Overall, the study highlights the dynamic interplay between managerial capabilities and governance structures in determining the success of strategic alliances. It provides both academic and managerial insights into how firms can better manage interorganizational partnerships in complex and uncertain VUCA (Volatile, Uncertain, Complex, and Ambiguous) environments.

Keywords: Strategic alliances, Alliance management capability, Alliance governance, Strategic alliance performance, Pharmaceutical industry

1. Introduction

Corporate Strategies are increasingly employed by organizations aiming to access key resources, and foster innovation and to enhance competitiveness by adapting to market demands and meet customer needs (Ferrigno et al. 2023; Abdeen et al. 2025). Strategic alliances as a prominent approach in the last two decades enable firms to penetrate new markets, develop capabilities, and respond to fast-changing environments (Zahoor et al. 2023; Russo and Cesarani 2017).

Despite their strategic relevance, many alliances underperform or dissolve prematurely (Al-Tabbaa and Zahoor 2024). While enthusiasm often fuels alliance formation, sustaining them requires robust managerial practices (Vurro et al. 2023; Engsig & Nielsen 2024). As such, there is growing interest in understanding the capabilities that support successful alliance implementation—namely, Alliance Management Capability (AMC), which encompasses the knowledge, experience, and routines needed to navigate alliance complexities (Vurro et al. 2023).

AMC refers to a firm's ability to acquire, integrate, and apply alliance-related knowledge (Robson et al. 2019). These capabilities may be cultivated over time through practice and deliberate investment (Vurro et al. 2023). However, even with increased scholarly focus on AMC, limited empirical work has investigated its direct and indirect effects on Strategic Alliance Performance (SAP), or its influence on alliance governance (Zahoor et al. 2023; Mamédio et al. 2019).

Two key gaps remain underexplored. First, how does AMC impact SAP, either independently or via its effect on governance structures? Second, what role does AMC play in shaping governance mechanisms to align partner objectives and reduce alliance failure (Sacchetti and Catturani 2021)?

Alliance governance (AG) mechanisms such as joint ventures, licensing, or franchising facilitate resource coordination and risk-sharing while clarifying responsibilities and aligning incentives (Kale & Singh 2009). AMC could be a crucial enabler of these governance forms, empowering firms to match governance strategies with specific alliance goal (Zahoor et al. 2023). Yet this interdependence remains underexamined.

To address this, our study investigates the relationships among AMC, AG, and SAP through a conceptual model grounded in dynamic capabilities and governance theory. Data were gathered via a structured survey administered to 193 alliance professionals in the Iranian pharmaceutical sector—a context where partnerships are critical for sustaining innovation, regulatory compliance, and market access (Shakeri and Radfar 2017).

Using Partial Least Squares Structural Equation Modeling (PLS-SEM), we test both direct and indirect effects of AMC on SAP. Our analysis shows that AMC significantly predicts both AG and SAP. Specifically, AMC explains 30.4% of the variance in AG and 32.1% in SAP, while AG alone accounts for 52.2% of the variance in SAP. These results reinforce the argument that AMC serves as both an independent and enabling factor for alliance success.

This research offers a unified framework that integrates capability development with governance design, responding to calls for empirical models that map governance mechanisms to alliance outcomes (Diakité et al. 2022) and the importance of using more direct measures to assess alliance management capabilities (Mamédio et al. 2019).

2. Literature Review

2.1 Strategic Alliances

Strategic alliances are cooperative agreements between firms that aim to achieve joint objectives through collaboration. They allow firms to share risks, enter new markets, and access complementary capabilities. In resource-constrained or innovation-driven environments, alliances provide critical flexibility and speed in responding to competition (Ferrigno et al. 2023).

The benefits of alliances include economies of scale, faster innovation cycles, and the co-development of new knowledge. Alliances are particularly relevant when firms face external volatility or need to overcome internal limitations, such as restricted capital, technological gaps, or insufficient market reach (Lee and Thosuwanchot 2025).

Despite their appeal, alliance performance varies significantly. Outcomes are difficult to measure uniformly, with scholars relying on both objective metrics (e.g., profitability, growth) and subjective evaluations (e.g., partner satisfaction, strategic fit, learning outcomes), and even use alliance duration as a proxy for success (Das and Teng 2003).

A recurring concern in the literature is the high failure rate of alliances, often attributed to poor design, weak coordination, or governance failures (Zahoor et al. 2023; Chiao et al. 2025). Consequently, researchers emphasize the need for managerial tools that can support the full alliance lifecycle—from partner selection and goal alignment to performance evaluation and termination (Russo and Cesarani 2017; Faems et al. 2008).

2.2 Alliance Management Capability and the Dynamic Capabilities View

The Dynamic Capabilities View (DCV), a refinement of the Resource-Based View (RBV), focuses on how firms reconfigure and renew their capabilities in response to dynamic environments (Teece et al. 1997). While RBV emphasizes static resources, DCV highlights processes that enable innovation and sustained competitiveness in changing markets (Bleady et al. 2018).

Alliance Management Capability (AMC) is a dynamic capability that supports the systematic management of inter-organizational relationships. It encompasses partner identification, coordination, learning, and governance. AMC evolves through repeated alliance experience, enabling firms to institutionalize best practices and respond to complex partnership demands (Gonçalves and da Conceição 2008). Firms with robust AMC are better positioned to navigate uncertainty and drive long-term alliance performance (Widjaja-Adhi et al. 2025).

These capabilities are often unique, difficult to replicate, and context-specific—making them a key differentiator in alliance performance. Effective AMC includes the anticipation of potential risks, continuous learning, and the alignment of governance strategies with evolving alliance needs (Robson et al. 2019).

Although the significance of AMC is widely acknowledged, empirical research linking it to alliance performance—especially via governance pathways—remains scarce. This study responds to this gap by testing AMC’s direct and mediated effects on alliance outcomes.

2.3 Alliance Governance

Alliance governance refers to the mechanisms used to manage and structure inter-firm collaborations. These include legal frameworks, equity ownership, contracts, and informal trust-based systems. Governance influences partner behaviour, conflict resolution, and strategic alignment over the lifecycle of the alliance (Syaifuddin 2025).

Governance mechanisms are typically grouped into three categories: equity-based (e.g., joint ventures), contractual (legal agreements), and relational (trust and norms). Each type serves a specific function, with many alliances adopting a hybrid model (Kale and Singh 2009).

Contractual governance relies on legally binding documents to delineate roles, responsibilities, and contingencies. These provisions reduce ambiguity, protect investments, and ensure compliance. Strong contracts contribute to performance by preventing misunderstandings and facilitating dispute resolution (Keller et al. 2021).

Relational governance, in contrast, emphasizes informal coordination through mutual trust, reciprocity, and shared values (Faems et al. 2008). Relational governance refers to the extent to which alliance partners rely on shared social norms to guide behaviour, fostering trust, coordination, and knowledge sharing while reducing collaboration barriers (Keller et al., 2021).

Effective alliances often require both governance types, evolving governance arrangements as relationships mature and partner expectations shift. Yet, few studies explore how AMC shapes the choice and evolution of governance mechanisms or how these, in turn, affect performance. Although governance is widely studied, few empirical models examine how alliance management capabilities influence governance design or how these governance choices affect alliance performance. The review shows that most studies analyse these variables in isolation, lacking integrated models that reflect their dynamic interactions.

The following section outlines the conceptual model of this study, building on these insights to link AMC, alliance governance, and strategic alliance performance.

3. Research Model and Hypotheses

In the context of Iranian pharmaceutical alliances, this study investigates the interconnected effects of alliance management capabilities (AMC), alliance governance (AG), and strategic alliance performance (SAP). Drawing on dynamic capabilities and governance theories, we propose a conceptual model comprising three constructs: AMC, AG, and SAP. This section outlines their definitions, presents the model, and introduces three hypotheses based on existing research.

Table 1: Proposed model constructs

Construct	Definition	Reference
Alliance Governance (AG)	The alliance governance structure encompasses legal, contractual, and relational mechanisms that safeguard partners’ interests, coordinate behaviour, and resolve conflicts. AG enables alignment and control, typically through equity ownership, contractual provisions, and trust-based norms.	Kale 2009; Piroozi et al. 2022
Alliance Management Capabilities (AMC)	AMC are dynamic capabilities that represent a firm’s ability to manage alliances effectively. They include routines for partner selection, coordination, learning, and trust-building. AMC enhance social capital, reduce uncertainty, and improve alliance outcomes.	Shakeri and Radfar 2017; Piroozi et al., 2022; Al-Tabbaa et al. 2023
Strategic Alliance Performance (SAP)	SAP reflects the extent to which alliance objectives are achieved. Performance can be evaluated across several dimensions: economic (e.g., financial returns), strategic (e.g., innovation or market access), operational, relational, and learning.	Russo and Cesarani, 2017; Piroozi et al. 2021

Figure 1 presents the proposed model which posits that AMC directly influences both AG and SAP, while AG itself positively affects SAP. The next sections elaborate on these hypothesized relationships.

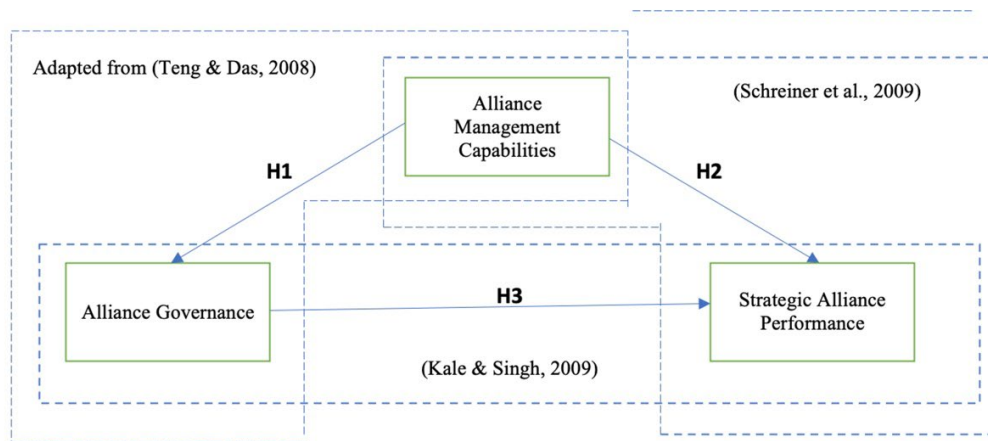


Figure 1: Proposed model; Effect of alliance capabilities on alliance governance and alliance performance

Firms with higher AMC are more likely to design and implement effective governance mechanisms. These capabilities are developed through alliance experience and involve knowledge-sharing routines, conflict resolution, and alignment of strategic intent (Vurro et al. 2023; Gonçalves and da Conceição 2008; Kale and Singh 2007). Firms with mature AMC can configure governance mechanisms to suit alliance complexity.

Robson et al. (2019) argue that AMC includes “formulation capability,” which supports contract design and negotiation. Additionally, Teng and Das (2008) states that alliance management capability influences the style of alliance governance chosen. In this sense, AMC shapes governance strategy to match the alliance context.

H1. Alliance Management Capabilities have a positive impact on Alliance Governance.

AMC enables firms to generate alliance value by managing complexity, maintaining trust, and adjusting strategies over time. Organizations with robust alliance management capabilities have established procedures for efficiently managing alliances (Widjaja-Adhi et al. 2025; Shakeri and Radfar 2017).

AMC encompasses skills like coordination, resource integration, and knowledge transfer—each crucial for achieving desired performance. A company's accumulated tacit knowledge regarding resource renewal, embedded in its routines and behavioural patterns, allows it to achieve a competitive advantage (Schreiner et al., 2009). The learning process embedded in alliance management routines reinforces capabilities and enables long-term alliance success (Kale and Singh 2007; Shakeri and Radfar 2017).

H2. Alliance Management Capabilities positively affect Strategic Alliance Performance.

Governance design influences a firm's ability to manage resources, reduce opportunism, and achieve alliance goals. Agency theory posits that formal controls (e.g., contracts) are essential to aligning interests and preventing misbehaviour (Kale and Singh 2009; Sacchetti and Catturani 2021).

In strategic alliances, governance takes the place of internal control mechanisms and serves as a tool to manage double moral hazard risks. The chosen governance structure shapes collaboration quality, resource flow, and strategic alignment (Daidj 2017). Alliance governance, facilitates trust, reduces monitoring costs, and enables flexible adaptation (Faems et al. 2008).

H3. Alliance Governance positively affects Strategic Alliance Performance.

In summary, this study proposes a model in which AMC serves as both a driver of governance structures and a direct contributor to alliance success. By testing these hypotheses using empirical data, we aim to validate how capability-building and governance interact to enhance performance in strategic partnerships.

4. Empirical Methodology

This study aims to examine the interrelationships between alliance management capabilities (AMC), alliance governance (AG), and strategic alliance performance (SAP) within the pharmaceutical sector in Iran. The

conceptual model was empirically tested using a structured questionnaire distributed among alliance professionals in pharmaceutical firms.

The questionnaire consisted of two main sections: (1) demographic information about respondents and their organizations, and (2) items measuring the key constructs: AMC (adapted from Shakeri and Radfar 2017; Goncalves & Goncalves 2008), AG (from Ratzmann 2016), and SAP (based on Lavie et al. 2012; Yang 2009; Shakeri and Radfar 2017). Items were rated on a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree).

The instrument was translated into Farsi, the native language of respondents, and pretested in a pilot study to ensure clarity and relevance. Based on pilot feedback, minor adjustments were made to improve interpretability and reliability prior to the main data collection phase.

4.1 Data Collection

Iran's pharmaceutical sector plays a pivotal role in national healthcare and economic resilience, although was in the face of geopolitical and economic instability (Cheraghali 2017). Despite political challenges, the Iranian pharmaceutical market has grown steadily and is projected to reach US\$8.16 billion in 2025, with oncology pharmaceuticals accounting for US\$1.49 billion. The sector is expected to grow at a 4.43% CAGR through 2029 (Statista 2025). Strategic alliances are a key mechanism for driving innovation and capacity expansion in this sector. This study used firms as the primary unit of analysis. The sample included pharmaceutical companies from across the value chain—manufacturers, importers, and distributors. Eligible respondents were selected based on their active roles in alliance design, management, or decision-making. These included CEOs, business development executives, sales managers, and quality assurance personnel. A random sample of 800 companies was contacted via LinkedIn, targeting senior professionals responsible for alliance operations. A total of 193 complete and valid responses were received, yielding a response rate of 25%.

Table 2: Sample Characteristics

Characteristics	Sample (N = 193)	%
Position		
CEO / Board	45	23.3%
Senior Managers	29	15.0%
Commercial / Business Dev.	42	21.7%
Sales & Marketing	25	13.0%
Supply Chain / QA / Int'l Affairs	23	11.9%
Other	29	15.0%
Experience (Years)		
2–10	101	52.3%
11–20	72	37.3%
>20	19	9.9%
Company Type		
Manufacturers	108	56.0%
Import / Distributor	49	25.4%
Mixed / Holding	36	18.6%
Ownership		
Private	170	88.1%
Government / Mixed	23	11.9%

This diverse and experienced sample offers a representative view of alliance dynamics across the pharmaceutical value chain in Iran. The next section presents the results of the analysis based on this dataset.

5. Analysis, Results

This section presents the findings of the study examining the relationships between alliance management capabilities (AMC), alliance governance (AG), and strategic alliance performance (SAP). Partial Least Squares Structural Equation Modeling (PLS-SEM) was used due to its suitability for theory-driven causal models and small to medium sample sizes (Hair et al. 2011).

The analysis followed a two-step approach using SmartPLS 4.0; first, measurement model assessment, and second, structural model evaluation (Hair et al. 2013).

5.1 Measurement Model Assessment

The reliability and validity of the constructs were assessed using composite reliability, average variance extracted (AVE), and discriminant validity. As shown in Table 3, all composite reliability values exceeded 0.85, and Cronbach's alpha values were within the acceptable 0.70–0.90 range, indicating strong internal consistency.

Indicator reliability was confirmed, with all outer loadings >0.70. AVE values were all >0.5, confirming convergent validity. Discriminant validity was evaluated using Fornell-Larcker criteria, cross-loadings, and the Heterotrait-Monotrait ratio (HTMT). All thresholds were met; cross-loadings showed each item loaded highest on its intended construct. Square roots of AVE exceeded inter-construct correlations. HTMT ratios were all below 0.9.

These results confirm that the constructs are both reliable and valid.

Table 3: Construct reliability: Composite reliability, $0.7 < \text{Cronbach's } \alpha < 0.9$, and Convergent validity: $\text{AVE} > 0.5$

Construct	Cronbach's Alpha	Composite Reliability	AVE
AMC	0.862	0.916	0.785
AG	0.858	0.913	0.779
SAP	0.893	0.916	0.609

5.2 Structural Model Results

Before model estimation, multicollinearity was tested using variance inflation factors (VIF). All VIF values were below 5, confirming the absence of collinearity. Path coefficients and model fit were assessed using bootstrapping. Figure 2 presents the structural model results.

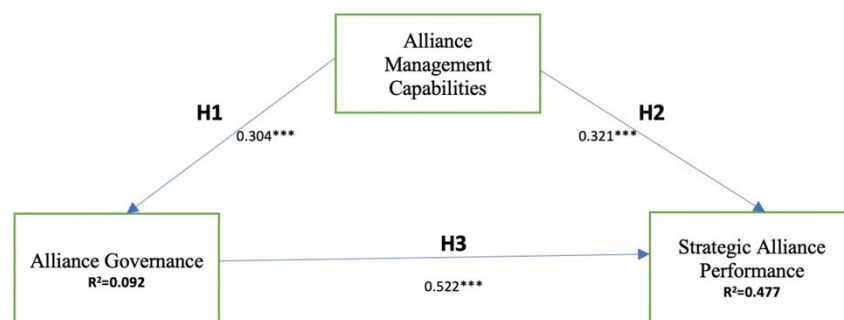


Figure 2: Results of the structural model analysis. ***significant at $p < 0.001$

AMC explains 9.2% of AG variance, while AMC and AG together explain 47.7% of the variance in SAP. Additionally, the indirect effect $\text{AMC} \rightarrow \text{AG} \rightarrow \text{SAP}$ was statistically significant ($\beta = 0.159$), indicating that AG partially mediates the AMC–SAP relationship.

Table 4: Bootstrap results: hypothesis results

Hypothesis	Path	β	t-value	p-value	F2	Conclusion
H1	AMC $\rightarrow$ AG	0.304	4.02	0.000	0.102	Supported (small effect)
H2	AMC $\rightarrow$ SAP	0.321	4.99	0.000	0.178	Supported (medium effect)
H3	AG $\rightarrow$ SAP	0.522	7.17	0.000	0.472	Supported (large effect)

These findings validate all three hypotheses. AMC has both a direct and indirect influence on alliance performance, with AG serving as a mediating mechanism. The results support the argument that strong alliance management capabilities are essential not only for building governance structures but also for enhancing strategic outcomes.

6. Discussion

This study offers strong empirical validation of the hypothesized relationships among Alliance Management Capabilities (AMC), Alliance Governance (AG), and Strategic Alliance Performance (SAP), highlighting how dynamic managerial capacities and governance systems jointly contribute to alliance effectiveness. The findings reinforce that AMC—defined as the ability to coordinate, learn from, and manage partnerships—is a critical antecedent to both robust governance and alliance success. Firms with mature AMC are significantly more capable of designing governance systems that mitigate risk and align partner interests. These capabilities, developed over time through structured routines and experiential learning, enable organizations to implement both contractual and relational mechanisms tailored to specific alliance contexts (Schilke and Goerzen 2010). The statistical support for this relationship confirms that effective governance is not simply a structural feature, but a manifestation of accumulated internal capacity.

Furthermore, the direct link between AMC and SAP emphasizes that alliance success is strongly influenced by how well a firm manages its collaborations. Capabilities such as accessing to critical resources, knowledge sharing, trust-building, and conflict resolution are shown to drive not only operational benefits but also strategic outcomes like innovation, learning, and competitive positioning (Al-Tabbaa & Zahoor, 2024; Schilke and Goerzen 2010; Goncalves & Goncalves 2008). Our findings echo Al-Tabbaa et al. (2023) in asserting that internal capacity building is essential for sustaining long-term partnerships and achieving higher alliance performance. Equally important, the validated relationship between AG and SAP demonstrates that governance plays a central role in enabling alliances to function smoothly. Well-crafted governance frameworks—whether based on formal contracts or informal norms—reduce opportunism, facilitate coordination, and set clear performance standards (Ratzmann 2016; Daidj 2017). These structures, especially when aligned with agency theory, help address asymmetries between alliance partners, ensuring consistency and transparency in expectations.

Crucially, this study also identifies AG as a significant mediating mechanism between AMC and SAP. The indirect effect ($\beta = 0.159$) highlights that the benefits of AMC are most fully realized when they are channeled through appropriate governance frameworks. This insight supports the view that capabilities and governance are interdependent, not isolated. Governance design both reflects the firm's maturity in alliance management and serves as the mechanism through which these capabilities produce measurable value (Sacchetti and Catturani 2021; Kale & Singh 2009). Rather than being a mere structural add-on, governance is a strategic lever enabled by and dependent upon managerial capabilities.

Theoretically, this study contributes a unified model that integrates AMC, AG, and SAP into a cohesive performance framework, answering prior calls for empirical work that connects dynamic capabilities and governance structures (Mamédio et al. 2019; Zahoor et al. 2023). Whereas earlier literature often examined these elements in isolation, our model positions governance as both a dependent outcome of AMC and an enabler of performance. This reinforces the dynamic capabilities perspective, which argues that firm-specific, path-dependent resources such as AMC are essential for sustaining competitive advantage in turbulent environments. By demonstrating that alliance governance enhances the effectiveness of AMC, the study advances a more nuanced understanding of how firms can leverage internal routines for external coordination success.

From a managerial standpoint, the findings offer actionable insights. First, organizations must recognize that AMC is not innate but must be actively cultivated through structured training, post-alliance evaluation, and process formalization. Firms that document alliance lessons and embed them in formal routines can improve future readiness and performance predictability. Second, governance should be treated as an evolving and strategic tool. Rather than applying generic governance templates, firms should tailor mechanisms to fit alliance lifecycle stages, relational dynamics, and strategic goals. A firm with high AMC is better positioned to make these adaptive governance choices, balancing formal control with flexibility as alliances evolve. Particularly in complex and volatile industries such as the Iranian pharmaceutical sector, these insights are highly relevant. In environments where firms must simultaneously navigate regulatory uncertainty, technological change, and resource constraints, AMC functions as a key differentiator. Companies that invest in building alliance expertise and governance agility can better manage environmental turbulence, absorb shocks, and achieve higher performance in their collaboration. Effective AMC also enables firms to tap into broader ecosystems, allowing faster market entry, reduced coordination costs, and improved alliance outcomes—factors that are critical for firms embedded in highly interdependent value chains.

7. Conclusion

While the study offers significant insights, it also presents limitations that suggest avenues for future research. The analysis did not disaggregate alliance types (e.g., R&D vs. commercial alliances) or firm roles (e.g., manufacturer vs. distributor), which may influence the strength of AMC–AG–SAP relationships. Exploring these distinctions could yield more targeted strategies for capability and governance development. Moreover, a comparative study across national contexts could further clarify how institutional environments mediate the interplay between capabilities and governance. This would enhance the generalizability of the model and offer guidance for firms expanding across borders. In conclusion, this study demonstrates that alliance success is driven by the interplay between internal managerial capabilities and external governance mechanisms. AMC enables firms to navigate complexity, while AG ensures coordination and control. Together, they form an integrated system that enhances alliance performance. The validated model provides both theoretical advancement and practical guidance, particularly for firms operating in high-stakes, resource-dependent sectors. By investing in AMC and designing responsive governance structures, firms can transform alliances from risky undertakings into strategic vehicles for growth, innovation, and sustained competitive advantage.

Ethics Declaration: No ethical approval required.

AI Declaration: AI tools supported only language editing limited to rephrasing and summarization for submission-readiness.

References

- Abdeen, H., De-Pablos-Heredero, C., Cosculluela-Martinez, C. and Montes-Botella, J.L. (2025) 'Strategic leadership and its impact on dynamic capabilities and sustainable competitive advantages', *Management Decision*.
- Al-Tabbaa, O. and Zahoor, N. (2024) 'Alliance management capability and SMEs' international expansion: The role of innovation pathways', *Journal of Business Research*, 171, p. 114384.
- Bleady, A., Ali, A.H. and Ibrahim, S.B. (2018) 'Dynamic capabilities theory: pinning down a shifting concept', *Academy of Accounting and Financial Studies Journal*, 22(2), pp. 1–16.
- Cheraghali, A.M. (2017) 'Trends in Iran pharmaceutical market', *Iranian Journal of Pharmaceutical Research (IJPR)*, 16(1), p. 1.
- Chiao, Y.C., Huang, C.J., Lin, C.C. and Chuang, T.S. (2025) 'Improving performance via rival alliance cooperation? Insights from the container shipping sector', *Journal of Business & Industrial Marketing*.
- Daidj, N. (2017) 'Agency theory and strategic alliances', in *Cooperation, Coopetition and Innovation*. Wiley, pp. 67–86. doi: 10.1002/9781119476511.ch4.
- Das, T.K. and Teng, B.S. (2003) 'Partner analysis and alliance performance', *Scandinavian Journal of Management*, 19(3), pp. 279–308.
- Diakité, D., Royer, A., Rousselière, D. and Tamini, L.D. (2022) 'Formal and informal governance mechanisms of machinery cooperatives: The case of Quebec', *Journal of Co-Operative Organization and Management*, 10(2), p. 100181.
- Engsig, J. and Nielsen, B.B. (2024) 'International strategic alliances', in *Encyclopedia of International Strategic Management*. Edward Elgar Publishing, pp. 240–250.
- Faems, D., Janssens, M., Madhok, A. and Looy, B.V. (2008) 'Toward an integrative perspective on alliance governance: Connecting contract design, trust dynamics, and contract application', *Academy of Management Journal*, 51(6), pp. 1053–1078.
- Ferrigno, G., Martin, X. and Battista Dagnino, G. (2024) 'Explaining the interplay of value creation and value appropriation in strategic alliances: A developmental perspective', *International Journal of Management Reviews*, 26(2), pp. 232–253.

- Gonçalves, F.R. and da Conceição, V.G. (2008) 'Strategic alliances and competitive performance in the pharmaceutical industry', *Journal of Medical Marketing*, 8(1), pp. 69–76.
- Hair, J.F., Ringle, C.M. and Sarstedt, M. (2011) 'PLS-SEM: Indeed a silver bullet', *Journal of Marketing Theory and Practice*, 19(2), pp. 139–152.
- Hair, J.F., Ringle, C.M. and Sarstedt, M. (2013) 'Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance', *Long Range Planning*, 46(1–2), pp. 1–12.
- Kale, P. and Singh, H. (2007) 'Building firm capabilities through learning: The role of the alliance learning process in alliance capability and firm-level alliance success', *Strategic Management Journal*, 28(10), pp. 981–1000.
- Kale, P. and Singh, H. (2009) 'Managing strategic alliances: What do we know now, and where do we go from here?', *Academy of Management Perspectives*, 23(3), pp. 45–62.
- Keller, A., Lumineau, F., Mellewigt, T. and Ariño, A. (2021) 'Alliance governance mechanisms in the face of disruption', *Organization Science*, 32(6), pp. 1542–1570.
- Lavie, D., Haunschild, P.R. and Khanna, P. (2012) 'Organizational differences, relational mechanisms, and alliance performance', *Strategic Management Journal*, 33(13), pp. 1453–1479.
- Lee, M.S. and Thosuwanchot, N. (2025) 'The effect of financial constraints on strategic alliances: Agency perspective versus resource dependence perspective', *Journal of Strategy and Management*, 18(2), pp. 410–429.
- Mamédio, D., Rocha, C., Szczepanik, D. and Kato, H. (2019) 'Strategic alliances and dynamic capabilities: A systematic review', *Journal of Strategy and Management*, 12(1), pp. 83–102.
- Piroozi, F., Romão, M.J.B., Costa, C.J. and Aparicio, M. (n.d.) 'Uma revisão da literatura para determinar os fatores críticos de sucesso durante as diferentes fases do ciclo de vida da aliança estratégica'.
- Piroozi, F., Romão, M.J.B., Faraji, H. and Iranpoor, S. (2022) 'Critical success factors in strategic alliances in Iran's pharmaceutical industry: A qualitative content analysis study', *International Journal of Business Administration*, 13(6), pp. 39–56.
- Ratzmann, M., Gudergan, S.P. and Bouncken, R. (2016) 'Capturing heterogeneity and PLS-SEM prediction ability: Alliance governance and innovation', *Journal of Business Research*, 69(10), pp. 4593–4603.
- Robson, M.J., Katsikeas, C.S., Schlegelmilch, B.B. and Pramböck, B. (2019) 'Alliance capabilities, interpartner attributes, and performance outcomes in international strategic alliances', *Journal of World Business*, 54(2), pp. 137–153.
- Russo, M. and Cesarani, M. (2017) 'Strategic alliance success factors: A literature review on alliance lifecycle', *International Journal of Business Administration*, 8(3), pp. 1–9.
- Sacchetti, S. and Catturani, I. (2021) 'Governance and different types of value: A framework for analysis', *Journal of Co-operative Organization and Management*, 9(1), p. 100133.
- Schilke, O. and Goerzen, A. (2010) 'Alliance management capability: An investigation of the construct and its measurement', *Journal of Management*, 36(5), pp. 1192–1219.
- Schreiner, M., Kale, P. and Corsten, D. (2009) 'What really is alliance management capability and how does it impact alliance outcomes and success?', *Strategic Management Journal*, 30(13), pp. 1395–1419.
- Shakeri, R. and Radfar, R. (2017) 'Antecedents of strategic alliances performance in the biopharmaceutical industry: A comprehensive model', *Technological Forecasting and Social Change*, 122, pp. 289–302.
- Statista. (2025) "Pharmaceuticals - Iran: Market insights and forecasts.", *Statista Market Insights*.
<https://www.statista.com/outlook/hmo/pharmaceuticals/iran>
- Statista (2025) 'Pharmaceuticals – Iran: Market insights and forecasts', *Statista Market Insights*. Available at:
<https://www.statista.com/outlook/hmo/pharmaceuticals/iran>.
- Syaifuddin, S. (2025) 'Understanding the dynamics of collaboration and partnerships: A qualitative inquiry into enhancing competitiveness through strategic alliances and business networks', *Golden Ratio of Marketing and Applied Psychology of Business*, 5(1), pp. 110–120.
- Al-Tabbaa, O., Nasr, A., Zahoor, N. and De Silva, M. (2023) 'Socio-emotional wealth preservation and alliance success in family firms: The role of political instability and alliance management capability', *British Journal of Management*, 34(2), pp. 915–941.
- Teece, D.J., Pisano, G. and Shuen, A. (1997) 'Dynamic capabilities and strategic management', *Strategic Management Journal*, 18(7), pp. 509–533.
- Teng, B.S. and Das, T.K. (2008) 'Governance structure choice in strategic alliances: The roles of alliance objectives, alliance management experience, and international partners', *Management Decision*, 46(5), pp. 725–742.
- Vurro, C., Romito, S., Costanzo, L.A., Ghobadian, A. and Russo, A. (2024) 'Alliance management capabilities in sustainability-oriented collaboration: Problematization and new research directions', *International Journal of Management Reviews*, 26(1), pp. 8–33.
- Widjaja-Adhi, A.B. and Soetjipto, B. (2025) 'Market competitive environment on exchange quality: The mediating effects of resource dependency, alliance management capability and IT adoption capability in Indonesian food service industry', *Journal of Foodservice Business Research*, pp. 1–36.
- Yang, J. (2009) 'The determinants of supply chain alliance performance: An empirical study', *International Journal of Production Research*, 47(4), pp. 1055–1069.
- Zahoor, N., Al-Tabbaa, O. and Khan, Z. (2023) 'R&D alliances and SMEs' post-entry internationalization speed: The impact of alliance management capability and co-innovation ambidexterity', *Global Strategy Journal*, 13(2), pp. 315–348.

Implementation of Lean Healthcare Approaches in a Hospital's Surgical Block

Catarina Ribeiro¹, Paulo Fernandes¹, Erik Lopes¹, Bruno Gonçalves² and Rui Lima¹

¹Algoritmi Research Centre/LASI, Department of Production and Systems, School of Engineering, University of Minho, Guimarães, Portugal

²Department of Economics, Management, Industrial Engineering and Tourism, University of Aveiro, Portugal

catarinavmrib@outlook.pt

paulomartinsfernandes95@gmail.com

erik.lopes05@gmail.com

brunosg@ua.pt

rml@dps.uminho.pt

Abstract: Over the last decades, there has been a growing demand for healthcare services, driven by increased life expectancy, population ageing and the prevalence of chronic diseases. In this context, there is an increasing need to make hospital systems more robust and efficient. To achieve this, hospital managers have increasingly adopted Lean methodologies, focusing primarily on identifying and eliminating waste, making operations and processes more efficient. The application of these methodologies in the healthcare sector is known as Lean Healthcare. Research in this area has gained growing interest since the late 20th century, resulting in a clear enhancement of hospital system sustainability and service quality. However, a significant gap has been identified regarding the observation of processes and the implementation of concrete tools in hospital units, which could directly contribute to the improvement of the healthcare network. This research aimed to diagnose and analyse the current state of the processes and activities associated with the operating room of a hospital unit. It also explored the application of Lean Healthcare tools. The project followed the Action Research methodology, applying a practical and collaborative approach to analyse, identify, suggest and implement process improvements, promoting interdisciplinarity between engineering and hospital operations management. This proximity to a real-world context strengthens scientific knowledge in the field of process standardisation, highlighting Action Research as a valid scientific methodology capable of adding value both to institutions and, simultaneously, to the scientific community. Through the data analysis and *in loco* observation of more than 60 surgeries, it was possible to model preoperative, intraoperative and postoperative processes. This enabled the diagnosis of improvement opportunities. The results revealed that surgeries were frequently delayed due to issues related to medical resource availability. Additionally, operating rooms exhibited low occupancy rates. In response, the research team proposed revised scheduling strategies, implemented 5S audits, process standardization, control checklists and Single-Minute Exchange of Die (SMED) practices. These interventions led to a reduction in non-conformities and errors, including a decrease of over 40 percentage points in non-conformities related to the availability of medical devices. Although there is still a long way to go in Lean Healthcare research, this investigation contributes to a more efficient and robust healthcare network, implementing Lean Healthcare in the surgery department to deliver safer and higher-quality services with the patient at the centre of continuous improvement efforts.

Keywords: Operating room, Hospital operations management, Lean healthcare, Process mapping, Continuous improvement

1. Introduction

Healthcare systems in developed countries are currently facing the challenge of adapting to shifting social structures caused by the inversion of the demographic pyramid, increased life expectancy, the rise in chronic diseases, and the universalization of healthcare services (Jones and Dolsten, 2024). These factors emphasize the urgent need for transformation within the healthcare sector. This transformation partially depends on the adoption of methodologies that ensure greater system sustainability while simultaneously promoting the delivery of higher-quality care to patients.

Portugal's National Health Service (Serviço Nacional de Saúde – SNS) was established in 1979 and is defined as a “universal and centralized system, coexisting with other complementary health subsystems” (OECD/European Observatory on Health Systems and Policies, 2023).

In this structure, the private sector plays a complementary role. The expansion of this Hospitals is largely driven by the demand for faster service in response to limitations within the SNS, including long waiting times and limited access to medical specialties (Mateus et al., 2017). As a result, improving internal processes has become a strategic priority for ensuring the sustainability and competitiveness of private hospitals.

Operating rooms (ORs) often represent the main revenue source in private hospitals (Gupta et al., 2022). Thus, their correct and efficient use is essential—not only to improve the quality of care provided but also to promote the financial stability of the organization.

It is therefore imperative to increase system availability, which requires implementing effective management processes focused on improving efficiency and productivity (Spearman, 2014). To this end, enhancing surgical room productivity is essential for ensuring more efficient patient access, reducing response times between procedures and minimizing idle non-operative time (Gupta et al., 2022). Promoting a culture of continuous improvement and operations management before, during, and after each surgical intervention is thus a key priority (Lima et al., 2021).

In this context, it is important to understand the specific characteristics and complexities of the operating room environment.

The operating room is a production-like structure with a linear flow typically comprising preoperative, operative, and postoperative stages. Its capacity is constrained by the number of available surgical rooms, equipment, human resources, and various technical and administrative delays, among other factors (Cima et al., 2011).

Operating rooms are defined as “organic and functional units composed of an integrated set of physical, human, and technical resources, designed for scheduled and emergency surgical interventions, diagnostic exams and other invasive procedures that require a high level of asepsis and/or anaesthesia control for the patient, with the goal of restoring or maintaining their health” (Ministério da Saúde, 2015).

From an infrastructure standpoint, the operating room comprises surgical suites where procedures are performed and is part of a broader surgical unit that includes disinfection areas and support rooms (Terras, 2017). These rooms accommodate scheduled (ambulatory), unscheduled and emergency surgeries, which may or may not require subsequent hospitalization (Pereira, 2014).

Surgical services involve multidisciplinary teams and various hospital departments (Pereira, 2014). Operating rooms hold significant strategic importance for hospitals, as they represent high investment and operational costs, due to the constant need for technological innovation and highly specialized human resources (Pereira, 2014). It is therefore essential to maximize the use of installed capacity and the resources available in these units.

Addressing some of these challenges can be achieved through the application of tools aimed at increasing productivity by eliminating waste and implementing operational management techniques that improve efficiency (Souza et al., 2020). While these tools originate in industrial settings, they can be successfully adapted to healthcare management, particularly in surgical environments.

The term “lean” was originally coined to describe a system capable of delivering outcomes using the fewest possible resources—whether physical space, labor effort, capital investment, or inventory—while also generating fewer defects and safety incidents. Over the decades, it has evolved into a methodology associated with achieving more efficient results. Several authors highlight that the primary goal of Lean in organizations is to improve process flow by reducing waste, non-value-added work, and cycle time (Lima et al., 2021).

Lean production systems represent a set of strategic goals and principles unique to each organization, employing operational methods and tools for a holistic approach to process management (Schumacher, Bildstein and Bauernhansl, 2020). Their general structure comprises objectives, processes, principles, methods and tools tailored to the specific needs of each organization.

The concept of “Lean Production” originates from the Toyota Production System, developed by Toyota Motor Corporation and adopted by many Japanese companies in the aftermath of the 1973 oil crisis, itself a consequence of World War II (Monden, 2012). At the time, resource scarcity prompted a strong focus on eliminating all non-essential processes in factories through a problem-solving approach designed to identify causes and develop resolution methods (Monden, 2012).

Womack, Jones, and Roos (1990) were among the first authors to reference the use of Lean techniques in service contexts, particularly healthcare delivery. They argued that the first step toward proper Lean implementation in healthcare involved placing the patient at the centre and considering time and comfort as key performance indicators. These authors emphasized the importance of versatile care teams and active patient involvement as essential components of Lean methodology in healthcare (Poksinska, 2010).

The term Lean encompasses a set of tools, a management system, and a philosophy capable of transforming the way hospitals are organized and operated. When applied to the healthcare sector, the term becomes Lean Healthcare. This methodology enables hospitals to improve the quality of patient care by reducing errors and wait times, ultimately resulting in lower operational costs. Moreover, it helps dismantle silos between disconnected departments, allowing them to collaborate more effectively for the benefit of patients (Graban, 2016). Research in this field has significantly advanced over recent decades, confirming Lean Healthcare as both an innovative and effective approach.

This study aimed to standardize and improve the processes associated with a surgical block of a Portuguese hospital through the application of Lean Healthcare principles. The first objective was to diagnose and analyse the current state of processes related to the operating room, and to enhance these activities using Lean Healthcare methodologies. The final goal was to increase operational efficiency, reduce waste, improve service quality and, consequently, patient satisfaction.

2. Methodology

To achieve these objectives, an Action Research methodology was adopted. This approach allows not only for the understanding, improvement and reform of practices but also for the execution of interventions in real-world organizational settings, with detailed analysis of the resulting effects.

This methodology is defined as “a family of research methodologies which combine action (or change) with research (or understanding) in a cyclical or spiral process that alternates between action and critical reflection” (Coutinho et al., 2009). The present study was designed to be participatory and collaborative, involving all stakeholders in the process—including researchers, nurses, healthcare assistants, physicians and administrators. The research also aimed to be practical and interventionist, going beyond theory to implement real-world changes (Coutinho Pereira, 2006). It followed a cyclical process in which early findings informed potential changes, which were then implemented and evaluated (Cortês, 1998). The project also involved critique, as participants were not only seeking improved practices but acting as agents of change (Zuber-Skerritt, 1992). Finally, the research was self-evaluative, with all implemented changes being continuously assessed to develop new knowledge (Coutinho et al., 2009).

The model was structured in five stages (Table 1), which were applied as follows:

Table 1: The five stages of the Action Research model.

Stage	Description
Diagnosis	On-site observation and process mapping (including patient admission, pre-operative, surgical, post-operative and recovery phases), 5S audit and identification of non-conformities. Surgical time data provided by the hospital were also analysed;
Action Planning	Design of action plans for process improvement, with a focus on standardizing operations and reducing non-conformities;
Implementation	Execution of the action plans through targeted activities aimed at addressing the hospital's specific operational needs;
Results Evaluation	Analysis of the impact of implemented improvements, measuring the extent to which project objectives were achieved;
Learning Specification	Synthesis of conclusions and identification of limiting factors encountered during the research process.

In summary, this methodology allowed the implemented changes to align closely with the organization's strategic goals, fostering and instilling a continuous improvement philosophy—an essential mindset for the ongoing development and progress of the institution.

3. Diagnosis

The hospital under analysis is staffed by experienced professionals and is part of a prominent private healthcare group in Portugal. This group operates nationwide and employs several thousand healthcare professionals. The hospital provides care in more than 40 different medical specialties, both surgical and non-surgical. Figure 1 shows a comparison between the surgeries performed in the hospital's operating room in 2023 and 2024

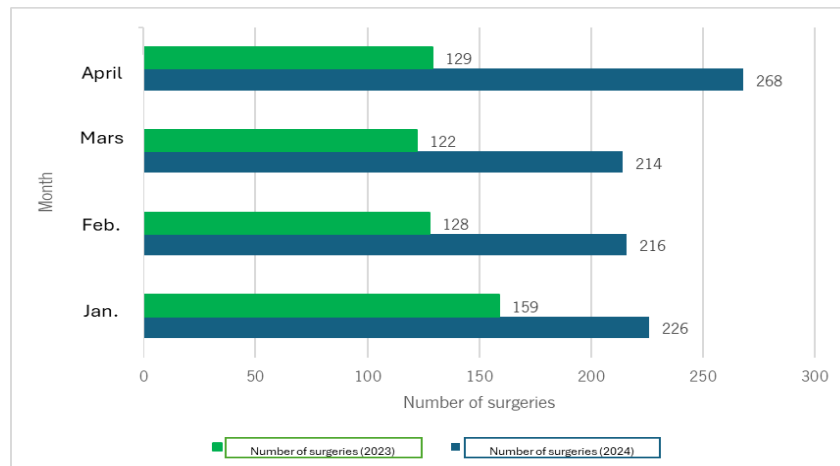


Figure 1: Comparison between the surgeries performed in the hospital's operating room in 2023 and 2024.
(Source: Data collected by the authors)

Reflecting the increasing pressure faced by the Portuguese healthcare system in recent years, Figure 1 shows that in 2024, compared to 2023, the number of surgeries in this hospital increased by an average of 71.7%. This is a highly significant and impactful rise for the institution, with direct consequences for the hospital's internal organization, logistics, and clinical operations.

There is a general perception that, according to Bandi & Gupta (2018), the surgical scheduling process is subject to numerous challenges, such as variability in procedure durations, resource availability (including equipment, staff, and surgical rooms), last-minute cancellations, emergency situations, and the need to maximize the operations room utilization without compromising patient safety or care quality (Bandi & Gupta, 2018).

This increase in demand led to a need for additional human resources and a focused effort to improve service quality, thereby ensuring the continued and sustainable growth of the organization. This is essential to ensure that the service provided does not deteriorate, despite emerging challenges.

To gain an accurate understanding of the hospital's operational reality, continuous on-site observation was conducted, closely monitoring processes. This enabled a precise diagnostic assessment of the hospital's actual condition. Simultaneously, the observation, alongside the analysed data, strengthened an understanding of the existing improvement opportunities within the system. Only through consistent, attentive, and direct engagement with daily activities was it possible to obtain a comprehensive understanding of the system's operations.

3.1 Average Start Time of the First Surgery

Among the various challenges identified, the delay of the first surgery stood out as particularly significant, as it greatly affects the productivity of the operating theatre, leading to a clear waste of human and material resources, including physical facilities. To analyse the delay in daily surgery start times, all surgeries performed at the start of the day between January and April 2024 were recorded. The monthly average start time for the first four months of the year is illustrated in the line graph in Figure 2.

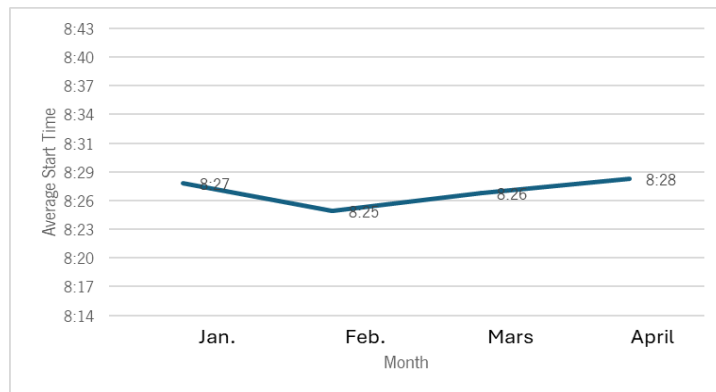


Figure 2: Monthly average start time of surgeries in the first four months of 2024. (Source: Data collected by the authors)

Between January and April 2024, the average starting time was 08:27 AM, which is significantly later than the scheduled start time of 08:00 AM. This delay directly impacts the overall efficiency of the day's surgical schedule, as the initial delay tends to cascade into subsequent surgeries. However, the delay remained consistent across months, with a variance of only 3 minutes and 12 seconds.

3.2 Operating Room Occupancy Rate

The operating room occupancy rate (Formula 1) reflects the proportion of time the OR is used for its primary purpose—performing surgeries—out of the total time it is available (Formula 2). The available time in minutes (per month) is calculated by multiplying the 11 hours of daily service available by the number of working days in the month, then by 60 minutes, and finally by the two available operating rooms. Cleaning and preparation times are excluded from this calculation, allowing for a true representation of how much time is devoted to value-adding surgical activity. The term 'Value-adding surgical activity' refers to all services that improve the patient's health condition.

$$\text{Occupancy Rate} = \% \frac{\text{used time}}{\text{available time}} \quad (1)$$

Formula 1: Formula for calculating the occupancy rate

$$\text{Available Time} = 11 \text{ hours} * \text{number of days worked per month} * 60 \text{ minutes} * 2 \text{ Ors} \quad (2)$$

Formula 2: Formula for calculating the OR available time

Since the OR occupancy rate (Figure 3) is a structural indicator, improving it depends on minimizing time waste associated with surgical procedures—namely the time taken to start surgeries and the turnover time between them. It is important to note that reducing these times is not merely about cutting idle periods but about making processes more efficient and leaner, while strictly adhering to patient safety and quality standards.

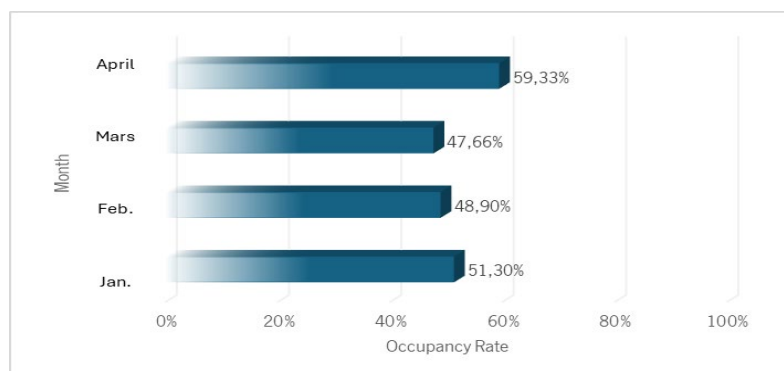


Figure 3: OR occupancy rate between January and April (2024)

3.3 Adherence Rate to the Scheduled Time

The Adherence Rate to the Scheduled Time (Formula 3) indicates the percentage of surgical procedures that actually begin at or before their scheduled start time, as agreed upon by the hospital with healthcare professionals and patients.

$$\text{Adherence Rate to the Scheduled Time} = \% \frac{\text{number of surgeries performed at the scheduled time}}{\text{number of surgeries performed for each time slot}} \quad (3)$$

Formula 3: Formula for calculating the adherence rate to the scheduled time

Between January and the end of April 2024, a total of 924 surgeries were performed, of which only 305 began at the scheduled time. This results in an average adherence rate of 33.01%, which is significantly lower than the hospital's target, reflecting persistent delays in surgical start times—as illustrated in Figure 4.

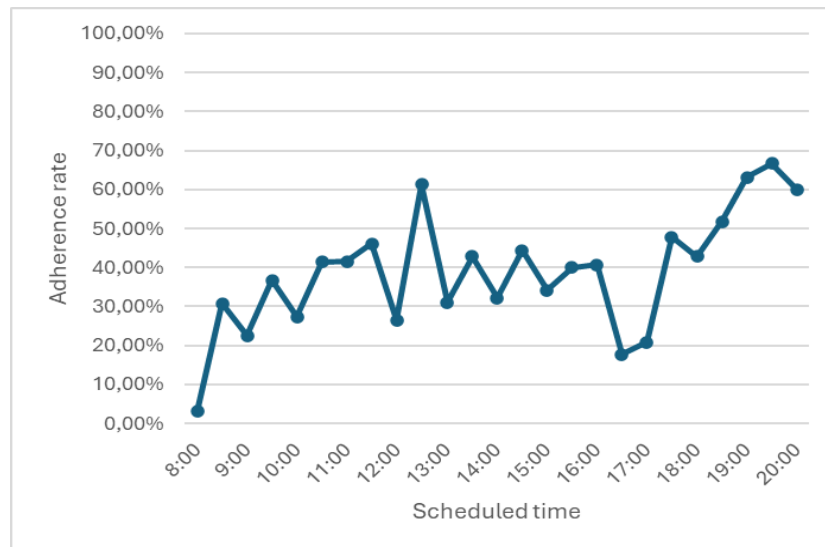


Figure 4: Adherence rate to the scheduled time between January and April 2024 for each time slot (Source: Data collected by the authors)

After analysing the scheduled time slots, the highest adherence rate was observed at 19:30 (66.67%), while the lowest was at 08:00 (3.10%). The low adherence at 08:00 can be explained by the fact that it coincides with the start of the medical team's shift - with the natural constraints associated - making delays inevitable and directly impacting both the start of the first surgery and adherence to the planned schedule.

It is important to note that several preparatory steps must be completed once the patient enters the operating room, such as the Safe Surgery Checklist and the induction of anaesthesia. Therefore, the actual surgery rarely begins upon patient entry, but instead, on average, starts approximately 14 minutes later.

Moreover, after each procedure, there are additional steps that may delay the next surgery, such as the cleaning and resetting of the room with the required devices and instruments.

3.4 Turnover Time

The Turnover Time (Formula 4) refers to the interval between the end of one surgery and the start of the next. This period is used for cleaning and disinfecting the surgical room, and—when multiple surgeries are scheduled—for preparing all the necessary materials (consumables, medical devices, and equipment). It also includes positioning the room according to the procedure to be performed, including the patient's orientation (e.g., side of the body to be operated on).

$$\text{Turnover Time} = (\text{Room exit} - \text{end of surgery}) + \text{cleaning time} \quad (4)$$

Formula 4: Formula for calculating the turnover time

Approximately 107 observations were analysed. Figure 5 presents the results of the turnover time analysis, revealing a wide variability in these times, highlighting a lack of standardisation in the process.

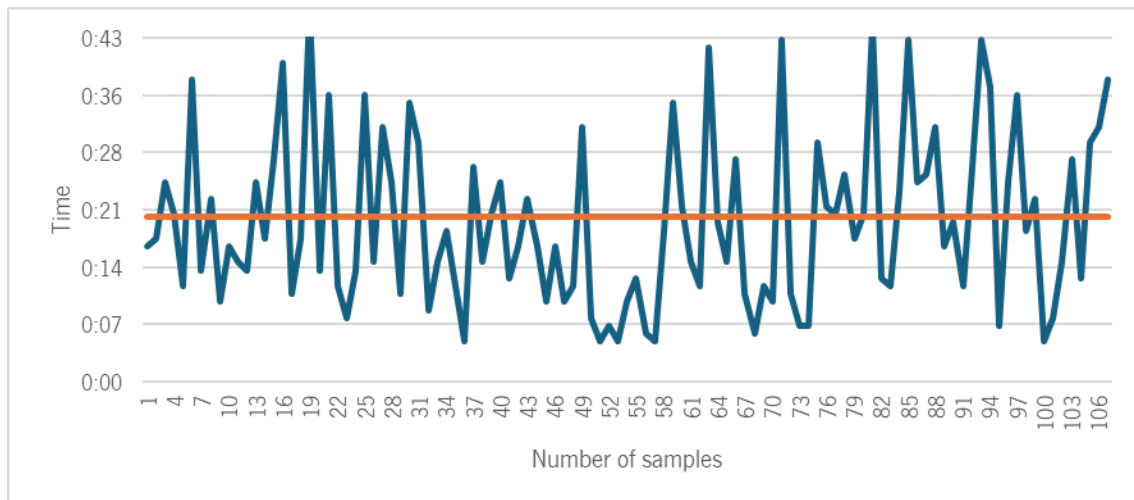


Figure 5: Turnover time analysis (Source: Data collected by the authors)

Following the implementation of cleaning time tracking and data collection related to surgeries, it was found that the average turnover time was 19.45 minutes, with a standard deviation of 11.35 minutes. Simultaneously:

- The average cleaning time was 13.24 minutes, with a standard deviation of 12.17 minutes;
- The average idle time between the end of surgery and the start of cleaning was 6.51 minutes, with a standard deviation of 7.15 minutes.

3.5 Nonconformities and Difficulties Identified

On-site observation during surgical activity revealed that materials used during operations were often poorly labelled, requiring nurses to leave the OR mid-surgery to locate identification tags.

It was also common practice for nurses to check that all required materials were in the anaesthesia cart, within expiration dates, and to verify the functionality of all critical medical devices, including ventilators and patient monitoring equipment.

During the observation period, it was also found that there was no standardized procedure for verifying the contents of the anaesthesia cart. No verification logs were maintained, nor were there defined methods for restocking, revealing a failure in the process.

Furthermore, it was frequently observed that expired consumables were present in the anaesthesia cart. Although nurses always check expiration dates before administering any item, the presence of expired products significantly increases the risk of incorrect administration, posing a potential threat to patient safety.

It is important to note that each surgical procedure involves its own specific consumables, equipment and workflows. Each device must be correctly positioned based on the surgical suite, patient position and operative side, making the most efficient use of the available time.

In addition to basic materials, certain consumables or machines are specifically requested by the surgeon. For the OR to be ready, it must be both disinfected and fully aligned with these specific requirements.

The medical device storage room houses equipment is available to various specialties, including positioning systems and anaesthesia devices. Over time, the organization of this space had been neglected, resulting in a cluttered environment without any logistics standards—no designated areas, insufficient space and no inventory or labelling of equipment.

4. Results and Discussion

One of the biggest challenges in the operating room was the frequent non-conformities associated with the disorganization of medical devices and consumables during surgeries. Often, devices were unavailable when needed or were improperly positioned for immediate use in specific procedures.

According to the non-conformities analysis, most issues were due to missing or mispositioned devices, or a general lack of knowledge regarding device placement. These difficulties stemmed from varying levels of

experience among staff and a lack of consistent knowledge and standard procedures related to medical devices used in the OR. This lack of standardization directly impacted turnover time.

Workplace organization is a key factor in achieving efficient and productive activity. Since the disorganization of the storage room was hindering OR staff performance and increasing turnover time, an audit and intervention were conducted based on the 5S principles (Sort, Set in Order, Shine, Standardize, Sustain). This process involved organizing and identifying all medical devices in storage, making them easily accessible to staff, reducing search time and standardizing organizational procedures across both the operating room and the storage area.

The intervention began by removing all equipment from the storage room and separating it into two groups: devices needed within the OR and those that were not. The second group was moved to an external location. An inventory of all remaining devices was then carried out, including quantities. After placing the devices in their designated spots, all items were clearly labelled. Sterilization-compatible tags were applied to the equipment itself. Additionally, labels identifying the medical specialty associated with each device were placed to further simplify location.

Finally, training sessions were conducted for all relevant staff to emphasize the importance of maintaining consistent organization—not only for operational efficiency but also to enhance the quality, speed and safety of care delivery. Careful and rigorous management of space is essential to avoid chaotic scenarios and potential failures.

Since turnover time is related to the changeover between procedures, it can be considered a form of setup time. As such, it was improved using SMED (Single-Minute Exchange of Die) tools. To support this, surgical setup cards were developed. These cards listed the names of required medical devices on one side and their appropriate placement in the OR based on the type of surgery on the other. This effort helped standardize equipment layout, making the process faster and safer.

To develop these cards, information from an existing manual and input from the nursing team were used. Each day, the cards for the scheduled procedures are displayed by the nursing staff. As each surgery concludes, its respective card is removed and stored in a designated location.

The implementation of 5S principles began with efforts to organize the remaining devices with clear and accessible placement, facilitating workflow. An inventory was created listing all devices and quantities, along with the identification of their designated storage locations, using standards easily understood by all staff.

Healthcare professionals were trained and sensitized to the importance of maintaining a Lean culture and a continuous improvement perspective. The implementation of these changes not only improved the motivation of support staff and the standardization of their tasks but also contributed significantly to reducing non-conformities in the OR, as we can see in Figure 6.

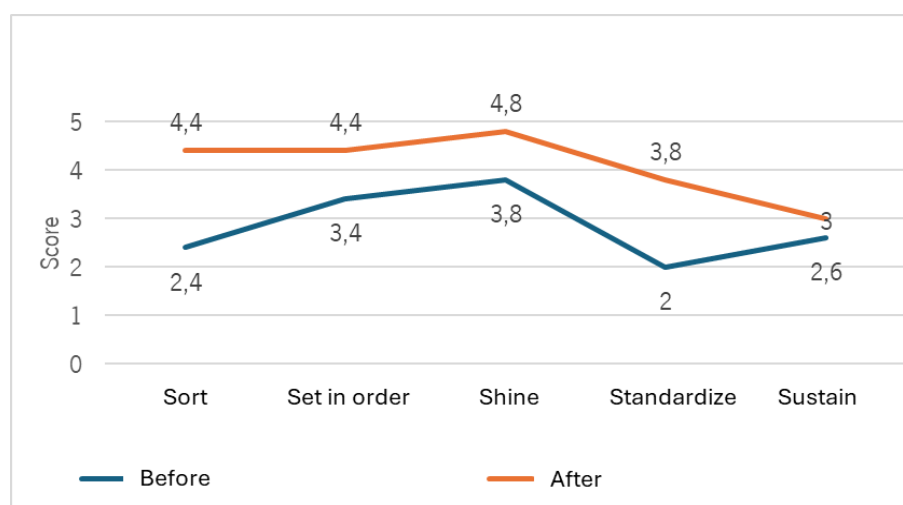


Figure 6: 5S audit results before and after the intervention. (Source: Data collected by the authors)

A 5S audit conducted before and after the intervention confirmed that the reorganization of the storage area led to a positive shift in results: the general audit score rose from an average of 2.84 to 4.08 points, representing a significant increase of 1.24 points.

The work carried out resulted in the standardization of several processes, which made the unit safer and enabled the provision of higher-quality care to patients.

On-site monitoring of surgical operations also made it possible to quantify the causes of non-conformities before and after the intervention (Table 2).

Table 2: Analysis of the root causes of nonconformities before and after intervention. (Source: Data collected by the authors)

	Initial Evaluation	Evaluation After OR Storage Reorganization and Card Implementation	Difference (percentage points)
	%NC	%NC	
Does the professionals know which medical devices are needed?	38%	10%	-28
<i>At the beginning of the surgery/setup, were all medical devices available?</i>	58%	8%	- 50
<i>Do the professionals correctly position the medical devices in the OR?</i>	46%	2%	- 44

The results showed a clearly positive impact on the surgical unit's performance, especially in eliminating previously identified non-conformities. There was a 50 and 44 percentage point reduction in non-conformities related to the availability and correct positioning of medical devices at the start of surgeries, respectively.

5. Final Considerations

This study aimed to demonstrate that the application of Lean methodologies to the hospital context—Lean Healthcare—can promote a more efficient and cost-effective healthcare system. At the same time, it sought to raise awareness among healthcare professionals of the need for a continuous improvement mindset, placing the patient at the centre of the system to enhance the quality of care delivered. The actions implemented during this investigation strengthened the hospital system without compromising service standards. It was also highlighted that the monitoring and standardisation of processes play a central role in system management, contributing to its enhancement and efficiency. This research helped to provide empirical validation of this knowledge, revealing the standardisation of spaces and processes a practical way to make operations leaner.

However, several challenges remain, such as persistent resistance to change and the need to implement continuous improvement strategies in the hospital management system. Although Lean Healthcare tools have seen increasing adoption in recent decades, there is still a long way to go before they can be broadly and systematically implemented throughout hospital systems.

In conclusion, the implementation of Lean Healthcare tools proved to be an effective approach to improving the operation of the surgical unit. It enabled low-cost, quick-to-implement changes that yielded significant benefits for both the organization and its patients.

Acknowledgement

This work has been supported by FCT – Fundação para a Ciência e Tecnologia within the R&D Units Project Scope: UID/00319/2023.

Ethics declaration: Ethical approval was not required for this research, as no patient data were used—only information related to workflows and operations. Throughout the study, all ethical guidelines and good practice principles were followed.

AI declaration: No AI tools were used to generate content for this paper. The use of artificial intelligence was limited to supporting translation and checking for potential writing inconsistencies. After using AI, a thorough review of the content was always conducted to ensure compliance. All guidelines and best practices were followed.

References

- Bandi, C. and Gupta, D., 2018. Here's a better way to schedule surgeries. Kellogg Insight, [online] 5 September. Available at: <https://insight.kellogg.northwestern.edu/article/heres-a-better-way-to-schedule-surgeries>
- Cima, R.R. et al., 2011. Use of Lean and Six Sigma Methodology to Improve Operating Room Efficiency in a High-Volume Tertiary-Care Academic Medical Center. *Journal of the American College of Surgeons*, 213(1).
- Cortês, L., 1998. Da necessidade da vigilância crítica em educação à importância da prática de investigação-ação. Available at: <https://hdl.handle.net/10216/94829>
- Coutinho Pereira, C., 2006. Aspectos Metodológicos da Investigação em Tecnologia Educativa em Portugal (1985-2000).
- Coutinho, C.P. et al., 2009. Investigação-ação: metodologia preferencial nas práticas educativas. Available at: <https://hdl.handle.net/1822/10148>
- Graban, M., 2016. *Lean Hospitals: Improving Quality, Patient Safety, and Employee Engagement*. 3rd ed.
- Gupta, R., Tat, Q., O'Brien, J., Shaw, M., Cumbler, E., McPherson, R., de la Cruz, D., Dua, A. and Yi, J.A., 2022. Utilization of lean project management principles and health informatics to reduce operating room delays in a vascular surgery practice. *American Journal of Surgery*, 223(1), pp.176–181. Available at: <https://doi.org/10.1016/j.amjsurg.2021.07.040>
- Jones, C.H. and Dolsten, M., 2024. Healthcare on the brink: navigating the challenges of an aging society in the United States. *npj Aging*, 10(1), p.22.
- Lima, R.M., Dinis-Carvalho, J., Souza, T.A., Vieira, E. and Gonçalves, B., 2021. Implementation of lean in health care environments: an update of systematic reviews. *International Journal of Lean Six Sigma*, 12(2), pp.399–431. Available at: <https://doi.org/10.1108/IJLSS-07-2019-0074>
- Mateus, A., Ramalho, E., Oliveira, H., Rodrigues, H., & Ferreira, R. (2017). *Setor Privado da Saúde em Portugal*. Ministério da Saúde, 2015. Avaliação da Situação Nacional dos Blocos Operatórios Outubro 2015-2.
- Monden, Y., 2012. *Toyota Production System: An Integrated Approach to Just-In-Time*. 4th ed.
- OECD and European Observatory on Health Systems and Policies, 2023. Portugal: Country Health Profile 2023. OECD. Available at: <https://doi.org/10.1787/069af7b1-en>
- Pereira, H., 2014. Modelo de Gestão do Bloco Operatório. Universidade Autónoma de Lisboa.
- Pokinska, B., 2010. The current state of lean implementation in health care: Literature review. *Quality Management in Health Care*, 19(4), pp.319–329. Available at: <https://doi.org/10.1097/QMH.0b013e3181fa07bb>
- Schumacher, S., Bildstein, A. and Bauernhansl, T., 2020. The impact of the digital transformation on lean production systems. *Procedia CIRP*, 93, pp.783–788. Available at: <https://doi.org/10.1016/j.procir.2020.03.066>
- Souza, T.A., Roehe Vaccaro, G.L. and Lima, R.M., 2020. Operating room effectiveness: a lean health-care performance indicator. *International Journal of Lean Six Sigma*, 11(5), pp.987–1002. Available at: <https://doi.org/10.1108/IJLSS-12-2017-0141>
- Spearman, M.L., 2014. Of physics and factory physics. *Production and Operations Management*, 23(11), pp.1875–1885. Available at: <https://doi.org/10.1111/poms.12188>
- Terras, H. (2017). *Gestão de Bloco Operatório*.
- Womack, J., Jones, D. and Roos, D., 1990. *The Machine That Changed the World*.
- Zuber-Skerritt, O., 1992. *Action Research in Higher Education: Examples and Reflections*. Available at: <https://api.semanticscholar.org/CorpusID:68060319>

The Effect of Carbon Emissions on Company Profitability

Alexandra Ștefan and Mădălina Preda

The Bucharest University of Economic Studies, Romania

stefan5alexandra21@stud.ase.ro

predamadalina17@stud.ase.ro

Abstract: Sustainability factors and in particular environmental factors have become increasingly important in recent years for companies, governments and public agencies, but also for many other stakeholders, gaining ground at the expense of financial factors. Non-financial reporting is an area of major interest for companies and researchers, but financial aspects and the quality of financial reporting remain relevant, influencing corporate decisions, including the adoption of short, medium, and long-term sustainability strategies. The two elements, financial and non-financial, mutually influence each other: the adoption of sustainable strategies entails additional costs, leading to lower profits in the short term; while the adoption of sustainability strategies can be beneficial for the profitability of companies in the long term. Thus, this paper aims to study the influence that the dissemination of information on carbon emissions has on the profitability of companies and to confirm or deny the synergy between environmental regulations and the economic development of companies. Moreover, another dimension in which we will approach the research involves analyzing the position in which the carbon disclosures rank in comparison with the ESG score. The study is carried out by using quantitative research methods on a sample of companies in the European Union, and the data used in the research are extracted from the LSEG Data & Analytics (Refinitiv) database and are explained in the paper. The contribution of our study is represented by the simultaneous analysis of the influence that carbon emissions and sustainability performance (ESG score) have on companies' profitability and by bringing together emerging and developed economies in the same study. In order to achieve the research objective, we consider similar research in the literature. We believe that the topic addressed in this paper is topical and may be relevant for future academic research on the case of carbon emissions in relation to corporate profitability.

Keywords: Carbon emissions, Profitability, Dissemination, Environment

1. Introduction

In the context of climate change and the need for regulatory compliance and truthful disclosure to investors and other stakeholders, carbon disclosure has become a key practice for companies globally. Reporting greenhouse gas emissions, and therefore CO₂, reflects the extent to which companies comply with environmental regulations and their commitment to sustainability. At the European Union (EU) level, the legal framework that requires companies to publish data on carbon emissions and other risks is the Corporate Sustainability Reporting Directive (CSRD) and the adoption of the European Sustainability Reporting Standards (ESRS).

The adoption of sustainability strategies and compliance with sustainability directives and regulations have significant implications for companies' profitability in the short, medium and long term. Thus, the costs associated with reducing emissions and complying with legislation can negatively influence short-term profitability. On the other hand, transparency in the dissemination of sustainability information can help to enhance reputation and attract investors interested in sustainable practices. The literature analyzes from multiple perspectives the relationship between carbon emissions and financial performance indicators such as Return on Assets (ROA), Return on Equity (ROE) (Wang et al., 2022; Gallego-Alvarez et al., 2014; Miah et al., 2021; Lewandowski, 2017).

Thus, analyzing the impact of carbon disclosure on the profitability of companies is a topical issue of interest to multiple stakeholders and is essential for understanding the correlations between sustainability strategies, compliance and economic effects on companies. This paper aims to analyze the influence that the level of carbon emissions, as measured by CO₂ Equivalent Total Emissions (tons), has on companies' performance, as expressed by the ROA profitability indicator. In parallel, the analysis also takes into account companies' sustainability performance as measured by the ESG score and its influence on financial performance (ROA), but it is not the main pillar of our study.

The results of our study show that the relationship between the ESG score and companies' profitability, measured through the financial indicator ROA, is positive and significant, but in terms of the link between carbon emissions and companies' profitability (ROA), the regression model is not significant.

Even if the results lack statistical significance, this paper contributes to the literature by concomitantly analyzing the influence that both carbon emissions and sustainability performance (ESG score) have on

companies' profitability expressed by the financial indicator ROA, which is a relatively limited approach in existing empirical studies, according to the studies we have carried out. While many papers separately investigate the influence of carbon emissions (Lewandowski, 2017; Miah et al., 2021; Wang et al., 2022) or ESG score (Aydogmus et al., 2022; Almeyda and Darmansyah, 2019; Treepongkaruna and Suttipun, 2024) on companies' profitability, few studies simultaneously investigate the effect of both factors on companies' financial performance (Gabr and ElBannan, 2024). What differentiates our study from Gabr and ElBannan (2024) is that the present paper includes companies from developed and emerging countries, whereas the work of the aforementioned authors focuses on emerging economies.

We believe that our study provides a more comprehensive perspective on how companies integrate sustainability factors into their strategies, and our results show that a high ESG score is closely correlated with lower carbon emission levels. This integrated approach is relevant in the current context of increasingly stringent environmental transparency regulations (CSRD, CBAM - Carbon Border Adjustment Mechanism) and growing pressure from investors and other stakeholders who attach great importance to ESG criteria in order to inform (investment, partnership) decisions.

The paper is structured in several sections as follows: the first section is dedicated to the literature review; the second section presents the research methodology. The latter is followed by results and discussions, the third section, and the last section is dedicated to conclusions.

2. Literature Review

The literature addresses sustainability factors and their relationship to globally operating companies from multiple perspectives. Thus, the increasing importance of environmental, social and governance (ESG) factors in both investment decisions and the focused attention of other stakeholders on these issues is driving a growing interest in studying how sustainability performance influences the profitability of companies.

Aydogmus et al. (2022) investigate the relationship between ESG performance and profitability on the 5000 largest listed companies in the Bloomberg database and emphasize that, although the adoption of ESG strategies involves significant upfront costs, they can generate long-term benefits. The authors conclude that there is a positive and significant correlation between firms' ESG performance and profitability.

Similarly, Almeyda and Darmansyah (2019) study the influence of ESG disclosure on the financial performance of listed companies in the real estate sector of the seven most developed countries globally (G7), and Treepongkaruna and Suttipun (2024) analyze the impact of ESG reporting on the profitability of companies in Thailand. The studies demonstrated a positive and significant relationship of ESG score on companies' profitability measured by financial indicators ROA (Return on Assets) and ROC (Return on Capital) (Almeyda and Darmansyah, 2019) and a positive relationship of ESG score on ROE (Return on Equity) but lack of it on ROA (Treepongkaruna and Suttipun, 2024). Thus, the literature suggests that investments related to the adoption of ESG measures can be considered as strategic investments with positive financial returns in the medium to long term.

There are also numerous studies regarding carbon emissions as a key indicator of companies' environmental performance. Several authors have approached this topic from different perspectives, but we have focused on identifying studies that focus on the relationship between carbon emissions and their effect on companies' profitability.

Naranjo Tuesta et al. (2020) study how carbon management influences the financial performance of EU companies as expressed by ROA, ROE and ROS (Return on Sales) indicators. Their study demonstrates that emission reduction strategies can have a positive impact on profitability, especially ROA. There are studies that address the issue of carbon emissions globally (Lewandowski, 2017; Gallego-Alvarez et al., 2014). The results show that companies promote sustainable behaviours to achieve higher financial performance, but do not show evidence on operational performance (Gallego-Alvarez et al., 2014), and that carbon emission reduction positively and statistically significantly affects the companies' return expressed using the ROS indicator, but negatively the Tobin's q indicator (Lewandowski, 2017).

Another study conducted at the international level, but focusing only on emerging economies, is conducted by Miah et al. (2021) and shows that carbon emissions are closely related to the reduction of profitability indicators such as ROE, Tobin's q, credit rating. It is noteworthy that companies operating in the financial sector have lower emissions than non-financial companies (Miah et al., 2021; Lewandowski, 2017).

Wang et al. (2022) show that listed companies in China are also concerned about reducing carbon emissions. They emphasized that the implementation of carbon emission reduction policies have contributed to increased corporate profitability and reduced the leverage of listed companies.

Therefore, based on the assumption that the adoption of sustainability strategies, which leads to higher ESG score and contributes to increase the profitability of companies, and on the other hand, the reduction of carbon emissions, which is also associated with the increase in profitability of companies, the hypotheses tested by us in parallel in the present study are as follows:

H1. Reducing CO₂ emissions have a positive and significant influence on companies' profitability expressed by ROA

H2. The ESG score has a positive and significant influence on companies' profitability expressed by ROA

The hypotheses can be supported by similar research in the literature reviewed. Table 1 summarizes the correspondence between existing studies and the hypotheses tested in this paper:

Table 1: Correlation between research hypotheses and literature references

No.	Research hypothesis	Literature references
H1	Reducing CO ₂ emissions have a positive and significant influence on companies' profitability expressed by ROA	Gallego-Alvarez et al. (2014) Miah et al. (2021) Wang et al. (2022)
H2	The ESG score has a positive and significant influence on companies' profitability expressed by ROA	Almeyda și Darmansyah (2019) Aydogmus et al. (2022) Treepongkaruna și Suttipun (2024)

3. Research Methodology

In order to carry out the research, we conducted a quantitative analysis based on an econometric model consistent with similar research in the field (Wang et al., 2022; Aydogmus et al., 2022) using panel data. The data were extracted from the LSEG Data & Analytics database (Refinitiv), and the sample includes companies listed on stock exchanges operating in Europe, reference currency EUR, for the analyzed period 2021-2023. The indicators selected to support the research topic are the following: ESG Score, Total Assets, Net Income After Taxes, CO₂ Equivalent Emissions Total, Total Liabilities, Average Total Assets, Total Current Assets, Total Current Liabilities. The selection based on the filters listed above generated an initial sample of 11203 companies. Since we wanted to identify a group of companies subject to the same carbon reporting regulation, the study aims to analyze only EU companies subject to the Carbon Border Adjustment Mechanism (CBAM) and the Corporate Sustainability Reporting Directive (CSRD). Therefore, out of the initial sample of 11203 companies, 4158 non-EU companies were removed. The next step was to eliminate all references that did not disclose information for each selected indicator in each year under analysis. The final sample consists of 751 companies from 20 EU member countries for the period 2021-2023, representing a total of 2253 observations.

Table 2: Sample data

	Sample
Period	2021-2023
Number of companies	751
Number of countries	20
Total number of observations	2253
Number of observations by region	
Eastern Europe	57
Northern Europe	822
Southern Europe	402
Western Europe	972

The analyzed period starts with the year before the publication of the Directive and we want to highlight companies' CO₂ reporting trends in this context: before and after the publication of the Directive.

The study is based on a regression model with two independent variables and a single dependent variable. The dependent variable of both approaches is the financial indicator ROA and is calculated by the authors by relating the Net Income After Taxes indicator to Total Assets, extracted from LSEG Data & Analytics (Refinitiv). ROA is a profitability indicator, indicating the return on assets, and its use is supported by numerous similar studies (Almeyda and Darmansyah, 2019; Aydogmus et al, 2022; Treepongkaruna and Suttipun, 2024; Gallego-Alvarez et al., 2014; Wang et al., 2022; Naranjo Tuesta et al., 2020).

The independent variables of the study are ESG Score and CO₂ Equivalent Emissions Total. These correspond to the LSEG Data & Analytics (Refinitiv) database calculation methodology. The emissions category is one of the three components of the environmental pillar (Emission, Innovation, Resource use) and measures 0.15% of the total ESG Score and 35% of the total environmental pillar, respectively.

Table 3: Emissions dimension in ESG score (LSEG Data & Analytics)

Pillar	Pillar weights	Category	Category weights
Environmental	0,44	Emission	0,15
		Innovation	0,15
		Resource use	0,13
Social	0,31		
Governance	0,26		

The control variables applied in the study are also supported by works in the field (Aydogmus et al., 2022; Wang et al., 2022) and are Company size, Asset liability ratio and Current ratio. The calculation of the dependent variable ROA and the control variables was performed by the authors using Microsoft Excel spreadsheet program and based on the indicators extracted from the LSEG Data & Analytics database (Refinitiv).

Table 4: Summary of variables

Variable	Description/formula
Dependent variable	
ROA	Net Income / Total Assets
Independent variable	
ESG Score	LSEG data
CO ₂ Equivalent Emissions Total	LSEG data
Control variable	
Company size	Ln(Total Assets)
Asset-liability ratio	Total Liabilities / Total Assets
Current ratio	Total Current Assets / Total Current Liabilities

Table 5 summarizes the analysis of all variables used in the study for the 751 companies and the period 2021-2023.

Table 5: Descriptive statistics

Description	Variable	N	Range	Minimum	Maximum	Mean	Std. Deviation
ESG	Independent	2253	88.3128	4.8880	93.2008	58.3785	16.3496
CO ₂	Independent	2253	982 000.0000	0.0000	982 000.0000	90 222.5862	158 649.4554
Companysize	Control	2253	10.1328	2.4065	12.5393	7.7143	1.6058
Assetliabilityratio	Control	2253	1.5643	0.0057	1.5700	0.5974	0.1876
Currentratio	Control	2253	36.2199	0.0154	36.2353	1.6379	1.7354

Description	Variable	N	Range	Minimum	Maximum	Mean	Std. Deviation
ROA	Dependent	2253	1.5077	-1.0006	0.5071	0.0341	0.0786
Valid N (listwise)		2253					

The average obtained by the dependent variable ROA is only 3.4%, registering a minimum of -100.06% and a maximum of 50.71%. We consider it worth mentioning that both values at the sample bounds were obtained in the year 2021. From the total of 2253 observations, the ROA indicator registers positive values for 1835 observations, i.e. 81.45% of the sample, and 418 negative values representing the difference of 18.55% of the total companies. The independent variables present only positive or null values.

The following regression model was constructed in order to support the research hypotheses:

$D \text{ variable}(it) = \alpha + \beta_1 I \text{ variable}(it) + \beta_2 \text{Control}(it) + \varepsilon(it)$, where:

- $D \text{ variable}(it)$ is the dependent variable (ROA);
- $I \text{ variable}(it)$ is the independent variable (ESG Score/ CO₂ Equivalent Emissions Total);
- $\text{Control}(it)$ is represented by the control variables (Company size, Asset-liability ratio și Current ratio);
- $\varepsilon(it)$ is the error term.

Therefore, each of the two research hypotheses was assigned a regression model to measure the influence of the independent variable (ESG Score and CO₂ Equivalent Emissions Total) on the dependent variable ROA.

Table 6: Regression models of the study

Variable	H1 (Model 1)	H2 (Model 2)
Dependent	ROA	ROA
Independent	CO ₂ Equivalent Emissions Total	ESG Score
Control	Company size	Company size
Control	Asset liability ratio	Asset liability ratio
Control	Current ratio	Current ratio

Results were obtained by running regressions in SPSS (Statistical Package for the Social Sciences).

4. Results and Discussions

Analyzing the composition of the sample across the EU countries, we can see that Sweden, Germany and France occupy the top three positions, with more than 100 companies each and a total of 383 companies, representing 50.99% of the sample. At the opposite pole are Lithuania, Romania, Hungary and Slovenia with a total of six companies in the sample, respectively a share of 0.79% in the sample.

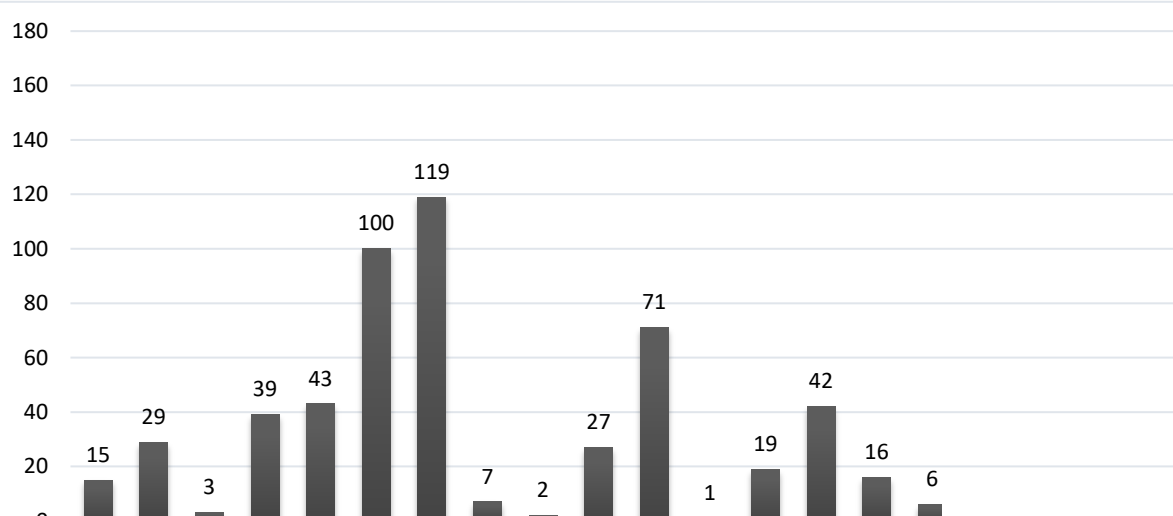


Figure 1: Sample composition across EU member countries

Expanding on the analysis of the average ESG and carbon emissions scores across EU countries, the best performing countries in terms of sustainability scores are Hungary, the only country with a score above 70 units, followed by Portugal, France and Spain with scores above 65 units each. The 2021-2023 period is marked, moreover, by the continuous increase of the ESG score by two units, from 57.1 units in 2021 to 59.1 units in 2023.

Portugal and Cyprus have the highest CO₂ emissions over the period, with more than 200000 tons per year, but a downward trend is observed. The same trend is adopted by most of the countries in the sample and can be supported by the overall decreasing averages at EU level per year, which is a consequence of the realization of the need for sustainability investments as well as the development of EU legislation on sustainability and in particular on carbon emissions (CSRD, CBAM).

These significant differences can be explained by factors such as clear legislation, incentives provided by the competent bodies and monitoring of the implementation of ESG strategies being more pronounced in some EU countries, as well as the existence of more industrialized and fossil fuel dependent economies and the low level of technology to promote clean energy in terms of carbon emissions.

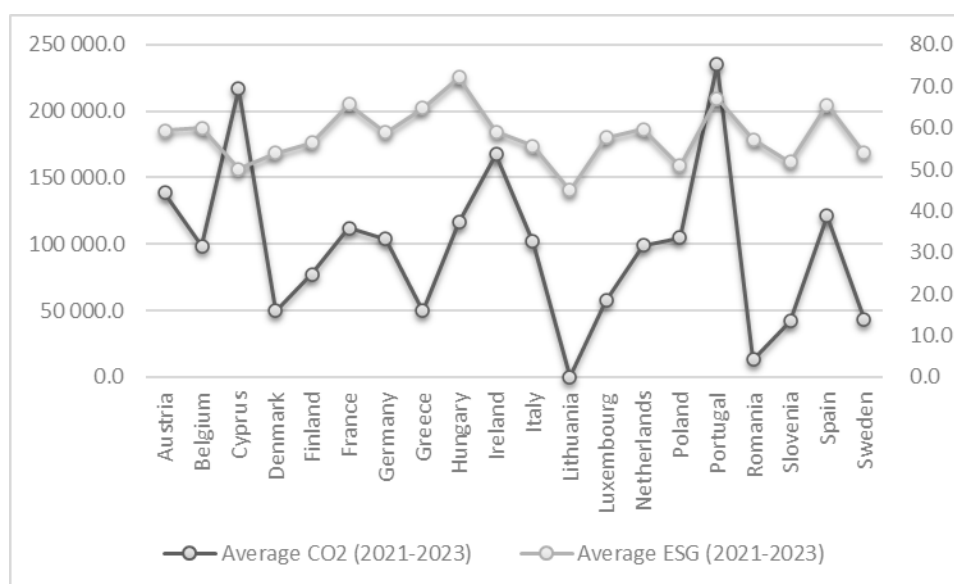


Figure 2: Global averages of ESG scores and CO₂ emissions across EU countries

4.1 Theoretical Implications

In order to answer the research hypotheses stated earlier in the paper, the regressions were run on the basis of the models presented, using the SPSS statistical program, which is compatible with the present research due to the not very complex databases under analysis.

The results obtained are presented in Tables 7-10.

The results obtained in the study make a relevant contribution to the literature on the relationship between sustainability and the financial performance of companies. Model 1 tested the influence of carbon emission reduction on company profitability (ROA), and the R² coefficient obtained shows that only 9.5% of the variation in ROA can be explained by the change in CO₂ emissions. By performing the F-test, together with the Significance F, which registers a value below the 0.05 threshold, the model is statistically significant and can be used to analyze the dependence between the two variables. The ROA indicator value is 0.091 when total CO₂ equivalent emissions are equal to 0, and the coefficient for CO₂ emissions is not statistically significant ($p = 0.151$), which means that we cannot support a direct relationship between carbon emission reduction and profitability.

Table 7: Regression results to support H1

Dependent Variable:	ROA					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1.318 ^a	4	0.330	58.902	0.000	0.095
Intercept	0.458	1	0.458	81.799	0.000	0.035
CO ₂	0.012	1	0.012	2.064	0.151	0.001
Companysize	0.079	1	0.079	14.152	0.000	0.006
Assetliabilityratio	1.248	1	1.248	223.051	0.000	0.090
Currentratio	0.130	1	0.130	23.292	0.000	0.010
Error	12.578	2248	0.006			
Total	16.512	2253				
Corrected Total	13.897	2252				
a. R Squared = .095 (Adjusted R Squared = .093)						

Table 8: Parameter estimates (H1)

Dependent Variable:	ROA						
Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared
					Lower Bound	Upper Bound	
Intercept	0.091	0.010	9.044	0.000	0.071	0.111	0.035
CO ₂	0.000	0.000	1.437	0.151	0.000	0.000	0.001
Companysize	0.004	0.001	3.762	0.000	0.002	0.006	0.006
Assetliabilityratio	-0.138	0.009	-14.935	0.000	-0.156	-0.120	0.090
Currentratio	-0.005	0.001	-4.826	0.000	-0.007	-0.003	0.010

The results obtained contradict similar studies in the literature, such as those by Naranjo Tuesta et al. (2020), who analyzed the relationship between carbon management and the financial performance of European companies, expressed by the ROA, ROE and ROS indicators. Their study was conducted for the period 2006-2017 on 497 companies, and the results indicate that reducing CO₂ emissions is useful for improving the profitability of companies, especially those in non-polluting sectors.

Gallego-Alvarez et al. (2014) subject 89 international companies to a similar analysis for the period 2006-2009, and their results show that reducing emissions has a positive impact on financial performance.

In this regard, our study offers a critical perspective, suggesting that the relationship between carbon emissions and profitability may depend on numerous contextual factors, such as region, industry, period analyzed, and reporting framework.

Model 2 tested the influence of the ESG score on company profitability expressed in ROA. The R² coefficient shows that 9.7% of the variation in ROA is explained by the evolution of the ESG score, suggesting a modest effect and a slightly higher contribution than in Model 1.

The validity of the regression model is achieved by obtaining a Significant F value below 0.05, and the validity of the coefficient results from obtaining a p value of 0.013.

The ROA indicator value is 0.083 when the ESG score is equal to 0.

The ESG coefficient registers a value of almost zero, 0.0003, which represents a weak positive evolution of the ROA indicator in relation to the increase of the ESG score by 1 unit.

However, the significance of the regression model and the positive correlation between the study variables can be supported by similar works in the literature. Thus, our results are consistent with those of Aydogmus et al. (2022), whose relationship between ESG score and profitability expressed by ROA was positive and significant, as well as with the study by Almeyda and Darmansyah (2019), whose conclusion highlighted a positive and significant relationship between performance and ESG score.

Table 9: Regression results to support H2

Dependent Variable: ROA						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1.341 ^a	4	0.335	60.035	0.000	0.097
Intercept	0.402	1	0.402	71.973	0.000	0.031
ESG	0.034	1	0.034	6.168	0.013	0.003
Companysize	0.036	1	0.036	6.426	0.011	0.003
Assetliabilityratio	1.247	1	1.247	223.264	0.000	0.090
Currentratio	0.129	1	0.129	23.039	0.000	0.010
Error	12.555	2248	0.006			
Total	16.512	2253				
Corrected Total	13.897	2252				

a. R Squared = .097 (Adjusted R Squared = .095)

Table 10: Parameter estimates (H2)

Dependent Variable: ROA							
Parameter	B	Std. Error	t	Sig.	95% Confidence Interval		Partial Eta Squared
					Lower Bound	Upper Bound	
Intercept	0.083	0.010	8.484	0.000	0.064	0.103	0.031
ESG	0.000	0.000	2.484	0.013	0.000	0.001	0.003
Companysize	0.003	0.001	2.535	0.011	0.001	0.005	0.003
Assetliabilityratio	-0.137	0.009	-14.942	0.000	-0.156	-0.119	0.090
Currentratio	-0.005	0.001	-4.800	0.000	-0.007	-0.003	0.010



Figure 3: Illustrating regression results to support research hypotheses

Although the statistical results do not fully validate the scope of our research, Figure 4 illustrates the evolution of the average ESG score, as well as carbon emissions, over the period under analysis, 2021-2023. It is evident that the ESG score increases from 57.1 in 2021 to 59.1 in 2023, while carbon emissions decrease from 94050.0 t in 2021 to 85785.4 t in 2023.

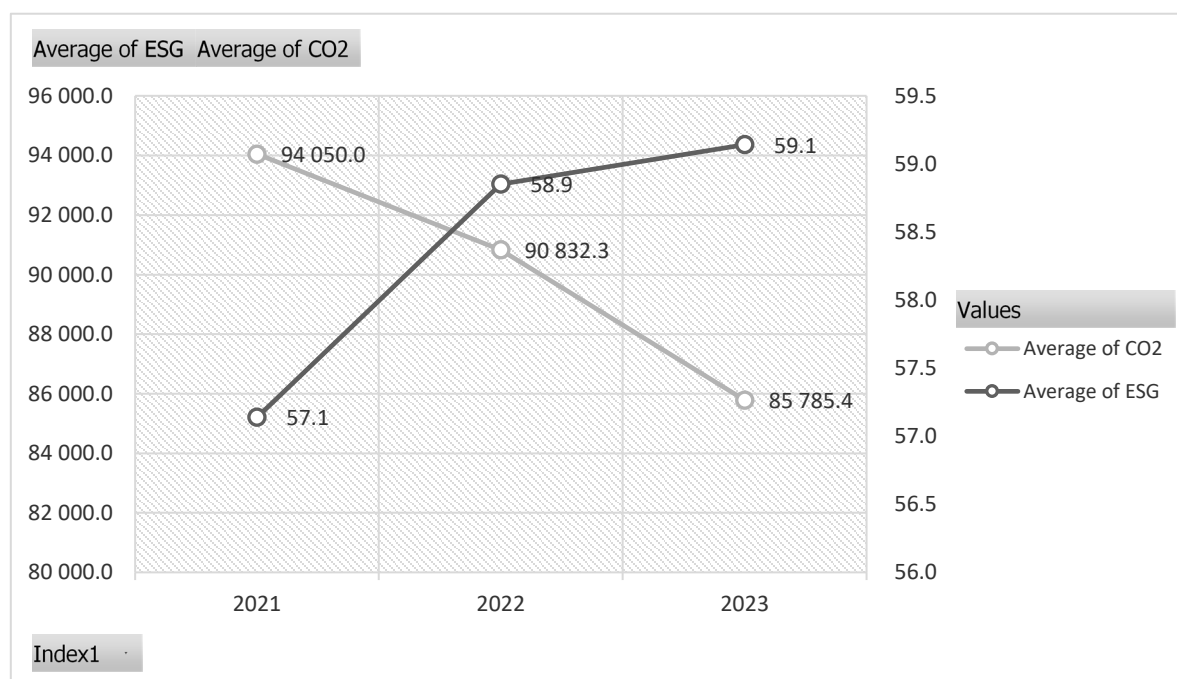


Figure 4: Evolution of the global averages of the ESG Score and CO₂ Equivalent Emissions Total, period 2021-2023

We believe that the results reinforce the validity of the positive relationship between ESG scores and financial performance.

As stated above, our study partially validates the literature, supporting the importance of ESG performance, but providing contradictory results regarding the link between carbon emissions and profitability. We believe that this contribution is theoretically relevant, as it analyzes the influence on companies' financial performance from two perspectives. The first model addresses the relationship between one of the components of the environmental pillar (carbon emissions) and profitability, while the second model uses overall ESG performance.

4.2 Practical Implications

The results highlight the importance of ESG factors in relation to company profitability and offer several implications for various stakeholders, such as managers, investors, or regulators.

For companies, the results suggest that improving ESG scores can have positive effects on financial returns. This may encourage companies to set sustainability goals not only to strengthen their reputation and comply with regulations, but also to maximize financial performance.

Sustainability criteria (ESG) can be considered decision-making factors for investors in that sustainable investments can generate financial returns. In terms of regulatory factors, the results of the study may suggest the need to strengthen environmental policies, particularly in relation to carbon emissions, and initiatives such as the CSRD (Corporate Sustainability Reporting Directive) are essential in integrating sustainability at the company level.

4.3 Limitations and Future Research

The present research has limitations, which are mentioned below. First, the database used (LSEG Data & Analytics) may construct ESG scores and carbon emissions information based on a different methodology than other databases used in other studies, which may affect data comparability.

Another limitation of the research may be the econometric models applied, which may not take into account all the significant variables of the study, such as the sector of activity or other specific indicators.

As directions for future research, we believe that the analysis could be developed to include two categories of companies: financial and non-financial companies, for greater validity of the results, as they may address

different strategies in terms of sustainability. Also, an analysis conducted over a significantly longer period of time may capture the effects of sustainability policies and financial performance over time.

5. Conclusions

A review of the literature reveals a growing interest in the topics covered in this paper, namely non-financial disclosure, ESG score and carbon emissions.

The testing of the research hypotheses involved the application of regression models on a sample of companies of the size presented. The results obtained did not validate both hypotheses tested: the existence of a positive and significant relationship between the ESG score and the profitability of companies expressed by ROA has been demonstrated and can be supported by other studies in the recent literature (Aydogmus et al., 2022; Almeyda and Darmansyah, 2019; Treepongkaruna and Suttipun, 2024). Thus, *H2. The ESG score has a positive and significant influence on companies' profitability expressed by ROA* was validated in the study.

Regression model 1, which tested the influence of carbon emission reduction on profitability was found to have no statistical significance, therefore *H1. Reducing CO₂ emissions have a positive and significant influence on companies' profitability expressed by ROA* cannot be supported. In the literature surveyed, we identified works by other authors that validate the hypothesis stated above, such as Wang et al. (2022), Gallego-Alvarez et al. (2014) or Miah et al. (2021).

Lewandowski (2017) finds that a positive association between carbon performance and financial performance is a motivation for companies to adopt carbon reduction strategies.

We believe that our results support the importance of promoting policies that encourage transparency and performance of ESG factors and are of interest to companies, policy makers and investors alike. Supporting non-financial reporting (such as CSRD) and integrating ESG aspects into company policies can contribute to a more sustainable and competitive economy. The result on carbon emissions may suggest that there is a need for stronger policies to link polluting behavior to financial performance. Moreover, for investors, the results provide a strong argument for integrating sustainability factors to inform investment decisions.

The study contributes to the literature by concomitantly analyzing the influence that carbon emissions as well as sustainability performance (ESG score) have on the profitability of companies expressed by the financial ROA indicator, being a relatively limited approach (Gabr and ElBannan, 2024), and by bringing together emerging and developed economies in the same study.

With respect to the limitations of the research, we consider that one of them is the choice of the database for the information extracted on carbon emissions and ESG scores. Another limitation of the research may be the econometric models applied, which may not account for all significant variables of the study.

As future research directions, we believe that the analysis can be developed to include two categories of companies: financial and non-financial companies, for greater validity of the results.

Acknowledgements

This paper was co-financed by The Bucharest University of Economic Studies during the PhD Program.

Ethics Declaration: As authors, we declare that the research complies with ethical principles and rules.

AI Declaration: As authors, we declare that no AI tools were used in the research.

References

- Almeyda, R. and Darmansyah, A. (2019) "The Influence of Environmental, Social, and Governance (ESG) Disclosure on Firm Financial Performance", *IPTEK Journal of Proceedings Series*, No.5, pp 278-290.
- Aydogmus, M., Gulay, G. and Ergun, K. (2022) "Impact of ESG performance on firm value and profitability", *Borsa Istanbul Review*, Vol.22, pp 119-127.
- Gabr, D.H. and ElBannan, M.A. (2024) "Is it worth it to go green? ESG disclosure, carbon emissions and firm financial performance in emerging markets", *Review of Accounting and Finance*, Vol.24, No.2, pp 193-217.
- Gallego-Alvarez, I., Segura, L. and Martínez-Ferrero, J. (2014) "Carbon emission reduction: the impact on the financial and operational performance of international companies", *Journal of Cleaner Production*, Vol.103, pp 149-159.
- Lewandowski, S. (2017) "Corporate Carbon and Financial Performance: The Role of Emission Reductions", *Business Strategy and the Environment*, Vol.26, pp 1196-1211.
- LSEG Data & Analytics (2023). *Environmental, social and governance scores from LSEG*. https://www.lseg.com/content/dam/data-analytics/en_us/documents/methodology/lseg-esg-scores-methodology.pdf

- Miah, M.D., Hasan, R. and Usman, M. (2021) "Carbon Emissions and Firm Performance: Evidence from Financial and Non-Financial Firms from Selected Emerging Economies", *Sustainability*, Vol.13.
- Trepongkaruna, S. and Suttipun, M. (2024) "The impact of environmental, social and governance (ESG) reporting on corporate profitability: evidence from Thailand", *Journal of Financial Reporting and Accounting*, Vol.22.
- Naranjo Tuesta, Y., Crespo Soler, C. and Ripoll Feliu, V. (2020) "The Influence of Carbon Management on the Financial Performance of European Companies", *Sustainability*, Vol.12.
- Wang, E., Nie, J. and Zhan, H. (2022) "The Impact of Carbon Emissions Trading on the Profitability and Debt Burden of Listed Companies", *Sustainability*, Vol.14.

Leadership Role Models Across Contexts: Identifying Common Similarities and Differences

Franziska Weindel

Ingolstadt School of Management, Germany

franziska.weindel@ku.de

Abstract: Although role models are widely acknowledged as important in leadership development, little is known about the defining traits of leader role models. This study aims to address this gap by developing a cross-organizational framework of characteristics that define role models in the field of observational leadership development. Drawing on a multiple case study design, three distinct types of organizational career trajectories were selected as cases for analysis: (1) careers rooted in management consultancies, (2) careers situated within corporate firms, and (3) careers involving a crossover from consulting to corporate settings. The primary focus is placed on management consultancies, as their unique setting creates an environment conducive to the observation of the salient attributes of leader role models. The findings are based on semi-structured interviews and thematic analysis. The paper concludes with a discussion of the results and future research directions. The study contributes to the extant literature on leadership development and role models, offering valuable practical and theoretical implications.

Keywords: Leadership development, Role models, Management consultancies, Case study

1. Introduction

The study of leadership development has attracted increasing scholarly interest and evolved into a distinct academic discipline (Day et al, 2014). While research has demonstrated the significant impact of role models on the leadership development of individuals (Vuhuong and Edwards, 2022), little attention has been paid to the content of role modelling itself and the attributes of role models in leadership studies. The present study seeks to address this gap by investigating core characteristics that define leader role models in the field of observational leadership development, with a particular emphasis on management consultancies, given their distinctive environment.

Distinguished by multifaceted leadership exposure, frequent reconfigurations of teams and client interactions, management consultancies provide a particular fertile ground for observing leader role models in action. Unlike corporate firms, where the production does not include significant amounts of non-human resources, such as inventories, factories and equipment (Nordenflycht, 2010), management consultancies are characterized by the core asset being intangible, not directly owned or controlled by the firm, but embodied in its professionals (Empson, 2020). Given this human-centric model, the development of professionals plays a pivotal role. Yet, formal leadership training is often sparse in management consultancies (Smets et al, 2017), rather leadership behaviors are learned informally, often by observing role models (Empson and Langley, 2017).

This study investigates core characteristics and key traits of role models that facilitate such observational learning in leadership. Based on a multiple case study design, it integrates interview data from three distinct types of organizational career trajectories selected as cases to develop a cross-organizational taxonomy of attributes that characterize role models in the field of leadership development. This study advances the current understanding of leadership development and role models with both practical and theoretical insights.

2. Theoretical Background

2.1 Role Models

Throughout history, models of every kind have played a crucial role in shaping an individual's growth and development (Scarnati, 2002). The term "role model" first appeared in 1973 in the literature of most fields (Speizer, 1981) and encompasses the notion of "roles", which refer to behavioral patterns associated with specific status positions, and the process of "modeling", which involves the alignment of cognitive skills and behaviors between an observer and a target (Gibson, 2003).

2.1.1 Definitions

The prevailing definition of a role model at this time was as a person who possesses skills and displays techniques that an individual lacks, and from whom an individual could learn through observation and comparison with one's own performance (Speizer, 1981). Since then, various definitions have been proposed.

Cunningham and Eberle (1993) defined role models as influential persons, who exhibit behavior, skills, and styles which individuals wish to emulate. Higgins and Thomas (2001) designate role models as "developers" and delineate the latter as an individual who holds a more senior organizational position and is working in the same organization as the protégé. Another definition is proposed by Gibson and Barron (2003) who define role models as "person(s) an individual perceives to be similar to some extent, and because of that similarity, the individuals desires to emulate (or specifically avoid) aspects of that person's attributes or behavior's" (p. 199).

Such definitions of role models are quite similar, with an emphasis on learning through observation and emulation. They are thus very similar to Bandura's conceptualization of models in his theory of social learning, which constitutes one of the two primary psychological theories that provide the foundation for the study of role models (Gibson, 2003). Social learning theory posits that individuals observe and attend to models who help them learn new tasks, skills, attitudes, and norms (Bandura, 1971). Identification theory, the second foundation, extends this by emphasizing the emotional and cognitive connection individuals form with role models they perceive as similar (Slater, 1961). Both theories highlight the selection of role models from an individual's social environment and the process of understanding their influence by observing their thoughts and behaviors.

2.1.2 Selection of role models

The selection of role models can be seen as a social comparison process. When individuals are motivated to self-improve, they select social references who inhibit these desired behaviors (Ibarra, 1999). Ibarra (2000) posits that the selection of a role model is predicated on several criteria: effectiveness, i.e. the question of whether the role model is successful; feasibility, i.e. whether the role model's behavior could work for the individual; and attractiveness, i.e. whether the role model's persona is appealing to the individual and if the individual wishes to emulate the role model. In addition to these factors, Cunningham and Eberle (1993) emphasized the pivotal role of accessibility in the selection of role models. As a further criterion in the process of role model selection, Lockwood and Kunda (1997) added attainability, which entailed an evaluation of whether the success of the role model appeared to be within a realistic reach for the individual. In summary, the basis of role model selection is whether individuals (1) find a role model relevant to their own needs and goals, (2) view the role model's position or expertise as successful and potentially attainable, and (3) perceive the role model as accessible and available for personal development.

2.1.3 Identification

As role models play a pivotal role in the development of an individual's skills and identity (Ibarra, 1999), an additional fundamental component of the selection process is the identification, which refers to the perceived similarity between an individual and their role model. Identification can be thought of as a psychological connection with a role model, where an individual internalizes the role model's influence on their thoughts, actions, and values (Aronson, 1999). This internalization is driven by the perception of the role model as attractive or appealing in representing a goal that the individual would like to attain (Gibson, 2004). The strength of this identification is assessed by the extent to which individuals perceive themselves to be similar to the role model (Gibson and Barron, 2003).

2.1.4 Multiple role models

Instead of conforming to a single role model, Ibarra (2000) revealed, that individuals tend to observe multiple role models, selectively adopting aspects of their behaviors to create and construct an ideal self. The integration of specific attributes from multiple role models to create a composite global role model involves constructing a representation of an individual's desired future self, combining characteristics and behaviors drawn from various influential figures (Gibson, 2003). This finding aligns with Higgins and Thomas (2001) who posited that having multiple developmental relationships is thought to be a more effective strategy for individuals than focusing on a limited number of dominant people. Also, Gibson and Barron (2003) found that individuals benefit from multiple, rather than one predominant fostering interaction which suggests that a greater range and diversity of relationships increases the quality and variety of information available to individuals, increasing their chances of career advancement. This is due to the fact that multiple role models can provide a portfolio of varied skills, rather than one homogenous package (Ibarra, 1999). Therefore, the concept of a singular, overarching role model was eschewed in favor of a more nuanced approach, whereby specific lessons were derived from a variety of role models, encompassing both positive and negative examples (Gibson, 2003).

2.2 Role Models in Leadership Development

Leadership development is often viewed as an individual endeavor, focusing on traits and behaviors (Day et al, 2014). Building on the foundational work of Day (2000), researchers have explored various perspectives, including experiential learning (McCall, 2004), developmental trajectories (Lord and Hall, 2005), the role of social capital (Bilhuber Galli and Müller-Stewens, 2012), and the influence of temporal dynamics and hierarchical levels on leadership growth (Day and Dragoni, 2015). In addition, research on leadership training (Lacerenza et al, 2017), development programs (Vongswasdi et al, 2023), and adult learning processes (Scholtz, 2023, 2024) has deepened our understanding of leadership development.

Leadership development is defined as a social process that builds human capital, i.e. enhancing individual skills and knowledge (Day, 2000), and social capital, i.e. fostering relationships, trust, and networks (Grandy and Holton, 2013). It evolves through interpersonal interactions and relational dynamics that shape leadership capabilities over time (Day, 2000). Despite the substantial body of knowledge already available, the extant literature still does not fully explain how leadership is learned. A key aspect of leadership development involves learning within social and organizational contexts (Day, 2000), including approaches such as action learning (Bilhuber Galli and Müller-Stewens, 2012), and experiential learning (Scholtz, 2024). Kempster (2006) posited that a pivotal component of leadership learning occurs within a variety of contexts and situations that facilitate learning through observation. While leadership development is not limited to formal training but rather unfolds as a complex and gradual social process, only a few studies have examined leadership learning in informal, multilevel settings, such as learning based on observing others (Kempster and Cope, 2010; Vuhuong and Edwards, 2022).

Role models have a considerable impact on the leadership development of individuals (Vuhuong and Edwards, 2022). It is often the case that individuals anchor their learning about leadership from their experience with notable persons, a process that is fundamental to the shaping of leadership perspectives (Kempster, 2006). The influence of role models is amplified when they are observed vicariously, whether or not there is actual interaction. This suggests that role modelling can serve as an important alternative to more traditional forms of leadership development (Gibson and Barron, 2003).

One essential outcome of leadership development is the leader identity (Day and Harrison, 2007), which is a subcomponent of one's overall identity specific to leadership (Miscenko et al, 2017), and represents an individuals' self-perception as a leader (Day and Dragoni, 2015).

The development of leadership capabilities extends beyond the individual growth of leaders, requiring the incorporation of organizational contexts. In order to take into account the importance of context in leadership (Johns, 2024), this study investigates role models with a primary focus on a specific organizational setting: Management Consultancies.

2.3 Leadership Development in the Context of Management Consultancies

The context of management consultancies offers a particularly well suited and distinctive setting to identify the constitution of role models in the process of leadership development. Unlike corporate firms, management consultancies operate with different structural and career dynamics that influence the acquisition and development of leadership capabilities. The nature of consulting work – characterized by project-based assignments, high client interaction, and frequent team changes (Nour et al, 2017) – creates an environment where individuals are continuously exposed to multiple potential role models at various hierarchical levels (Smets et al, 2012).

Consultants engage in short-term, customized, one-off projects, which generally extend across a few weeks to months. Each new project includes varied team compositions and leadership dynamics (Noury et al, 2017). This setting fosters continuous exposure to a variety of role models, enabling individuals to observe and internalize different leadership behaviors. As such, role models are a central aspect of leadership development in management consultancies. Also, the pyramid shaped organizational structure provides professionals with exposure to a variety of role models and leadership dynamics (Smets et al, 2012), facilitating the internalization of diverse leadership behaviors.

In contrast to conventional corporate firms, where investment in leadership development is prevalent (Bilhuber Galli and Müller-Stewens, 2012), management consultancies endeavor to enhance the expertise of the consultants by prioritizing the development of human capital in the form of technical training (Smets et al,

2017). Leadership skills, however, are primarily developed by observing successful role models within the work environment (Empson and Langley, 2017), as the following interview statements from consultants indicate:

There were no training sessions at all on the topic of leadership (MC-8)

A lot was simply observed. I mean, how the partners do it (MC-12)

Consequently, many consultants progress to more senior roles without receiving adequate formal guidance from their organization (Ibarra, 1999). Therefore, this informal learning is particularly important, as leadership behaviors are shaped by repeated exposure to various role models rather than structured interventions.

Within management consultancies, leadership development and career progression have traditionally been integral components of exposure to multiple role models across varying hierarchical levels (Smets et al, 2012), encompassing a diverse array of leadership styles (Empson and Langley, 2017). Additionally, the dual interaction with both internal senior colleagues and external clients offers an expanded set of role models (Kornberger et al, 2011), as clients often exhibit distinct leadership styles that may contrast with those within one's own company (Empson et al, 2017). Thus, it is assumed that the leadership development process in management consultancies is fundamentally shaped by role modeling. As consultants progress in their careers, they refine their leadership identities through continuous observation, evaluation, and selective adoption of leadership behaviors exhibited by the role models around them (Ibarra, 1999). Given that role models serve as a critical reference point for leadership development, it is pertinent to investigate the characteristics of role models in this domain.

2.4 Research Gap and Question

The initial question posed in the role modeling process appears to be "With whom can I identify with?" (Eriksson-Zetterquist, 2008). When confronted with a multitude of role models, each with a combination of positive and negative traits, individuals tend to formulate a composite role model to emulate, based on what they have observed (Gibson, 2003). In the extant literature, the process of role modeling has been thoroughly discussed as a part of organizational socialization, and workplace identity construction (Eriksson-Zetterquist, 2008). To date, however, the subject of role modeling has received limited attention in the domain of leadership development. It has been asserted that people of outstanding achievements, access, and potential career trajectories serve as role models to other individuals (Gibson, 2003; Ibarra, 1999; Lockwood and Kunda, 1997), thus representing a critical component in an individual's performance enhancement (Gibson and Barron, 2003) and leadership development in organizational contexts (Vuhuong and Edwards, 2022). Notably, role models have been identified as being especially important for developing interpersonal skills (Javidan et al, 1995). According to Gibson (2003), role models are observed for broader aspects of social role rather than more limited tasks or skills. However, the precise nature of a role model in observational leadership development remains unclear, even if these findings indicate that role modeling is an optimal method for leadership development. The present study therefore aims to address this research gap by investigating the research question: *What characteristics and behaviors define role models in the field of observational leadership development?* In order to explore this question, the study places particular emphasis on management consultancies as their distinctive environment is conducive to observing leader role models. The goal is to develop a cross-organizational framework of characteristics that define role models in the field of observational leadership development.

3. Methodology

Considering the explorative aim of this study, a qualitative multiple case study design was conducted (Yin, 2018). To conduct the analysis, three distinct types of organizational career trajectories were selected as cases: (1) careers rooted in management consultancies, (2) careers situated within corporate firms, and (3) careers involving a crossover from consulting to corporate settings. The primary focus lies on management consultancies, as their unique setting creates an environment conducive to the observation of the salient attributes of leader role models. In addition, corporate firms and crossover trajectories were included to broaden the analytical scope of this study. Their inclusion allows for the identification of consistent role model characteristics across diverse contexts. The research process followed an inductive qualitative approach, thereby enabling the emergence of patterns and themes from the data. Semi-structured interviews were conducted across all three career trajectories, using tailored interview guides for each case.

A total of 35 semi-structured interviews were conducted across the three cases: 15 within management consultancies, ten within corporate firms, and ten within the crossover trajectory. Participants were recruited

from Germany, Austria and Switzerland. It is noteworthy that all interviews were conducted in German, and relevant quotations have been translated into English for the sake of clarity and conciseness in reporting. The age of the participants ranged from 27 to 57 years ($M = 35,7$ years). Of the total sample, three participants identified as female, representing 20.0% of the total. In cases (1) and (2), which pertain to management consultancy and corporate firm, respectively, interviewees held managerial positions with professional experience spanning from one and a half to seven years. In case (3), relating to crossover trajectories, the interviewees occupied senior positions, such as vice president and C-level roles. Their professional backgrounds included management consultancy experience ranging from three to ten years and corporate experience ranging from one to twenty years.

The interviews were analyzed using the inductive thematic analysis procedure described by Braun and Clarke (2006).

4. Findings, Discussion, Implications, and Limitations

4.1 Findings

For each case, a particular definition of a leader role model was identified, which were then combined to formulate an overarching definition: “A leader role model embodies professional excellence, integrity, and transparent communication. Through authentic adherence to values, they provide orientation, cultivate trust, and facilitate the professional and personal development of others, while maintaining space for individual autonomy”.

The empirical analysis of the data resulted in a coherent, cross-organizational framework with six aggregated dimensions – *Leadership*, *Empowerment*, *Inter-Relation*, *Communication*, *Professional Competence*, and *Management* – which capture the essential characteristics that interviewees associated with leader role models. Each dimension is underpinned by distinct sub-themes, reflecting both the personal qualities and the concrete practices that inspire followers and shape their own leadership aspirations.

Leadership encompasses the qualities that make individuals credible, inspiring, and influential, combining integrity, strategic foresight, and adaptability to mobilize others toward shared goals.

Empowerment refers to the practices through which leaders enable others to reach their potential, take initiative, and perform optimally, while providing support, protection, and space for autonomy.

The dimension *Inter-Relation* highlights the social and relational competencies necessary for building trust, fostering collaboration, and maintaining respectful, participatory connections within teams.

Communication involves clear, sincere, and interactive exchange that promotes understanding, trust, and alignment, emphasizing transparency, active listening, and constructive dialogue.

Professional Competence represents the knowledge, skills, and expertise that establish credibility and authority, enabling leaders to guide others effectively through strategic insight and accumulated experience.

Finally, *Management* captures the operational and organizational capabilities required to translate vision into coordinated action, maintain structure, and ensure accountability in achieving objectives.

By revisiting the framework at this point, the study underscores its integrative nature: it is not the isolated presence of any single trait, but rather the interplay of these dimensions that defines exemplary role models in observational leadership development. This framework thus offers a comprehensive and empirically grounded response to the research question.

4.2 Discussion

Through the analysis of interviews, this study developed a cross-organizational framework outlining the characteristics and behaviors of leader role models. This framework contributes to the existing literature on role models (Gibson, 2003) and leadership development (Day, 2000) by integrating previously separate strands of research and extending their scope beyond single organizational settings (Ibarra, 1999). It also contributes to the literature of professional service firms, especially the consulting sector, as it highlights how dynamic team structures, client interactions, and project work create unique opportunities for observational leadership development.

The identification of six aggregated dimensions with underlying sub-themes demonstrates that leader role models exert a substantial influence on the development of leadership skills individuals (Vuhuong and

Edwards, 2022). Importantly, the findings underscore that leadership development is fundamentally interpersonal (Day and Dragoni, 2015), highlighting the role of observational leadership learning as a key mechanism alongside action learning (Bilhuber Galli and Müller-Stewens, 2012) and experiential learning (Scholtz, 2024). This supports and extends Bandura's social learning theory (Bandura, 1971), which emphasizes development through observation, showing how role models facilitate leadership growth in practical organizational contexts.

4.3 Implications

This research offers practical implications for leadership development strategies, especially within professional service firms. By identifying the traits perceived as most influential, organizations can more effectively shape onboarding, staffing, and coaching to support early career development. Theoretically, the study contributes to the leadership literature by proposing a taxonomy of role model traits specific to observational learning environments.

4.4 Limitations

The study's limitations include a relatively small and regionally focused sample, as well as reliance on retrospective accounts that may be subject to selective memory. As data collection is still ongoing, all findings should be considered provisional.

Ethics declaration: This study was conducted in accordance with ethical standards, with informed consent obtained from all participants. No ethical issues were encountered.

AI declaration: As non-native English speaker, AI-based tools (e.g., DeepL, Grammarly) were used to support spelling and grammar refinement. These tools were used solely to improve linguistic clarity and did not affect the manuscript's content.

References

- Andriopoulos, C., and Slater, S. (2013). Exploring the landscape of qualitative research in international marketing. *International Marketing Review*, 30(4), 384–412. <https://doi.org/10.1108/IMR-03-2012-0061>
- Aronson, E. (1999). *The Social Animal* (8th ed.). New York: Worth.
- Bandura, A. (1971). *Social learning theory*. New York: General Learning Press.
- Bilhuber Galli, E., and Müller-Stewens, G. (2012). How to build social capital with leadership development: Lessons from an explorative case study of a multibusiness firm. *The Leadership Quarterly*, 23(1), 176–201. <https://doi.org/10.1016/j.leaqua.2011.11.014>
- Braun, V., and Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Cunningham, J. B., and Eberle, T. (1993). Characteristics of the Mentoring Experience: A Qualitative Study. *Personnel Review*, 22(4), 54–66. <https://doi.org/10.1108/00483489310042699>
- Day, D. V. (2000). Leadership development. *The Leadership Quarterly*, 11(4), 581–613. [https://doi.org/10.1016/S1048-9843\(00\)00061-8](https://doi.org/10.1016/S1048-9843(00)00061-8)
- Day, D. V., and Dragoni, L. (2015). Leadership Development: An Outcome-Oriented Review Based on Time and Levels of Analyses. *Annual Review of Organizational Psychology and Organizational Behavior*, 2(1), 133–156. <https://doi.org/10.1146/annurev-orgpsych-032414-111328>
- Day, D. V., Fleenor, J. W., Atwater, L. E., Sturm, R. E., and McKee, R. A. (2014). Advances in leader and leadership development: A review of 25 years of research and theory. *The Leadership Quarterly*, 25(1), 63–82. <https://doi.org/10.1016/j.leaqua.2013.11.004>
- Day, D. V., and Harrison, M. M. (2007). A multilevel, identity-based approach to leadership development. *Human Resource Management Review*, 17(4), 360–373. <https://doi.org/10.1016/j.hrmr.2007.08.007>
- Empson, L. (2020). Ambiguous authority and hidden hierarchy: Collective leadership in an elite professional service firm. *Leadership*, 16(1), 62–86. <https://doi.org/10.1177/1742715019886769>
- Empson, L., and Langley, A. (2017). Leadership and Professionals. In L. Empson, D. Muzio, J. P. Broschak, and C. R. Hinings (Eds.), *Oxford handbooks. The Oxford handbook of professional service firms* (p. 163–188). Oxford: Oxford University Press.
- Empson, L., Muzio, D., Broschak, J. P., and Hinings, C. R. (Eds.) (2017). *Oxford handbooks. The Oxford handbook of professional service firms* (First published in paperback). Oxford: Oxford University Press.
- Eriksson-Zetterquist, U. (2008). Gendered role modelling—A paradoxical construction process. *Scandinavian Journal of Management*, 24(3), 259–270. <https://doi.org/10.1016/j.scaman.2008.05.002>
- Gibson, D. E. (2003). Developing the Professional Self-Concept: Role Model Construals in Early, Middle, and Late Career Stages. *Organization Science*, 14(5), 591–610. <https://doi.org/10.1287/orsc.14.5.591.16767>
- Gibson, D. E. (2004). Role models in career development: New directions for theory and research. *Journal of Vocational Behavior*, 65(1), 134–156. [https://doi.org/10.1016/S0001-8791\(03\)00051-4](https://doi.org/10.1016/S0001-8791(03)00051-4)

- Gibson, D. E., and Barron, L. A. (2003). Exploring the impact of role models on older employees. *Career Development International*, 8(4), 198–209. <https://doi.org/10.1108/13620430310482571>
- Grandy, G., and Holton, J. (2013). Leadership development needs assessment in healthcare: a collaborative approach. *Leadership and Organization Development Journal*, 34(5), 427–445. <https://doi.org/10.1108/LODJ-11-0090>
- Higgins, M. C., and Thomas, D. A. (2001). Constellations and careers: toward understanding the effects of multiple developmental relationships. *Journal of Organizational Behavior*, 22(3), 223–247. <https://doi.org/10.1002/job.66>
- Ibarra, H. (1999). Provisional Selves: Experimenting with Image and Identity in Professional Adaptation. *Administrative Science Quarterly*, 44(4), 764–791. <https://doi.org/10.2307/2667055>
- Ibarra, H. (2000). Making Partner: A Mentor's Guide to the Psychological Journey. *Harvard Business Review*, 78(78), 146–155. Retrieved from <https://hbr.org/2000/03/making-partner-a-mentors-guide-to-the-psychological-journey>
- Javidan, M., Bemmels, B., Devine, K. S., and Dastmalchian, A. (1995). Superior and Subordinate Gender and the Acceptance of Superiors as Role Models. *Human Relations*, 48(11), 1271–1284. <https://doi.org/10.1177/001872679504801102>
- Johns, G. (2024). The context deficit in leadership research. *The Leadership Quarterly*, 35(1), 101755. <https://doi.org/10.1016/j.leaqua.2023.101755>
- Kempster, S. (2006). Leadership learning through lived experience: A process of apprenticeship? *Journal of Management and Organization*, 12(1), 4–22. <https://doi.org/10.1017/S1833367200004132>
- Kempster, S., and Cope, J. (2010). Learning to lead in the entrepreneurial context. *International Journal of Entrepreneurial Behavior and Research*, 16(1), 5–34. <https://doi.org/10.1108/13552551011020054>
- Kornberger, M., Justesen, L., and Mouritsen, J. (2011). "When you make manager, we put a big mountain in front of you": An ethnography of managers in a Big 4 Accounting Firm. *Accounting, Organizations and Society*, 36(8), 514–533. <https://doi.org/10.1016/j.aos.2011.07.007>
- Lacerenza, C. N., Reyes, D. L., Marlow, S. L., Joseph, D. L., and Salas, E. (2017). Leadership training design, delivery, and implementation: A meta-analysis. *The Journal of Applied Psychology*, 102(12), 1686–1718. <https://doi.org/10.1037/apl0000241>
- Lockwood, P., and Kunda, Z. (1997). Superstars and me: Predicting the impact of role models on the self. *Journal of Personality and Social Psychology*, 73(1), 91–103. <https://doi.org/10.1037/0022-3514.73.1.91>
- Lord, R. G., and Hall, R. J. (2005). Identity, deep structure and the development of leadership skill. *The Leadership Quarterly*, 16(4), 591–615. <https://doi.org/10.1016/j.leaqua.2005.06.003>
- McCall, M. W. (2004). Leadership development through experience. *Academy of Management Perspectives*, 18(3), 127–130. <https://doi.org/10.5465/ame.2004.14776183>
- Miscenko, D., Guenter, H., and Day, D. V. (2017). Am I a leader? Examining leader identity development over time. *The Leadership Quarterly*, 28(5), 605–620. <https://doi.org/10.1016/j.leaqua.2017.01.004>
- Nordenflycht, A. (2010). What Is a Professional Service Firm? Toward a Theory and Taxonomy of Knowledge-Intensive Firms. *Academy of Management Review*, 35(1), 155–174. <https://doi.org/10.5465/amr.35.1.zok155>
- Noury, L., Gand, S., and Sardas, J.-C. (2017). Tackling the work-life balance challenge in professional service firms: The impact of projects, organizing, and service characteristics. *Journal of Professions and Organization*, jow010. <https://doi.org/10.1093/jpo/jow010>
- Scarnati, J. T. (2002). Leaders as role models: 12 rules. *Career Development International*, 7(3), 181–189. <https://doi.org/10.1108/13620430210414892>
- Scholtz, G. (2023). Leadership development perspective of adult learning philosophies. *The International Journal of Management Education*, 21(2), 100792. <https://doi.org/10.1016/j.ijme.2023.100792>
- Scholtz, G. (2024). Exploratory study of the humanistic philosophy of adult learning as principal philosophy for leadership development. *The International Journal of Management Education*, 22(2), 100949. <https://doi.org/10.1016/j.ijme.2024.100949>
- Slater, P. (1961). Toward a Dualistic Theory of Identification. *Merrill-Palmer Quarterly*, (7), 113–126.
- Smets, M., Morris, T., and Malhotra, N. (2012). Changing career models and capacity for innovation in professional services. In M. Reihlen and A. Werr (Eds.), *Research Handbooks in Business and Management series. Handbook of research on entrepreneurship in professional services* (pp. 127–147). Cheltenham: Edward Elgar.
- Smets, M., Morris, T., Nordenflycht, A., and Brock, D. M. (2017). 25 years since 'P2': Taking stock and charting the future of professional firms. *Journal of Professions and Organization*, 4(2), 91–111. <https://doi.org/10.1093/jpo/iox006>
- Speizer, J. J. (1981). Role Models, Mentors, and Sponsors: The Elusive Concepts. *Signs: Journal of Women in Culture and Society*, 6(4), 692–712. <https://doi.org/10.1086/493841>
- Vongswasdi, P., Leroy, H., Claeys, J., Anisman-Razin, M., and van Dierendonck, D. (2023). Beyond Developing Leaders: Toward a Multinarrative Understanding of the Value of Leadership Development Programs. *Academy of Management Learning and Education*, 23(1), 8–40. <https://doi.org/10.5465/amle.2021.0231>
- Vuong, J., and Edwards, G. (2022). Exploring the leadership development journey of SME owner-managers. *Journal of Management Development*, 41(2), 53–69. <https://doi.org/10.1108/JMD-10-2021-0271>
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (Sixth edition). Los Angeles, London, New Delhi, Singapore, Washington DC, Melbourne: SAGE.

Masters Research Papers

Kata Coaching and Organizational Factors for Engagement and Performance: A Literature Review

Jéssica da Silva Soares Cunha, June Marques Fernandes and Luciana Paula Reis

Universidade Federal de Ouro Preto, João Monlevade, Brazil

jessica.cunha@aluno.ufop.edu.br

june@ufop.edu.br

lucianapaula@ufop.edu.br

Abstract: Organizational environments undergoing cultural transformation require not only the support of managers and leaders, but also the active involvement of various stakeholders, such as employees, customers, and suppliers. In this context, kata coaching emerges as an effective approach for developing an organizational culture focused on learning and continuous improvement, reinforcing the role of leadership as a facilitator of transformation and strategic decisions. However, there is a gap in research on how specific kata coaching approaches interact with organizational factors to promote greater team engagement and performance. This study seeks to answer the research question: Which kata coaching leadership competencies influence the environmental factors that promote employee engagement and performance? To fill this gap, a systematic literature review was conducted, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methodology. The review was conducted by screening five large academic databases. From an initial total of six hundred and eight articles, thirty-five were selected based on the defined inclusion criteria and four additional studies were incorporated to enrich the analysis. The results indicate that performance and engagement are influenced by both leadership competencies and environmental factors. Leadership competencies from kata coaching are often associated with improved engagement, and performance supervision includes analytical ability, coaching, active listening, interpersonal relationship, communication, appreciation of employees' physical and mental well-being. Key organizational factors include transparent information sharing, psychological safety, recognition, and encouraging open communication. This study contributes to the literature by specifically addressing how leadership competencies from kata coaching and specific workplace dynamics jointly shape employee outcomes. Furthermore, it highlights the reciprocal nature of the influence of leadership and environmental context on team success. The results of this study can inform leadership development programs and strategic initiatives aimed at creating adaptive and high-performance organizational cultures—especially in the context of the accelerated transformation brought about by Industry 4.0.

Keywords: Kata coaching, Leadership development, Organizational change, Employee engagement, PRISMA

1. Introduction

The leadership competencies of kata coaching and the factors of the organizational environment are considered essential elements related to employee engagement and performance (Chirinos et al., 2025). Specifically, when evaluating these competencies, it becomes evident that they are fundamental to organizational change processes, being described either as a condition for success or, conversely, as a factor in failure. Moreover, they are deemed essential for fostering an environment conducive to learning (Holmemo; Ingvasden; Powell, 2023). Investing in the development of these competencies serves as a cornerstone for managers to influence their team members through interactions and attitudes, promoting involvement and engagement in the organization's continuous improvement processes, as well as enhancing team performance (Netland; Powell; Hines, 2020).

Thus, leaders who develop competencies associated with kata coaching can contribute to the creation of an environment that fosters employee engagement and, consequently, enhances organizational performance. Engagement is understood as the active participation of individuals in organizational processes, with autonomy to identify and solve challenges independently (Netland; Powell; Hines, 2020). For this to occur, employees must feel motivated and see themselves as integral parts of the work environment, carrying out their tasks to the best of their abilities. Performance, in turn, refers to the ability to execute tasks with speed and quality, directly linked to goal achievement and the pursuit of operational excellence. It is believed that certain organizational environment factors also significantly impact the development of a context that fosters engagement and high performance. For example, in organizations that adopt a culture of continuous improvement, it is common for managers to adopt a coaching-based leadership style, encouraging their team members to face challenges that stimulate reflection (Kristensen; Saabye; Edmondson, 2022).

About Toyota Kata methodology, Masri and Matkó (2022, p.42) argue: "One of the key factors for sustainable continuous improvement and organizational success is to consider and influence the behavioral and habitual aspects of managers and employees, which can be improved through the application of Toyota Kata." Thus, the Lean methodology and the Toyota Kata methodology differ in their focus: while Lean aims at reducing waste in

processes, Toyota Kata is oriented toward creating routines that support problem-solving and achieving results, allowing and encouraging the participation of all team members and learning through experimentation. However, it is important to emphasize that both methods pursue continuous improvement.

Masri and Matkó (2022) further note that the Improvement Kata and the Coaching Kata can be crucial for developing critical thinking and problem-solving skills in all members of the organization, through learning processes that involve direct observations and constant “checks” on the theories formulated and later tested, as in the Plan-Do-Check-Act (PDCA) method. In this context, Figure 1 establishes and differentiates the relationship between the Improvement Kata and the Coaching Kata. In the Improvement Kata, the routine to be followed to achieve a common objective is established (four steps shown in the figure below), while the Coaching Kata accompanies these steps, ensuring that the method is applied correctly and assisting in its implementation. From this perspective, Tortorella et al. (2021) suggest in their study that there is difficulty in replicating Toyota methodologies in other companies due to differences in organizational cultures and types of leadership.

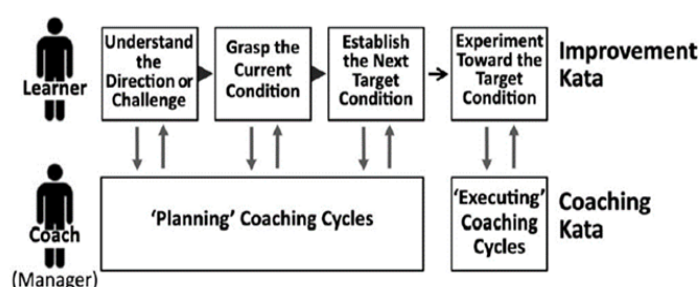


Figure 1: Relationship between Improvement Kata and Coaching Kata. Source: Michels, Forcellini and Fumagali (2019)

In this context, using a systematic literature review (SLR), this research aims to fill the existing gap regarding how specific kata coaching approaches interact with organizational factors to promote greater team engagement and performance. The guiding research question is: Which kata coaching leadership competencies influence the environmental factors that promote employee engagement and performance? Figure 2 presents the objective of this research.

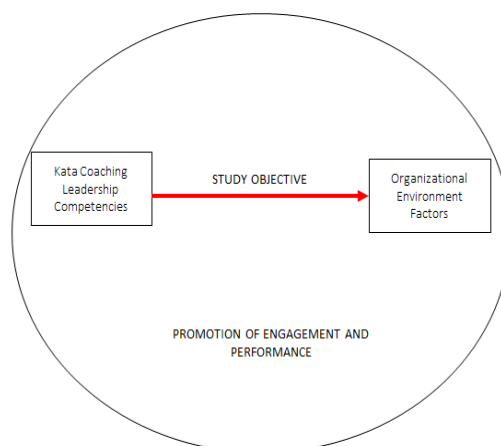


Figure 2: Research objective. Source: The authors

Given this, identifying kata coaching leadership competencies in organizational leaders becomes essential for understanding their influence on aspects such as team engagement, employee performance, and support for organizational transformation. This investigation aims to assess which competencies are strongly associated with the organizational factors that, according to the literature, influence the formation of engaged, high-performing teams. In this way, the results of this study are expected to contribute to the formulation of a leadership persona to be tested in different sectors and adapted according to the needs and goals of each organization. Furthermore, organizations may direct investments toward training and methodologies aimed at developing and enhancing leadership competencies in kata coaching, especially those associated with organizational environments that promote engagement and high performance.

2. Methodology

The methodology adopted in this study was the Systematic Literature Review (SLR), which is seen as a way to present what already exists in the literature on the researched topic, as well as to identify existing gaps (Cauchick-Miguel, 2019). For the construction of the SLR, the data sources used were the Emerald, Web of Science (WoS), Scopus, and CAPES databases, in order to include studies from different countries and contexts. Once the databases were defined, the selected keywords for the search were “Coaching Kata,” “Toyota Kata,” “Continuous Improvement,” “Lean Leadership,” and “Culture.” These terms were searched throughout the entire text of the documents.

The selection criteria included articles published between 2019 and 2024, open access articles, and fully published studies. This ensured the evaluation of recent content in its entirety. This step resulted in the identification of 65 articles. After importing the data into Mendeley software, 11 duplicate articles were excluded. Subsequently, the reference database was converted to a .xslm format and transferred to Excel to facilitate the reading of titles and abstracts. This enabled a preliminary analysis, followed by a full reading of the articles, resulting in 24 articles being selected for the construction of the literature review.

After reading and analyzing the selected articles, the research theme was further defined. As a result, it became necessary to conduct a new search for articles that could complement and encompass the new topics to be addressed. In this context, a combination of several keywords was used based on the study’s objective, and the following search string was determined: {("Coaching Kata" OR "Kata") AND ("skills") AND ("Engagement") AND ("Leaders" OR "Led") AND ("Team")}. For this new search stage, the CAPES, Emerald, and Science Direct databases were chosen. Initially, 94 articles were found; after applying a filter limiting the search to the period between 2019 and 2025, 69 articles remained for evaluation.

Next, the articles were exported to Mendeley software, where 4 duplicates were identified in relation to the previous dataset. After removing these duplicates, the titles and abstracts of the selected studies were analyzed, and 16 articles were selected for full analysis. Of these, 11 were found to be directly related to the present study, and an additional 4 complementary studies were added. These were selected through the reading of related articles that contributed to deepening and expanding the understanding of the research subject. Figure 3 illustrates this process.

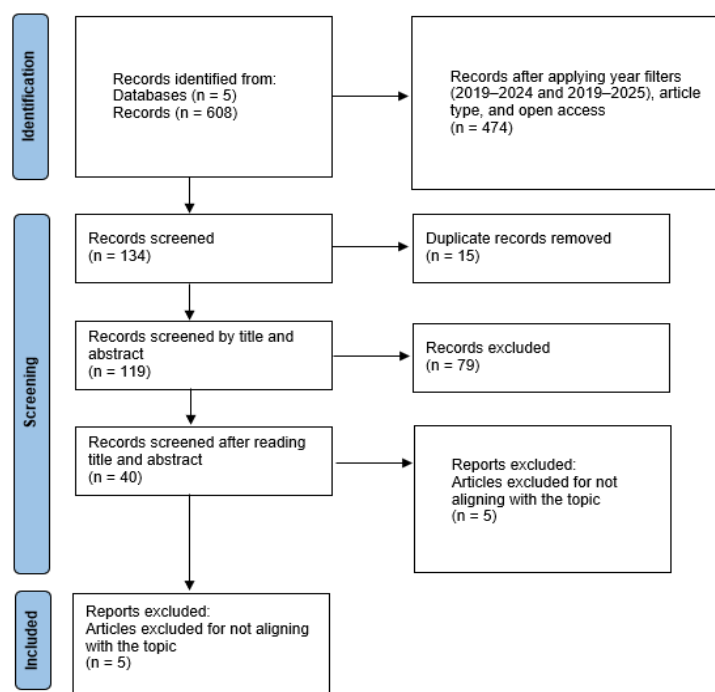


Figure 3: Data from the systematic literature review. Source: Adapted from PRISMA

After analyzing the literature, the study aimed to identify the kata coaching competencies and the organizational environment factors that influence team engagement and performance through content analysis. Subsequently, a semantic analysis was conducted based on the description of each keyword identified as a kata coaching competency or a factor influencing engagement and performance. By understanding the meaning and context

of each keyword, the study sought to correlate them, forming organizational contexts that could justify the relationships found. Finally, a mind map was created to better visualize the relationships identified.

3. Results and Analysis

3.1 Kata Coaching Leadership Competencies That Affect Engagement and Performance

Kata coaching leadership competencies are essential for inspiring followers through a relationship built on respect and trust (Mangaroo-Pillay; Coetzee, 2020; Leite; Radnor; Bateman, 2022). Such leaders can be compared to those in religious practices, since, according to some authors, religious and organizational leaders share common characteristics, such as passion, motivation, and attentiveness to the needs of others (Hines et al., 2022). Studies indicate that the leader's behavior exerts a direct influence on the team: while a positive attitude strengthens the work environment, a hostile and aggressive temperament can cause physical and emotional stress, negatively impacting the performance of followers (Ljungblom; Lennerfors, 2021; Castillo, 2022).

To promote a work environment conducive to the development of high-performance teams, it is essential that leaders act as facilitators of learning. For this, they must demonstrate humility, vulnerability, and ask strategic questions to guide employees in developing problem-solving skills (Saabye; Kristensen; Wæhrens, 2022; Tan; Van Dun; Wilderom, 2024). From this perspective, competencies can be classified as: i) cognitive – related to problem-solving ability; ii) social – linked to communication skills; iii) motivational – connected to factors that awaken desire and fulfillment in leading; and iv) knowledge and expertise – referring to the leader's experience and level of education (Simões; Toledo; Lizarelli, 2024). In this context, creating emotional bonds between leaders and followers can represent an advantage for overall team performance and, consequently, for achieving operational excellence (Kharub et al., 2023; Duggan; Cormican; McDermott, 2023). That being said, Table 1 presents some of the kata coaching competencies extracted from the literature, grouped into cognitive, social and motivational skills.

Table 1: Kata Coaching Leadership Competencies

Types of Kata Coaching Leadership Competencies	Kata Coaching Leadership Competencies	Description	References
Cognitive Skills	Systematic Problem Solving	Focus on problem solving, and with that, on performing tasks methodically, paying attention to the details of each step to be executed.	Kristensen, Saabye & Edmondson (2022); Holmemo, Ingvaldsen & Powell (2023); Netland, Powell & Hines (2020); Netland, Powell & Hines (2020); Knol et al. (2022); Mogaramedi, Nel & Marnewick (2020); Van Dun & Wilderom (2021); Saabye, Powell & Coughlan (2022); Tan, Van Dun & Wilderom (2024); Michels, Forcellini & Fumagalli (2019); Knol et al. (2019); Ljungblom & Lennerfors (2021); Gaspar & Leal (2020); Saabye, Kristensen & Wæhrens (2022); Fannon, Munive-Hernandez & Campean (2022); Van Dun, Tortorella & Carminati (2023)
	Analytical Ability	Ability to handle and analyze data and facts according to dynamic scenarios contextualized with the organization's reality and the objective to be achieved.	Netland, Powell & Hines (2020); Saabye, Powell & Coughlan (2022); Hines (2022); Ljungblom & Lennerfors (2021); Gaspar & Leal (2020); Magnani et al. (2024); Van Dun, Tortorella & Carminati (2023)
Cognitive/Social Skills	Coaching	Leader with the ability to train the team, act as a learning facilitator, and promote an environment conducive to information exchange.	Kristensen, Saabye & Edmondson (2022); Netland, Powell & Hines (2020); Van Dun & Wilderom (2021); Connor & Cormican (2022); Saabye, Powell & Coughlan (2022); Tan, Van Dun & Wilderom (2024); Michels, Forcellini & Fumagalli (2019); Knol et al. (2019); Hines (2022); Ljungblom & Lennerfors (2021); Kharub et al. (2023); Gaspar & Leal (2020); Saabye, Kristensen & Wæhrens (2022); Fannon, Munive-Hernandez & Campean (2022); Magnani et al. (2024); Van Dun, Tortorella & Carminati (2023)
Social Skills	Active Listening	Ability to listen to team members frequently, giving full attention to the information shared.	Kristensen, Saabye & Edmondson (2022); Holmemo, Ingvaldsen & Powell (2023); Van Dun & Wilderom (2021); Tan, Van Dun & Wilderom (2024); Hines (2022); Hines et al. (2022); Ljungblom & Lennerfors (2021); Van Dun, Tortorella & Carminati (2023)
	Interpersonal Relationship	Interpersonal and relationship skills, linked to listening and communication.	Holmemo, Ingvaldsen & Powell (2023); Netland, Powell & Hines (2020); Mogaramedi, Nel & Marnewick (2020); Connor & Cormican (2022); Saabye, Powell & Coughlan (2022); Tan, Van Dun & Wilderom (2024); Leite, Radnor & Bateman (2022); Hines (2022); Hines et al. (2022); Ljungblom & Lennerfors (2021); Fannon, Munive-Hernandez & Campean (2022); Magnani et al. (2024); Van Dun, Tortorella & Carminati (2023)
	Communication	Ability to communicate clearly, conveying information in a way that all interlocutors understand what is being shared.	Holmemo, Ingvaldsen & Powell (2023); Netland, Powell & Hines (2020); Knapic, Rusjan & Božić (2023); Van Dun & Wilderom (2021); Connor & Cormican (2022); Tan, Van Dun & Wilderom (2024); Leite, Radnor & Bateman (2022); Hines (2022); Hines et al. (2022); Ljungblom & Lennerfors (2021); Gaspar & Leal (2020); Chirinos et al. (2025); Chirinos et al. (2025); Magnani et al. (2024); Van Dun, Tortorella & Carminati (2023); Van Dun, Tortorella & Carminati (2023)
Motivational Skill	Appreciation of Employees' Physical and Mental Well-being	Leader concerned with whether workers are fit and able to perform their jobs, and who regularly checks job demands to avoid possible overload.	Rosa, Marolla & McDermott (2023); Hines (2022); Hines et al. (2022); Ljungblom & Lennerfors (2021); Ljungblom & Lennerfors (2021); Magnani et al. (2024)

Source: The authors.

Therefore, when evaluating the leadership competencies of kata coaching, it is observed that they are closely linked to personality and interpersonal factors, rather than technical skills that require extensive academic background. This factor can be considered a potential bottleneck for the implementation of kata coaching, as

personal competencies may vary according to aspects such as culture, experience, education, and age group, for example.

3.2 Environmental Factors Affecting Engagement and Performance

Operational excellence is defined as a management model whose central pillar is the continuous improvement of processes (Villalba-Diez et al., 2019). In this context, dynamic capability supports high organizational performance, with greater investment in this dynamism increasing the chances for a company to stand out among competitors (Furnival; Boaden; Walshe, 2019). Additionally, the importance of managing work time is highlighted, since overload can represent an obstacle to motivation and, consequently, to high performance. Conversely, promoting a learning-friendly environment has been shown to be a stimulating factor for employees (Rosa; Marolla; McDermott, 2023). Information sharing between managers and subordinates also emerges as a strategic element, strengthening trust between leaders and followers (Hines, 2022). This practice contributes to the development of a sense of organizational belonging, leading employees to engage more intensely in their activities (Rodrigues et al., 2020).

Castillo (2022) presents in his study the process of acceptance of new methodologies and tools implemented in the organization. In the initial phase of the change, employees showed resistance. In a second phase, they became open to negotiation, requiring project leaders to seek convincing arguments to promote employee adherence. As a result, there was acceptance of the proposed changes and, consequently, increased productivity and performance in the activities carried out.

Table 2: Organizational Environmental Factors Influencing Engagement and Performance

Factors Influencing Engagement and Performance	Description	References
Information Sharing	Sharing of organizational processes, improvements, new procedures, and factors that may affect the organization's environment and culture.	Rodrigues et al. (2020); Netland, Powell & Hines (2020); Knapic, Rusjan & Božić (2023); Van Dun & Wilderom (2021); Fannon, Munive-Hernandez & Campean (2022); Januszek, Netland & Furlan (2024); Magnani et al. (2024); Van Dun, Tortorella & Carminati (2023)
Sense of Belonging	Feeling of being valued, i.e., being an important part of the company. The employee feels that their work contributes to the organizational goals.	Rodrigues et al. (2020); Mogaramedi, Nel & Marnewick (2020); Hines (2022); Kharub et al. (2023); Magnani et al. (2024); Van Dun, Tortorella & Carminati (2023)
Psychological Safety to Share Ideas and Opinions	Leaders and managers encourage the sharing of information and make employees feel comfortable expressing ideas and opinions.	Kristensen, Saabye & Edmondson (2022); Saabye, Powell & Coughlan (2022); Leite, Radnor & Bateman (2022); Michels, Forcellini & Furnagali (2019); Hines (2022); Ljungblom & Lennerfors (2021); Kharub et al. (2023); Fannon, Munive-Hernandez & Campean (2022); Januszek, Netland & Furlan (2024); Van Dun, Tortorella & Carminati (2023)
Team Meetings	Regular team meetings so that members can share difficulties, challenges, gains, and alignments.	Netland, Powell & Hines (2020); Knol et. al (2022); Van Dun & Wilderom (2021); Ljungblom & Lennerfors (2021); Saabye, Kristensen & Wæhrens (2022); Januszek, Netland & Furlan (2024); Van Dun, Tortorella & Carminati (2023)
Daily Involvement of All Employees in Continuous Improvement Projects	Implementation of training and continuous improvement programs at operational, tactical, and strategic levels.	Netland, Powell & Hines (2020); Knol et. al (2022); Tan, Van Dun & Wilderom (2024); Ljungblom & Lennerfors (2021); Saabye, Kristensen & Wæhrens (2022); Magnani et al. (2024); Van Dun, Tortorella & Carminati (2023)
Team Autonomy	Granting decision-making autonomy to ensure agility in certain process steps.	Netland, Powell & Hines (2020); Knapic, Rusjan & Božić (2023); Duggan, Cormican & McDermott (2023); Hines et al. (2022); Ljungblom & Lennerfors (2021); Kharub et al. (2023); Saabye, Kristensen & Wæhrens (2022); Van Dun, Tortorella & Carminati (2023)
Rewards	Creation of employee appreciation programs with awards to stimulate greater participation, engagement, and performance in projects.	Knapic, Rusjan & Božić (2023); Connor & Cormican (2022); Rosa, Marolla & McDermott (2023); Hines (2022); Van Dun, Tortorella & Carminati (2023)
Training Programs	Provision of quality training programs for employees.	Knapic, Rusjan & Božić (2023); Van Dun & Wilderom (2021); Connor & Cormican (2022); Tan, Van Dun & Wilderom (2024); Hilverda et. al (2023); Rosa, Marolla & McDermott (2023); Hines (2022); Kharub et al. (2023); Fannon, Munive-Hernandez & Campean (2022); Chirinos et al. (2025); Magnani et al. (2024); Van Dun, Tortorella & Carminati (2023); Bader (2024)
Support	Providing feedback, being receptive to suggestions, and supporting personal matters when needed.	Knapic, Rusjan & Božić (2023); Connor & Cormican (2022); Leite, Radnor & Bateman (2022); Tan, Van Dun & Wilderom (2024); Hines et al. (2022); Kharub et al. (2023); Van Dun, Tortorella & Carminati (2023); Bader (2024)
Job Design	Mapping the tasks performed by each employee, defining clear objectives, and using performance key performance indicators (KPIs).	Knapic, Rusjan & Božić (2023); Tan, Van Dun & Wilderom (2024); Leite, Radnor & Bateman (2022); Fannon, Munive-Hernandez & Campean (2022); Chirinos et al. (2025); Januszek, Netland & Furlan (2024); Van Dun, Tortorella & Carminati (2023)

Source: The authors.

From this perspective, Table 2 presents some environmental factors identified in the literature as drivers of engagement and increased team performance. By conducting a brief analysis of the environmental factors that influence organizational engagement and performance, it is noticeable that there are factors related to individual satisfaction (rewards, support, training opportunities, job design, feeling a sense of belonging) as well as factors related to team satisfaction, which require the involvement of all employees (autonomy, meetings, psychological safety to share ideas and opinions, engagement of all employees in projects). This scenario reinforces the idea that building an engaged and high-performing environment depends on a critical view of each individual. However, it is also necessary to consider strategies that ensure each employee functions as part

of a mechanism connected to the whole, guaranteeing that organizational processes operate in an integrated manner.

3.3 Discussion

Figure 4 represents an analysis of the relationships between kata coaching leadership competencies and organizational environmental factors that can influence team engagement and high performance, as identified in the literature. This relationship was established through semantic analysis of the keywords found and presented in Tables 1 and 2.

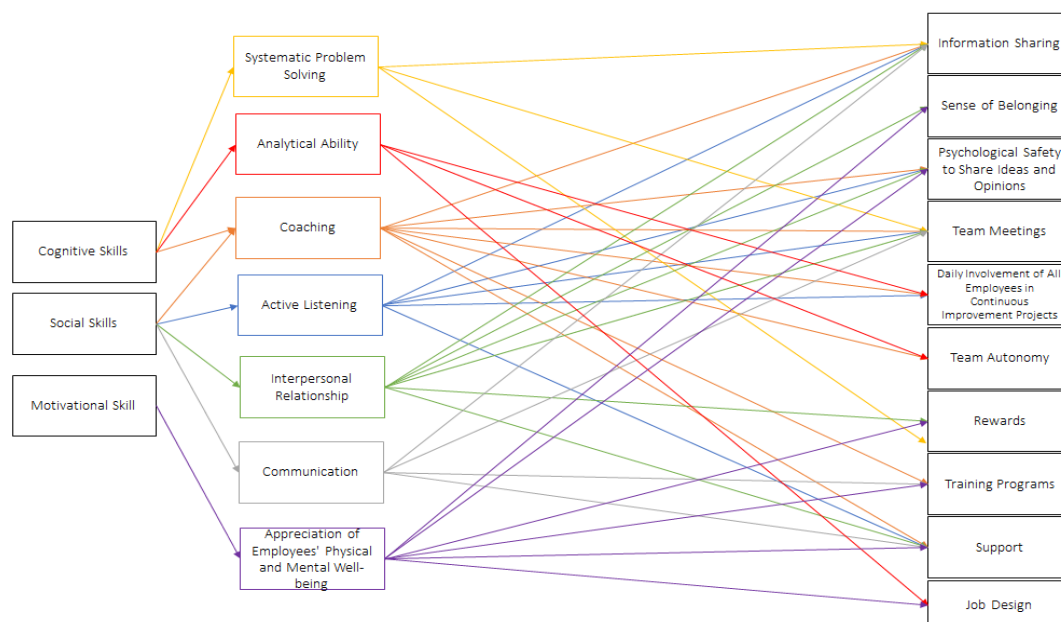


Figure 4: Relationship between Coaching Characteristics and Influential Factors on Engagement and Performance. Source: The authors

Thus, it is understood that active listening is a social skill directly associated with a leader's ability to foster an environment conducive to information sharing. This occurs through conducting team meetings and involving employees in organizational projects, making them feel valued, supported, and confident to express their ideas and opinions. The coaching leader is seen as a facilitator of learning and, therefore, should possess cognitive and social competencies that promote knowledge dissemination through training, creating an environment that allows team autonomy, and encouraging employees' active participation in organizational initiatives (Kristensen; Saabye; Edmondson, 2022). Furthermore, leadership aimed at engaged, high-performing teams should be task-oriented, with cognitive competencies that enable systematic problem-solving, using strategies such as information sharing, alignment meetings, and clear definition of tasks and goals (Holmemo; Ingvaldsen; Powell, 2023).

Social skills, particularly those related to communication and interpersonal relationships, are associated with building an environment favorable to dialogue and information sharing. This environment fosters employee inclusion, allowing their ideas to be heard and valued. To reinforce this sense of belonging, it is recommended to adopt rewards, in addition to promoting meetings and training sessions as tools for capacity building and strengthening the ecosystem of interaction and experience exchange (Rodrigues et al., 2020). A leader's analytical ability, as a cognitive skill, is essential for deeply understanding team members and effectively mapping activities and goals, promoting greater autonomy and engagement of employees in ongoing projects, so that individuals can make decisions considering the collective outcome rather than decisions that satisfy personal objectives (Villalba-Diez et al., 2019). To build an increasingly engaged and high-performing organizational environment, it is essential that the leader values the physical and mental well-being of the team. This includes adequately assessing each employee's workload, providing training, giving constant feedback, being open to listening, offering rewards, encouraging participation, and, above all, demonstrating that the tasks performed by each individual are an essential part of the organization's processes (Castillo, 2022).

It is evident that the presence of all these kata coaching competencies, aligned with environmental factors that foster team engagement and high performance, represents a significant challenge for organizations. As emphasized by Mangaroo-Pillay and Coetzee (2022), Tortorella et al. (2021), and Knapić, Rusjan, and Božič (2023), both organizational culture and local culture are decisive factors for the success or failure of implementing new work methodologies, which constitutes a barrier that must be broadly addressed to be overcome. From this perspective, the involvement of all organizational members is highlighted by Simões, Toledo, and Lizarelli (2024), who stress the critical importance of encouraging and investing in operational leadership practices so that tools supporting process improvement are recognized and implemented from the shop floor upward, increasing the likelihood of achieving desired results. On the other hand, the existence of communication barriers across the organization can hinder the engagement of everyone involved in processes and, above all, impede clear and effective communication among members of different hierarchical levels.

Moreover, the lack of senior management support and commitment, misalignment between strategic objectives and operational goals, failures in change management, limited awareness among top management about the expected benefits of a project, and resource constraints are some of the factors that contribute to failure in organizational change environments (Bader, 2024). These issues are directly related to the difficulty of involving people in knowledge-sharing initiatives, as employees may fear losing their positions by training a colleague in the same role or worry about becoming less essential to the organization as their unique knowledge is disseminated. In addition, such involvement can be hampered by individual personality traits that conflict with the Kata coaching competencies identified in this study.

Finally, this study sought to identify, through a literature review, the kata coaching competencies and organizational environmental factors that together can promote team engagement and high performance. However, it is essential for companies to understand their own organizational reality and employee profiles in order to design strategies that both build leadership competencies and create an environment conducive to engagement and high performance. It is important to note that this model is based on literature and requires empirical testing for validation, given the dynamic nature and multiple dimensions of organizational environments, which can vary according to industry, number of employees, and regional context.

4. Final Considerations

This study aimed to conduct a Systematic Literature Review (SLR) to identify kata coaching leadership competencies and organizational environmental factors that promote team engagement and high performance, establishing the correlation between these two constructs. At the end of the analysis, 39 articles were evaluated, allowing the identification of kata coaching leadership competencies such as systematic problem-solving, analytical ability, coaching, active listening, relationship skills, effective communication, and valuing employees' physical and mental well-being.

Additionally, organizational environmental factors contributing to team engagement and high performance were identified, including information sharing, a sense of belonging to the work environment, psychological safety to express ideas and opinions, conducting team meetings, involving all employees in continuous improvement projects, team autonomy, rewards, training, leadership support, and appropriate task design. Thus, the analysis confirmed that kata coaching leadership competencies and the identified organizational environmental factors are correlated. It was also observed that many of the competencies complement each other, reinforcing the importance of investing in training programs aimed at developing these characteristics in organizational leaders. Nonetheless, it is worth highlighting that there are barriers to developing leaders with the competencies of kata coaching, as many of these are related to intrinsic personality traits of the individual. Furthermore, the same applies to environmental factors that influence engagement and performance, since they must satisfy both individual and collective needs, ensuring not only good relationships between leaders and subordinates, but also among members within the same team and across different teams.

Although the use of specific keywords guided the identification of the analyzed studies, it is recognized that this choice represents a limitation of the present research, as other combinations could reveal different results. Therefore, this limitation should be considered when interpreting the findings. As future work, empirical validation of the relationship model identified in the literature is suggested through its application in different organizational contexts, allowing verification of its adherence to practical reality and possible adjustments. This validation could contribute to building a kata coaching-based leadership persona aimed at creating organizational environments favorable to the development of lean, engaged, and high-performance teams.

Acknowledgements

The authors would like to thank the Federal University of Ouro Preto (UFOP/Brazil), the Graduate Program in Production Engineering (PPGEP), the Research Support Foundation of the State of Minas Gerais (FAPEMIG, Grant Number APQ-00951–22), the Coordination for the Improvement of Higher Education Personnel (CAPES), and the National Council for Scientific and Technological Development (CNPq) for their support and funding throughout the development of this research.

Ethics Declaration: No ethical approval was required for this study.

AI Declaration: No AI tools were used in the generation or writing of this paper.

References

- Bader, M. et al. (2024) Why do process improvement projects fail in organizations? A review and future research agenda, *International Journal of Lean Six Sigma*, 15(3), pp. 664–690.
- Castillo, C. (2022) The workers' perspective: emotional consequences during a lean manufacturing change based on VSM analysis, *Journal of Manufacturing Technology Management*, 33(9), pp. 19–39.
- Cauchick-Miguel, P. A. (2019) *Metodologia científica para engenharia*, Elsevier Brasil.
- Chirinos, O. et al. (2025) Sustaining continuous improvement programs proposition of influential elements and a maturity-benchmark model, *International Journal of Lean Six Sigma*.
- Duggan, J.; Cormican, K.; McDermott, O. (2023) Lean implementation: analysis of individual-level factors in a biopharmaceutical organisation, *International Journal of Lean Six Sigma*, 14(2), pp. 309–334.
- Fannon, S. R.; Munive-Hernandez, J. E.; Campean, F. (2022) Mastering continuous improvement (CI): the roles and competences of mid-level management and their impact on the organisation's CI capability, *The TQM Journal*, 34(1), pp. 102–124.
- Furnival, J.; Boaden, R.; Walshe, K. (2018) Assessing improvement capability in healthcare organisations: a qualitative study of healthcare regulatory agencies in the UK, *International Journal for Quality in Health Care*, 30(9), pp. 715–723.
- Gaspar, F.; Leal, F. (2020) A methodology for applying the shop floor management method for sustaining lean manufacturing tools and philosophies: a study of an automotive company in Brazil, *International Journal of Lean Six Sigma*, 11(6), pp. 1219–1238.
- Hilverda, J. J. et al. (2023) Unveiling the Impact of Lean Leadership on Continuous Improvement Maturity: A Scoping Review, *Journal of Healthcare Leadership*, pp. 241–257.
- Hines, P. et al. (2022) Turning the lean world upside down, *International Journal of Lean Six Sigma*, 13(5), pp. 989–1024.
- Hines, P. (2022) Human centred lean—introducing the people value stream, *International Journal of Lean Six Sigma*, 13(5), pp. 961–988.
- Holmemo, M. D.-Q.; Ingvaldsen, J. A.; Powell, D. (2023) Beyond the lean manager: Insights on how to develop corporate lean leadership, *Total Quality Management & Business Excellence*, 34(1–2), pp. 19–31.
- Januszek, S.; Netland, T. H.; Furlan, A. (2024) The role of managerial perceptions and behaviors across hierarchical levels during lean implementation, *International Journal of Operations & Production Management*, 44(1), pp. 54–74.
- Kharub, M. et al. (2023) Employee's performance and Kaizen events' success: does supervisor behaviour play a moderating role?, *The TQM Journal*, 35(8), pp. 2336–2366.
- Knapic, V.; Rusjan, B.; Bozic, K. (2022) Importance of first-line employees in lean implementation in SMEs: a systematic literature review, *International Journal of Lean Six Sigma*, 14(2), pp. 277–308.
- Knol, W. H. et al. (2022) Establishing the interplay between lean operating and continuous improvement routines: a process view, *International Journal of Operations & Production Management*, 42(13), pp. 243–273.
- Knol, W. H. et al. (2019) The relative importance of improvement routines for implementing lean practices, *International Journal of Operations & Production Management*, 39(2), pp. 214–237.
- Kristensen, T. B.; Saabye, H.; Edmondson, A. (2022) Becoming a learning organization while enhancing performance: the case of LEGO, *International Journal of Operations & Production Management*, 42(13), pp. 438–481.
- Leite, H.; Radnor, Z.; Bateman, N. (2022) Meaningful inhibitors of the lean journey: a systematic review and categorisation of over 20 years of literature, *Production Planning & Control*, 33(5), pp. 403–426.
- Ljungblom, M.; Lennerfors, T. T. (2021) The Lean principle respect for people as respect for craftsmanship, *International Journal of Lean Six Sigma*, 12(6), pp. 1209–1230.
- Magnani, F. et al. (2024) Defining lean experts' roles and behavioral competencies during lean adoption: a case study of Groupe PSA, *The TQM Journal*, 36(4), pp. 1054–1073.
- Mangaroo-Pillay, M.; Coetzee, R. (2022) A systematic literature review (SLR) comparing Japanese Lean philosophy and the South African Ubuntu philosophy, *International Journal of Lean Six Sigma*, 13(1), pp. 118–135.
- Michels, E.; Forcellini, F. A.; Fumagali, A. E. C. (2019) Opportunities and barriers in the use of Toyota Kata: a bibliographic analysis, *Gepros: Gestão da Produção, Operações e Sistemas*, 14(5), p. 262.
- Mogaramedi, M.; Nel, H.; Marnewick, A. (2020) Impact of standard work for leaders on reducing unused employee creativity during lean implementation, *South African Journal of Industrial Engineering*, 31(2), pp. 1–10.
- Netland, T. H.; Powell, D. J.; Hines, P. (2020) Demystifying lean leadership, *International Journal of Lean Six Sigma*, 11(3), pp. 543–554.

- O'Connor, D.; Cormican, K. (2022) Leading from the middle: how team leaders implement lean success factors, *International Journal of Lean Six Sigma*, 13(2), pp. 253–275.
- Rodrigues, J. et al. (2020) A rapid improvement process through “quick-win” lean tools: A case study, *Systems*, 8(4), p. 55.
- PRISMA Group (s.d.) PRISMA Statement. Disponível em: <https://www.prisma-statement.org/>
- Rosa, A.; Marolla, G.; McDermott, O. (2023) A cross-organizational Lean deployment in an Italian regional healthcare system, *International Journal of Health Care Quality Assurance*, 36(3/4), pp. 17–36.
- Saabye, H.; Kristensen, T. B.; Wæhrens, B. V. (2022) Developing a learning-to-learn capability: insights on conditions for Industry 4.0 adoption, *International Journal of Operations & Production Management*, 42(13), pp. 25–53.
- Saabye, H.; Powell, D. J.; Coughlan, P. (2023) Lean and action learning: towards an integrated theory?, *International Journal of Operations & Production Management*, 43(13), pp. 128–151.
- Simões, J. M. S.; Toledo, J. C.; Lizarelli, F. L. (2024) Front-line lean leader capacities, practices and effects on implementing tools: a survey of leaders in industrial companies, *International Journal of Lean Six Sigma*, 15(4), pp. 925–956.
- Tan, A. B. C.; Van Dun, D. H.; Wilderom, C. P. M. (2023) Lean innovation training and transformational leadership for employee creative role identity and innovative work behavior in a public service organization, *International Journal of Lean Six Sigma*, 15(8), pp. 1–31.
- Van Dun, D. H.; Tortorella, G. L.; Carminati, L. (2023) Lean leadership across different national cultures: a comparative study, *Production Planning & Control*, pp. 1–18.
- Van Dun, D. H.; Wilderom, C. P. M. (2021) Improving high lean team performance through aligned behaviour-value patterns and coactive vicarious learning-by-doing, *International Journal of Operations & Production Management*, 41(13), pp. 65–99.
- Villalba-Diez, J. et al. (2019) Characterization of industry 4.0 lean management problem-solving behavioral patterns using EEG sensors and deep learning, *Sensors*, 19(13), p. 2841.

Lean Leadership: A Study on Lean Leadership Attributes

Thierry Jefferson Barros Scursulim, June Marques Fernandes and Luciana Paula Reis

Universidade Federal de Ouro Preto, João Monlevade, Brazil

thierry.scursulim@aluno.ufop.edu.br

june@ufop.edu.br

lucianapaula@ufop.edu.br

Abstract: This study aims to investigate the key attributes of lean leadership that can mitigate barriers faced during the implementation of continuous improvement in the healthcare sector, with a focus on hospitals and clinics. The research is guided by the following question: How can lean leadership attributes contribute to overcoming barriers in lean implementation for problem-solving? To address this question, a systematic literature review was conducted following the PRISMA methodology, covering 54 articles published between 2016 and 2023 in the Science Direct, Emerald, and Scopus databases. The analysis identified 16 lean leadership attributes: persuasion, communication, analytical thinking, adaptability, strategic and goal-oriented vision, continuous improvement culture, training (coaching role), organizational climate oversight, resource management, accountability and commitment, leadership model grounded in self-confidence and self-awareness, resilience, customer focus, leadership model grounded in empathy, ethics/credibility, and delegation and empowerment. Concurrently, 10 major barriers were mapped: resistance to change, organizational culture, limited resources, ineffective communication, process complexity, impatience with delayed results, lack of employee/stakeholder involvement, lack of knowledge and training, lack of planning/conflicting priorities, and lack of top management support/commitment. The attributes were organized into three categories: communication skills, behavioral skills, and decision-making skills. The barriers were grouped into behavioral, structural, and capability-related types. The relationship between these groups resulted in three key premises: (i) Behavioral barriers can be mitigated by communication and decision-making skills; (ii) Structural barriers can be addressed by behavioral and decision-making skills; and (iii) Capability-related barriers can be overcome by communication and behavioral skills. The findings emphasize that developing specific lean leadership competencies is essential to creating an organizational environment conducive to cultural change, team engagement, and the sustainability of lean practices. Ultimately, the study contributes to bridging the gap between lean theory and practice by offering actionable insights for training healthcare managers capable of leading effective transformations.

Keywords: Lean leadership, Leadership attributes, Lean barriers, lean healthcare

1. Introduction

The literature highlights that the effectiveness of lean is conditioned by its strategic integration with management and organizational leadership processes, aiming to overcome barriers and foster continuous improvement (Aij & Teunissen, 2017; Dombrowski et al., 2013). Nevertheless, studies exploring the characteristics of lean leadership (LL) and its direct relationship with obstacles faced during implementation in healthcare settings remain scarce. Identifying which leadership attributes can mitigate these barriers offers practical guidance to managers and leaders in the sector, contributing to more effective and lasting implementations.

Through a systematic literature review (SLR), 15 attributes were identified and grouped into three categories: (i) communication skills, (ii) behavioral skills, and (iii) decision-making skills. Communication skills refer to those that influence interpersonal interaction, involving the ability to transmit and receive information. Behavioral skills affect interaction through patterns of behavior, including attitudes and habits. Decision-making skills relate to the capacity and methods used to make informed decisions (Unibra, 2023; Mundo Psicólogos, 2023).

Additionally, ten main barriers were identified and organized into three categories: (i) behavioral barriers, (ii) structural barriers, and (iii) capability-related barriers. The first refers to barriers linked to individual behavior, the second to environmental or organizational conditions, and the third to individuals' technical skills (Silva, 2023; Pereira, 2023; Oliveira, 2023).

Accordingly, this research seeks to answer the following question: How can lean leadership attributes contribute to mitigating the different barriers to lean implementation in problem-solving? To address this, the study aims to identify the main LL attributes and their relationship with barriers to lean sustainability, through the validation of three premises: (i) Premise 1 – behavioral barriers can be mitigated through communication skills combined with decision-making skills; (ii) Premise 2 – structural barriers can be mitigated through behavioral skills combined with decision-making skills; (iii) Premise 3 – capability-related barriers can be mitigated through communication skills combined with behavioral skills.

2. Leadership Attributes for Mitigating Barriers to Lean Implementation

Lean leadership (LL), aligned with the principles of lean thinking, is essential for overcoming barriers in the implementation of lean healthcare (LH), ensuring that its principles are embedded as part of the organizational culture rather than merely applied as tools (Aij & Teunissen, 2017; Mann, 2009; Tortorella et al., 2019; Costa & Godinho Filho, 2016). Leaders with effective communication skills—such as clarity, active listening, and persuasion—promote team engagement and alignment with institutional goals, which are fundamental for overcoming resistance to change (Trakulsunti et al., 2021; Choo et al., 2007).

Behaviors such as empathy, resilience, and commitment strengthen team motivation and facilitate the cultural adaptation required for continuous improvement (Solaimani et al., 2019; Hihnala et al., 2018). Decision-making capacity based on data, strategic vision, and patient-centeredness enables leaders to adjust strategies to mitigate organizational, cultural, and behavioral barriers (Aij & Teunissen, 2017; Baldassarre et al., 2018).

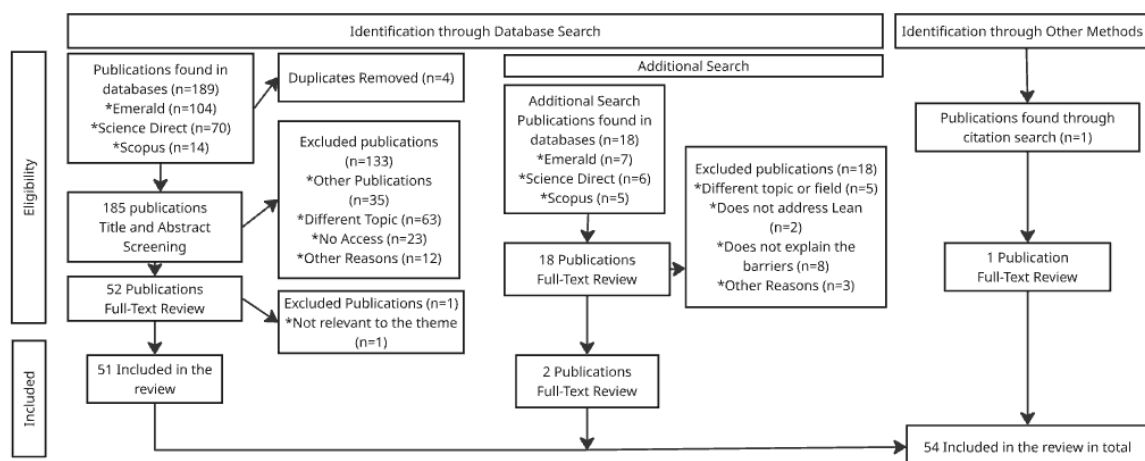
Thus, the development of these leadership attributes, combined with participative management and top management support, is essential for overcoming resistance and ensuring the sustainability of LH, fostering a culture of excellence and continuous improvement (Hallam & Contreras, 2018; Leite et al., 2020).

3. Research Methodology

The SLR is a method that uses secondary studies to analyze and synthesize the results of primary research, such as clinical trials, observational, or qualitative studies. Conducting a systematic review involves several steps, including defining the research question, searching and selecting studies, extracting and analyzing data, assessing methodological quality, and publishing the results (Galvão & Pereira, 2014).

To search for articles related to the attributes, the following query was used: “leadership and lean healthcare and empowerment and patient flow and hospital management and leadership attributes.” The search was conducted in the Science Direct, Emerald, and Scopus databases, covering the period from 2016 to 2023. This search initially returned 189 publications. Titles and abstracts were screened to verify the presence of at least two of the searched terms and relevance to the healthcare field. Book chapters, presentations, and unavailable publications were excluded. Considering only open-access articles, 51 studies were selected.

To further explore the barriers to lean implementation, an additional search was conducted using the same criteria, changing only the query to: “implementation barriers and lean leadership and lean healthcare and attributes, problem solving and hospital.” A total of 18 studies were identified, and after applying the same filters, 54 articles were analyzed, as shown in Figure 1.



Source: Authors

Figure 1: Article Selection Based on PRISMA Methodology

The analysis of the texts followed three complementary approaches: i) identification of terms directly related to attributes or barriers; ii) extraction of characteristics explicitly described by the authors; iii) interpretation of described situations that represented barriers or attributes, even if not explicitly named.

Data were organized in a spreadsheet to quantify the frequency of each barrier and attribute, accounting for multiple occurrences within a single article. Subsequently, the identified elements were grouped into three categories of attributes and three types of barriers. Based on this, three premises were formulated linking attribute categories to the mitigation of specific barriers.

To validate these relationships, a cross-analysis was conducted to measure how often attributes from a particular category were associated with their corresponding barriers.

4. Resultados

4.1 Atributos Para Implementação do LL

LH aims to optimize both care and administrative processes by eliminating waste and maximizing value for the patient (Costa & Godinho Filho, 2016; Hallam & Contreras, 2018). Its effectiveness depends on its adoption as an organizational philosophy, rather than the isolated use of tools, which often leads to implementation failure (Tortorella et al., 2019; Hihnala et al., 2018; Aij & Teunissen, 2017; Danese et al., 2018).

Table 1: Leadership attributes

	Attribute	Description	Articles
Communication Skills	Persuasion	Ability to influence and motivate the team to embrace change, resolve conflicts fairly, build trust, and foster collaboration across different areas.	1,2,3,4,5,6,7,8,10,14,15,16,17,18,19,20,21,22,24,25,26,27,29,30,31,33,34,35,38,39,40,42,43,44,45,46,48,50,51,52,53,54,56,58,59,60,61,62,64,66,67,68,69
	Communication	Skill in conveying information clearly and transparently, keeping everyone informed, actively listening, and providing constructive feedback.	1,2,3,4,5,6,7,8,10,14,15,16,17,18,19,20,21,22,23,24,25,26,27,29,30,31,33,34,35,38,39,40,42,43,44,45,46,48,50,51,52,54,56,58,59,60,61,62,63,64,66,67,68,69
	Organizational climate management	Ability to maintain a positive work environment, manage conflict and stress, value people, and promote well-being and inclusion.	1,2,3,4,5,7,14,15,16,18,19,20,21,23,24,25,27,29,30,31,33,35,38,39,40,42,43,44,45,46,50,51,52,54,56,58,59,61,62,66,68
	Resource management	Skill in efficiently using time, staff, and materials, ensuring necessary resources, prioritizing tasks, and supporting sustainability.	1,2,3,4,5,6,8,10,14,15,16,17,18,19,20,21,23,24,25,26,27,31,33,35,39,42,43,44,45,46,48,50,51,54,56,59,60,61,62,64,67
Behavioral Skills	Adaptability	Ability to adjust to changes, be flexible and resilient, and adapt strategies as new challenges arise.	1,2,3,4,5,6,7,8,10,14,15,16,17,19,21,22,23,24,25,26,27,29,30,31,33,34,35,38,39,40,42,43,44,45,46,50,51,52,54,56,58,59,60,61,62,63,64,66,67,68,69
	Continuous improvement culture	Commitment to innovation and the constant pursuit of improvement, promoting learning and efficiency at work.	1,2,3,4,5,6,7,8,10,14,15,16,17,18,19,20,21,22,23,24,25,26,27,29,30,31,33,34,35,38,39,40,42,43,44,45,46,48,50,51,52,54,56,58,59,60,61,62,63,64,66,67,68,69
	Training (coaching role)	Ability to guide, teach, and develop the team, fostering continuous learning and effective practices.	1,2,3,4,5,6,7,8,14,15,16,17,18,19,20,21,22,23,24,25,26,27,29,30,31,33,34,35,38,39,42,43,44,45,46,48,50,51,52,53,54,56,58,59,60,61,62,64,67,68,69
	Accountability and Commitment	Involves taking responsibility, maintaining ethical standards, being accountable, and being present in improvement processes.	1,2,3,5,6,7,8,10,14,15,17,19,20,22,24,25,26,27,29,30,31,33,35,39,42,43,45,48,50,51,52,54,56,59,60,61,62,63,64,68,69
	Leadership Model (Self-confidence/ Self-awareness)	Ability to know oneself, act with confidence, handle conflict, and value team contributions.	2,4,5,6,7,14,15,16,19,21,24,27,30,31,33,35,38,39,40,42,43,44,45,46,53,56,62,64,68,69
	Resilience	Ability to face challenges, remain calm under pressure, overcome obstacles, and keep the team motivated.	1,2,4,7,15,16,17,18,19,20,21,22,23,24,26,27,29,30,31,33,34,35,38,39,40,42,43,44,46,50,52,54,56,58,60,61,62,64,66,68,69
	Leadership model (empathy, ethics/ Credibility)	Demonstrates empathy, acts ethically, leads by example, and creates an environment of trust and respect.	2,3,4,7,15,16,17,18,19,20,21,23,24,25,26,27,29,30,31,33,34,35,38,39,40,42,43,44,45,46,50,52,53,54,56,59,60,62,64,66
Decision Making	Analytical thinking	Ability to observe, analyze data, identify problems, and make quick, evidence-based decisions.	1,2,3,4,5,6,7,8,10,14,15,16,17,18,19,20,21,22,23,24,25,26,27,29,30,31,33,34,35

Attribute	Description	Articles
		,38,39,40,42,43,44,45,46,50,51,52,54,56,59,60,61,62,63,64,67,68,69
Strategic/goal-oriented vision	Skill to set clear goals, plan long-term actions, and align efforts with the organization's objectives.	2,3,4,5,6,7,8,10,14,15,16,17,18,19,20,21,22,23,24,25,26,27,29,30,31,33,34,35,38,39,40,42,43,44,45,46,50,51,52,53,56,58,59,60,61,62,63,64,67,68,69
Customer focus	Keeping the patient at the center of decisions, always aiming to improve their experience and care.	1,3,4,5,6,7,8,10,14,15,17,18,19,21,22,23,25,26,31,34,35,39,40,42,44,46,48,51,54,59,60,61,63,67,68
Delegation	Knowing how to efficiently assign tasks, trust the team, and optimize the use of human resources.	2,4,15,16,19,21,23,24,25,27,30,31,33,34,35,38,40,42,43,44,45,46,50,56,59,60,62,64
Empowerment	Ability to make autonomous decisions and encourage the team to do the same, fostering ownership and initiative.	1,3,5,6,7,8,14,20,22,23,29,30,31,39,50,51,54,58,61,63,66,67,69

Source: Authors

In this context, leadership plays a central role in promoting engagement, alignment, and sustainability of lean practices (Choo et al., 2007; Mann, 2009). Effective leaders demonstrate commitment, active listening, clear communication, flexibility, and inspire trust. They also work directly on the gemba to facilitate cultural change and continuous improvement (Trakulsunti et al., 2021; Solaimani et al., 2019; Aij & Teunissen, 2017).

Based on the SLR, 15 leadership attributes were identified and grouped into three categories (Psicologia Online, 2023; Unibra, 2023; Mundo Psicólogos, 2023): i) Communication skills – persuasion, communication, climate and resource management; ii) Behavioral skills – adaptability, improvement culture, training, accountability, exemplary leadership, and resilience; iii) Decision-making skills – analytical and strategic vision, customer focus, delegation, and empowerment. Table 1 describes these attributes.

4.2 Barriers to Lean Implementation

Despite its benefits, lean implementation faces several barriers in hospital settings. Leite et al. (2020) highlight that these barriers can be organizational, cultural, technical, or behavioral, such as resistance to change, rigid hierarchical structures, lack of lean knowledge, and absence of a clear strategy.

Table 2: Barriers to lean implementation in healthcare settings

	Barrier	Description	Articles
Behavioral Barriers	Resistance to Change	Can arise from difficulty in abandoning established practices, fear of job loss, and complexity of organizational processes.	1,3,5,6,7,8,10,14,15,16,17,25,31,33,34,35,39,42,45,48,50,51,54,58,59,60,61,63,64,67,68,69
	Impatience with Delayed Results	Pressure for quick deliveries and a high workload make it difficult to dedicate the necessary effort to implement and sustain lean practices, compromising long-term projects.	3,14,15,17,18,25,31,33,42,50,51,59,60,61,68,69
	Lack of Employee/Stakeholder Involvement	The absence of active participation and incentives undermines team engagement and the effectiveness of lean initiatives.	1,3,5,6,8,15,24,25,31,33,34,39,50,51,54,58,59,61,68,69
	Lack of Support/Commitment from Top Management	The absence of active and committed leadership weakens lean actions, especially when external support or specialized consultancy is missing.	3,5,6,8,14,15,16,17,18,24,25,31,33,35,42,45,48,50,59,60,61,64,67,68,69
Infrastructure Barriers	Organizational culture	Rigid and innovation-resistant cultures hinder the adoption of lean principles, especially when there is little integration between departments.	1,3,5,6,7,14,15,16,17,18,24,25,31,33,35,39,42,44,45,48,50,51,54,58,59,60,61,63,64,67,68,69
	Limited resources	Bureaucracy and interdependence among areas make Lean application more difficult, requiring clarity and focus on projects.	1,3,5,6,7,8,10,14,15,16,17,18,24,25,31,33,34,35,39,42,44,45,48,50,51,54,58,59,60,61,63,64,67,68,69

Barrier		Description	Articles
	Process complexity	Lack of time, staff, and investment prevents training and structural improvements, making it harder to consolidate lean practices.	1,3,5,6,8,14,15,17,18,25,31,33,35,39,42,45,50,51,58,59,60,61,67,68,69
Capability Barriers	Ineffective communication	Communication failures between hierarchical levels and departments cause misunderstandings and hinder the necessary alignment for lean implementation.	1,3,5,7,8,10,14,15,16,17,18,24,25,31,33,34,35,39,42,44,45,48,50,51,54,58,59,60,61,63,64,67,68,69
	Lack of Knowledge and Training	The lack of theoretical and practical training limits understanding and correct application of lean tools.	1,3,5,6,7,8,10,14,15,16,17,18,25,31,33,35,39,42,44,48,50,51,54,58,59,60,61,63,64,67,68,69
	Lack of Planning/Conflicting Priorities	The absence of a structured plan and misalignment between areas compromise the continuity of initiatives, making it difficult to sustain them in the long term.	3,5,6,7,15,16,24,25,31,33,42,50,59,61,67,68,69

Source: Authors

Baldassarre et al. (2018) and Trakulsunti et al. (2021) point out that resistance from healthcare professionals is one of the main difficulties. Other barriers include distance between units, fragmented communication, and excessive bureaucracy, especially in the public sector (Oliveira & Bye, 2020; Sales et al., 2021). Resistance from healthcare professionals remains a key challenge (Trakulsunti et al., 2021; Baldassarre et al., 2018). In the public sector, further challenges include distance between units, fragmented communication, and excessive bureaucracy (Oliveira & Bye, 2020; Sales et al., 2021).

Based on SLR, ten recurring barriers were identified and grouped by nature (Silva, 2023; Pereira, 2023; Oliveira, 2023): i) behavioral – resistance to change, impatience with results, lack of involvement and support from management; ii) infrastructure – organizational culture, complex processes, limited resources; iii) capability – ineffective communication, lack of training, and inadequate planning.

4.3 Relationships Between Attributes and Barriers

For the table analyses, two correlations were made: the first considers in how many different publications a direct or indirect relationship between attribute and barrier was found, relative to the total number of articles included in the SLR; the second is a global average to identify the most relevant attribute for each group of barriers.

4.3.1 Premise 1 – Behavioral barriers x communicative and decision-making skills

Barriers related to individual and collective behavior can be overcome by leaders who master communication and make decisions with clarity and purpose.

Table 3: Behavioral barriers x communicative and decision-making skills

	Number of times the barrier was identified:								
Barriers Attributes	Resistance to Change		Impatience with Dela. Res.		Lack of Employee/ Stak. Invol.		Lack of Top Management Support/Commit.		Overall Attribute Average
	Nº	(%)	Nº	(%)	Nº	(%)	Nº	(%)	
Persuasion	27	50,00%	15	27,78%	15	27,78%	18	33,33%	34,72%
Communication	27	50,00%	15	27,78%	15	27,78%	20	37,04%	35,65%
Organizational climate manag.	18	33,33%	12	22,22%	12	22,22%	12	22,22%	25,00%
Resource management	21	38,89%	13	24,07%	11	20,37%	17	31,48%	28,70%
Analytical vision	26	48,15%	15	27,78%	14	25,93%	19	35,19%	34,26%
Strategic/objective vision	24	44,44%	18	33,33%	13	24,07%	18	33,33%	33,80%
Customer focus	21	38,89%	13	24,07%	12	22,22%	14	25,93%	27,78%
Delegation	12	22,22%	9	16,67%	6	11,11%	10	18,52%	17,13%
Empowerment	15	27,78%	8	14,81%	11	20,37%	8	14,81%	19,44%

Source: Authors

The main attributes related to the communication skills group to mitigate behavioral barriers addressed in the literature were communication (35.65%), persuasion (34.72%), analytical vision (34.26%), and strategic/objective vision (33.80%). The most relevant for mitigating resistance to change were communication and persuasion; for impatience with delayed results: strategic/objective vision; for lack of employee/stakeholder involvement: communication and persuasion; and for lack of support/commitment from top management: communication.

4.3.2 *Premisse 2 – Structural barriers and behavioral and decision-making attributes*

Unfavorable structural conditions require leaders with proactive attitudes, systemic vision, and decision-making ability to promote improvements in the work environment.

Table 4: Infrastructure barriers x behavioral and decision-making skills

	Number of times the barrier was identified:						
Barriers Attributes	Organizational Culture		Process Complexity		Limited Resources		Overall Average
	Nº	(%)	Nº	(%)	Nº	(%)	
Adaptation	25	46,30%	27	50,00%	28	51,85%	49,38%
Continuous improvement culture	27	50,00%	29	53,70%	30	55,56%	53,09%
Training (coach)	26	48,15%	28	51,85%	28	51,85%	50,62%
Responsibility and Commitment	23	42,59%	25	46,30%	25	46,30%	45,06%
Leadership Model (Self-conf./Self-awar.)	8	14,81%	9	16,67%	9	16,67%	16,05%
Resilience	19	35,19%	19	35,19%	20	37,04%	35,80%
Leadership model (empat./ethics/credib.)	20	37,04%	20	37,04%	21	38,89%	37,65%
Analytical vision	26	48,15%	28	51,85%	30	55,56%	51,85%
Strategic/objective vision	24	44,44%	26	48,15%	28	51,85%	48,15%
Customer focus	21	38,89%	23	42,59%	25	46,30%	42,59%
Delegation	12	22,22%	12	22,22%	13	24,07%	22,84%
Empowerment	14	25,93%	16	29,63%	15	27,78%	27,78%

Source: Authors

The main attributes related to the communicative skills group for mitigating behavioral barriers addressed in the literature were continuous improvement culture (53.09%), leadership model (empathy/ethics/credibility) (51.85%), and training (coach) (50.62%). The most relevant for organizational culture were: continuous improvement culture; for process complexity: continuous improvement culture; for limited resources: continuous improvement culture and leadership model (empathy/ethics/credibility).

4.3.3 *Premisse 3 – capability barriers and communicative/behavioral attributes*

Lack of technical skills can be mitigated by leaders who communicate effectively and encourage continuous team development through example.

Table 5: Capability Barriers x Communicative and Behavioral Skills

	Number of times the barrier was identified:						
Barriers Attributes	Ineffective Communication		Lack of Knowledge and Training		Lack of Planning / Conflicting Priorities		Overall Attribute Average
	Nº	(%)	Nº	(%)	Nº	(%)	
Persuasion	30	55,56%	27	50,00%	13	24,07%	43,21%
Communication	30	55,56%	27	50,00%	13	24,07%	43,21%
Organizational climate management	20	37,04%	18	33,33%	10	18,52%	29,63%
Resource management	23	42,59%	22	40,74%	10	18,52%	33,95%
Adaptability	28	51,85%	26	48,15%	13	24,07%	41,36%
Continuous improvement culture	30	55,56%	27	50,00%	13	24,07%	43,21%

Training (coach role)	28	51,85%	25	46,30%	13	24,07%	40,74%
Responsibility and Commitment	25	46,30%	24	44,44%	9	16,67%	35,80%
Leadership Model (Self-conf./Self-awar.)	8	14,81%	5	9,26%	4	7,41%	10,49%
Resilience	20	37,04%	18	33,33%	9	16,67%	29,01%
Leadership model (empat./ethics/credib.)	21	38,89%	18	33,33%	11	20,37%	30,86%

Source: Authors

The main attributes related to the communication skills group to mitigate behavioral barriers, as identified in the literature, were communication (43.21%), persuasion (43.21%), and continuous improvement culture (43.21%). The most relevant attributes for ineffective communication are communication, persuasion, and continuous improvement culture; for lack of knowledge and training: communication, persuasion, and continuous improvement culture; and for lack of planning/conflicting priorities: communication, persuasion, continuous improvement culture, adaptation, and training (coach).

5. Discussion and Conclusion

Implementing lean in healthcare requires leadership capable of addressing diverse barriers. This study confirms that specific leadership attributes can mitigate or eliminate common obstacles to lean adoption. For behavioral barriers, key attributes include persuasion, communication, analytical thinking, and strategic vision. Infrastructure barriers are best addressed through a continuous improvement culture, role-model leadership (empathy, ethics, credibility), and coaching. Capacity-related barriers are influenced primarily by communication, persuasion, and a culture of continuous improvement.

Findings suggest that the synergistic combination of leadership attributes—not merely their individual effects—enhances the effectiveness and sustainability of lean initiatives, even when traits are not dominant. Investing in these competencies improves leaders' ability to manage implementation challenges while fostering a culture of continuous improvement and patient-centered care. The results offer practical guidance for recruiting, evaluating, and developing leadership.

Future research should empirically validate these findings by quantifying the impact of attribute development across healthcare contexts, considering both frequency and relative importance in mitigating barriers.

Acknowledgements

The authors would like to thank the Federal University of Ouro Preto (UFOP/Brazil), the Graduate Program in Production Engineering (PPGEP), the Research Support Foundation of the State of Minas Gerais (FAPEMIG, Grant Number APQ-00951–22), the Coordination for the Improvement of Higher Education Personnel (CAPES), and the National Council for Scientific and Technological Development (CNPq) for their support and funding throughout the development of this research.

References

- A. Akmal, R. Greatbanks, J. Foote. Lean Thinking In Healthcare – Findings From A Systematic Literature Network And Bibliometric Analysis, Health Policy, Volume 124, Issue 6, 2020, Pages 615–627, Issn 0168-8510, <https://doi.org/10.1016/j.healthpol.2020.04.008>
- A.D.C., Souza, Santos, A.C.D.S.G.D., Reis, C.G.D., Santos, I.L.D. E Ferreira, L.A.F. (2020), "The First Evidence About Conceptual Vs Analytical Lean Healthcare Research Studies", Journal Of Health Organization And Management, Vol. 34 No. 7, Pp. 789-806. <https://doi.org/10.1108/jhom-01-2020-0021>
- Agarwal, R., Green, R., Agarwal, N. E Randhawa, K. (2016), "Management Practices In Australian Healthcare: Can Nsw Public Hospitals Do Better?", Journal Of Health Organization And Management, Vol. 30 No. 3, Pp. 331-353. <https://doi.org/10.1108/jhom-01-2015-0016>
- Aij, K.H.; E Teunissen, M. (2017), "Atributos Da Liderança Enxuta: Uma Revisão Sistemática Da Literatura", Journal Of Health Organization And Management, Vol. 31 No. 7/8. <https://doi.org/10.1108/jhom-12-2016-0245>
- Alban, R.F.; Anania, E.C.; Cohen, Tara; F., Peter J.; Gewertz, B.L.; Jain, M.; Jopling, J.K.; Maggio, P.M.; Sanchez, J.A.; Sax, H.C. (2019). Performance Improvement In Surgery. Current Problems In Surgery, (), S0011384017302216–. Doi:10.1067/J.Cpsurg.2019.02.002
- Alkhalidi, R.Z.; E Abdallah, A.B. (2020), "Lean Management And Operational Performance In Health Care: Implications For Business Performance In Private Hospitals", International Journal Of Productivity And Performance Management, Vol. 69 No. 1, Pp. 1-21. <https://doi.org/10.1108/jppm-09-2018-0342>
- Alnajem, M., Garza-Reyes, J.A. And Antony, J. (2019), "Lean Readiness Within Emergency Departments: A Conceptual Framework", Benchmarking: An International Journal, Vol. 26 No. 6, Pp. 1874-1904. <https://doi.org/10.1108/Bij-10-2018-0337>

- Ayeleke, R.O., North, N.H., Dunham, A. E Wallis, K.A. (2019), "Impact Of Training And Professional Development On Health Management And Leadership Competence: A Mixed Methods Systematic Review", *Journal Of Health Organization And Management*, Vol. 33 No. 4, Pp. 354-379. <https://doi.org/10.1108/Jhom-11-2018-0338>
- B. Joubert And W. Bam, "Review And Classification Of Lean Project Aims In Hospitals," 2019 Ieee International Conference On Engineering, Technology And Innovation (Ice/Ietc), Valbonne Sophia-Antipolis, France, 2019, Pp. 1-11, Doi: 10.1109/Ice.2019.8792633.
- Baldassarre, F.F., Ricciardi, F. And Campo, R. (2018), "Waiting Too Long: Bottlenecks And Improvements – A Case Study Of A Surgery Department", *The Tqm Journal*, Vol. 30 No. 2, Pp. 116-132. <https://doi.org/10.1108/Tqm-07-2017-0087>
- Bbc News Brasil. "População Mundial: Por Que Onu Diz Que Somos 8,2 Bilhões Se..." Bbc, 12 De Julho De 2024. Disponível Em: <https://www.bbc.com/portuguese/articles/crgkzdlvxxgo>.
- Brasil, Sebrae-Na/ Dieese. Anuário Do Trabalho Na Micro E Pequena Empresa, 2013, P. 17.
- Brasil. Ministério Da Saúde. Agência Nacional De Vigilância Sanitária. Resolução Rdc Nº 11, De 26 De Janeiro De 2006. Diário Oficial Da União, Poder Executivo, Brasília, Df, 30 Jan. 2006.
- Brasil. Ministério Da Saúde. Diretrizes Para A Atenção Domiciliar No Sistema Único De Saúde, Brasília, Df, 2004.
- Coffey Jr., C., Cho, E. S., Wei, E., Luu, A., Ho, M., Amaya, R., Pecson, M., Dalton, F. V., Kahaku, D., Spellberg, B., & Sener, S. F. (2018, May 11). Lean Methods To Improve Operating Room Elective First Case On-Time Starts In A Large, Urban, Safety Net Medical Center. *The American Journal Of Surgery*. <https://doi.org/10.1016/j.amjsurg.2018.05.002>
- Debono, D., Et Al. Strengthening The Capacity Of Nursing Leader Through Multifaceted Professional Development Initiatives: A Mixed Method Evaluation Of The 'Take The Lead' program. *Collegian* (2016), <https://www.sciencedirect.com/science/article/abs/pii/S1322769614000870>
- Dittmer, K., Hower, K. I., Beckmann, M., Karbach, U., & Pfaff, H. (2021, September 16). A Qualitative Study Of The Adoption Of Value Stream Mapping In Breast Cancer Centers. *European Journal Of Oncology Nursing*. <https://doi.org/10.1016/j.ejon.2021.102037>
- Dopelt, K., Levi, B. E Davidovitch, N. (2021), "Identificando Traços Distintivos De Líderes De Saúde Em Israel: Entrevistas Em Profundidade Com Médicos Seniores – Um Estudo Exploratório", *Leadership In Health Services*, Vol. 34 No. 3, Pp. 263-279. <https://doi.org/10.1108/Lhs-08-2020-0059>
- E.L. Mckean, C.H. Snyderman. *Leadership Driving Safety And Quality*, *Otolaryngologic Clinics Of North America*, Volume 52, Issue 1, 2019, Pages 11-22, Issn 0030-6665, Isbn 9780323654814, <https://doi.org/10.1016/j.otc.2018.08.002>.
- Eriksson, N.; (2017), "Gestão Hospitalar A Partir De Uma Perspectiva De Mudança Organizacional De Alta Confiabilidade: Um Caso Sueco Sobre Lean E Seis Sigma", *International Journal Of Public Sector Management*, Vol. 30 No. 1, Pp. 67-84. <https://doi.org/10.1108/Ijpsm-12-2015-0221>
- Fernandes, H.M.D.L.G.; Jesus, M.V.N.D.; Silva, D.D.; Guirardello, E.D.B. Lean Healthcare Na Perspectiva Institucional, Profissional E Paciente: Uma Revisão Integrativa. *Rev. Gaúcha Enferm.* 41 • 2020 • <https://doi.org/10.1590/1983-1447.2020.20190340>
- Galvão, Taís Freire; Pereira, Mauricio Gomes. Ministério Da Saúde. Elaboração De Revisões Sistemáticas. *Epidemiologia E Serviços De Saúde*, Brasília, V. 23, N. 1, P. 183–184, Jan./Mar. 2014. Disponível Em: http://scielo.iec.gov.br/scielo.php?script=sci_arttext&pid=S1679-49742014000100018.
- Gupta, S., Sharma, M. E Sunder M., V. (2016), "Lean Services: A Systematic Review", *International Journal Of Productivity And Performance Management*, Vol. 65 No. 8. <https://doi.org/10.1108/Ijppm-02-2015-0032>
- Gupta, S.; E Sharma, M. (2018), "Empirical Analysis Of Existing Lean Service Frameworks In A Developing Economy", *International Journal Of Lean Six Sigma*, Vol. 9 No. 4. <https://doi.org/10.1108/Ijlss-03-2016-0013>
- H. Leite, Z. Radnor & N. Bateman (2020): Meaningful Inhibitors Of The Lean Journey: A Systematic Review And Categorisation Of Over 20 Years Of Literature, *Production Planning & Control*, Doi: 10.1080/09537287.2020.1823511
- Hussain, M., Malik, M. E Al Neyadi, H.S. (2016), "Ahp Framework To Assist Lean Deployment In Abu Dhabi Public Healthcare Delivery System", *Business Process Management Journal*, Vol. 22 No. 3, Pp. 546-565. <https://doi.org/10.1108/Bpmj-08-2014-0074>
- Improta, G., Ricciardi, C., Borrelli, A., D'alessandro, A., Verdoliva, C. E Cesarelli, M. (2020), "The Application Of Six Sigma To Reduce The Pre-Operative Duration Of Hospital Stay At The Hospital Antonio Cardarelli", *International Journal Of Lean Six Sigma*, Vol. 11 No. 3, Pp. 555-576. <https://doi.org/10.1108/Ijlss-02-2019-0014>
- Instituto Brasileiro De Geografia E Estatística [Ibge]. Lacerda, M. R. Tornando-Se Profissional No Contexto Domiciliar: Vivência Do Cuidado Da Enfermeira. 2000. Tese (Doutorado Em Filosofia Da Enfermagem) - Universidade Federal De Santa Catarina, Florianópolis, 2000. 13
- Iswanto, A.H.; (2021), "Impacto Do Lean Six Sigma Na Unidade De Farmácia Na Lucratividade Hospitalar Antes E Durante A Pandemia De Covid-19", *International Journal Of Lean Six Sigma*, Vol. 12 No. 4, Pp. 718-743. <https://doi.org/10.1108/Ijlss-10-2020-0182>
- J. Needleman, M.L. Pearson, V.V. Upenieks, T. Yee, J. Wolstein, M. Parkerton. Engaging Frontline Staff In Performance Improvement: The American Organization Of Nurse Executives Implementation Of Transforming Care At The Bedside Collaborative, *The Joint Commission Journal On Quality And Patient Safety*, Volume 42, Issue 2, 2016, Issn 1553-7250, [https://doi.org/10.1016/S1553-7250\(16\)42007-6](https://doi.org/10.1016/S1553-7250(16)42007-6).
- K. Halvorsen, A. Dihle, C. Hansen, M. Nordhaug, H. Jerpseth, S. Tveiten, P. Joranger, I.R. Knutsen. Empowerment In Healthcare: A Thematic Synthesis And Critical Discussion Of Concept Analyses Of Empowerment, Patient Education And Counseling, Volume 103, Issue 7, 2020, Pages 1263-1271, Issn 0738-3991, <https://doi.org/10.1016/j.pec.2020.02.017>.

- Lee, J.J., Mcfadden, K.L., Lee, M.K., & Gowen Iii, C.R. (2021). Hospital Cultural Profiles In The Usa For Improved Performance In Patient Safety, Patient Satisfaction, Six Sigma, And Lean Implementation. *International Journal Of Production Economics*, 235, 108121. Doi: <https://doi.org/10.1016/j.ijpe.2021.108121>
- Lee, J.Y.; Mcfadden, K.L.; Lee, M.K.; Gowen Iii, C.R. U.S. Hospital Culture Profiles For Better Performance In Patient Safety, Patient Satisfaction, Six Sigma, And Lean Implementation. *International Journal Of Production Economics*, V. 234, P. 108047, 2021.
- Leite, H., Bateman, N., & Radnor, Z. (2019). Beyond The Ostensible: An Exploration Of Barriers To Lean Implementation And Sustainability In Healthcare. *Production Planning & Control*, 1-18. <https://doi.org/10.1080/09537287.2019.1623426>
- M. Crema, C. Verbano. Identification And Development Of Lean And Safety Projects, *Safety Science*, Volume 89, 2016, Pages 319-337, Issn 0925-7535, <https://doi.org/10.1016/j.ssci.2016.07.007>.
- Mundo Psicólogos. O Papel Das Emoções Na Tomada De Decisões: Como Equilibrar Razão E Emoção. *Mundo Psicólogos*, 2023. Disponível Em: <<https://www.mundopsicologos.com.br/tomada-de-decisoes>>..
- Muraliraj, J., Kuppusamy, S., Zailani, S. E Santha, C. (2020), "Lean, Six Sigma And Its Influence On Potential And Realized Absorptive Capacity", *International Journal Of Lean Six Sigma*, Vol. 11 No. 1, Pp. 84-124. <https://doi.org/10.1108/IJLSS-03-2018-0020>
- Muraliraj, J., Zailani, S., Kuppusamy, S. E Santha, C. (2018), "Annotated Methodological Review Of Lean Six Sigma", *International Journal Of Lean Six Sigma*, Vol. 9 No. 1. <https://doi.org/10.1108/IJLSS-04-2017-0028>
- N. Afsar-Manesh, S. Lonowski, A.A. Namavar, Leveraging Lean Principles In Creating A Comprehensive Quality Program: The Ucla Health Readmission Reduction Initiative, *Healthcare*, Volume 5, Issue 4, 2017, Pages 194-198, Issn 2213-0764, <https://doi.org/10.1016/j.hjdsi.2016.12.002>.
- Narayanamurthy, G., Gurumurthy, A. E Lankayil, A.A. (2021), "Experiência De Implementação Do Pensamento Lean Em Uma Instituição De Saúde Indiana", *International Journal Of Lean Six Sigma*, Vol. 12 No. 1, Pp. 23-60. <https://doi.org/10.1108/IJLSS-10-2016-0062>
- Núcleo Nacional Das Empresas De Serviços De Atenção Domiciliar. Censo 2019-2020 Nead-Fipe De Atenção Domiciliar. 2020.
- Oliveira, A.I.; Ribeiro, J.C.; O'horo, João C. (2020). Melhoria Da Qualidade E Cuidados De Saúde: A Experiência Da Academia De Qualidade Da Mayo Clinic. *Jornal De Tuberculose Clínica E Outras Doenças Micobacterianas*, 20(), 100170-. Doi:10.1016/J.Jctube.2020.100170
- Oliveira, H.; (2018), "Melhorando O Fluxo De Pacientes Através Da Aplicação De Conceitos Lean Ao Departamento De Emergência", *Liderança Em Serviços De Saúde*, Vol. 31 No. 3, Pp. 293-309. <https://doi.org/10.1108/LHS-02-2018-0014>
- Oliveira, J.J.; (2019), "Leadership And Change Management", Ward, N.J., Watson, B. E Fleming-Vogl, K. (Ed.) *Traffic Safety Culture*, Emerald Publishing Limited, Leeds, Pp. 191-218. <https://doi.org/10.1108/978-1-78714-617-420191013>
- Oliveira, L. A Importância Da Formação Continuada Do Professor Educador No Contexto Educacional Inclusivo. *Revista Formação*, 2023. Disponível Em: <<https://revistaf.com.br/a-importancia-da-formacao-continuada-do-professor-educador-no-contexto-educacional-inclusivo/>>. Acesso Em: 19 Set. 2024.
- Oliveira, M.; E Pisarra, M. (2021), "Lean Management In Health Care: A Review Of Reviews Of Socio-Technical Components For Effective Impact", *Revista De Organização E Gestão Da Saúde*, Vol. 35 Nº 4, Pp. 475-491. <https://doi.org/10.1108/Jhom-06-2020-0241>
- Oliveira, Y.; E Bye, G. (2020), "Line Managers And Employees Use Of Lean Task Boards In Norwegian Municipal Healthcare Sector: A Tool For Action Learning?", *Leadership In Health Services*, Vol. 33 No. 4, Pp. 445-460. <https://doi.org/10.1108/LHS-04-2020-0020>
- P. Ramos, C. Savage, J. Thor, R. Atun, K.S. Carlsson, M. Makdisse, M.C. Neto, S. Klajner, P. Parini, P. Mazzocato. It Takes Two To Dance The Vbhc Tango: A Multiple Case Study Of The Adoption Of Value-Based Strategies In Sweden And Brazil, *Social Science & Medicine*, Volume 282, 2021, 114145, Issn 0277-9536, <https://doi.org/10.1016/j.socscimed.2021.114145>.
- Patri, R., Suresh, M. And Prasad, R. (2021), "Modelling The Leadership Characteristics For Organizational Readiness: A Context Of Lean Implementation In Healthcare", *Leadership In Health Services*, Vol. 34 No. 2, Pp. 181-197. <https://doi.org/10.1108/LHS-01-2021-0005>
- Pereira, M. Barreiras E Recursos À Aprendizagem E À Participação De Alunos Em Situação De Inclusão. *Psicologia Escolar E Educacional*, 2023. Disponível Em: <<https://www.scielo.br/J/Pusp/A/Nrttr45rzjxc5d8nwnqckmx/>>.
- Pereira, P.; (2019), "Lean Na Organização De Saúde: Uma Oportunidade Para A Sustentabilidade Ambiental", *Benchmarking: An International Journal*, Vol. 26 No. 1, Pp. 205-220. <https://doi.org/10.1108/Bij-04-2018-0104>
- Psicologia Online. Habilidades Comunicativas: Quais São E Como Desenvolvê-Las. *Psicologia Online*, 2023. Disponível Em: <<https://www.psicologiaonline.com.br/habilidades-comunicativas>>.
- Puthanveettil, B.A., Vijayan, S., Raj, A. E Mp, S. (2021), "Tqm Implementation Practices And Performance Outcome Of Indian Hospitals: Exploratory Findings", *The Tqm Journal*, Vol. 33 No. 6, Pp. 1325-1346. <https://doi.org/10.1108/Tqm-07-2020-0171>
- Radcliffe, E., Kordowicz, M., Mak, C., Shefer, G., Armstrong, D., White, P. E Ashworth, M. (2020), "Lean Implementation Within Healthcare: Imaging As Fertile Ground", *Journal Of Health Organization And Management*, Vol. 34 No. 8, Pp. 869-884. <https://doi.org/10.1108/Jhom-02-2020-0050>
- Rees, G.H.; E Gauld, R. (2017), "O Lean Pode Contribuir Para A Intensificação Do Trabalho Em Saúde?", *Journal Of Health Organization And Management*, Vol. 31 No. 3. <https://doi.org/10.1108/Jhom-11-2016-0219>

- Sales, M. And De Castro, R. (2021), "Value-Based Lean Implementation In A Surgical Unit: The Impact Of The Methodology", The Tqm Journal, Vol. 33 No. 6, Pp. 1484-1501. <https://doi.org/10.1108/Tqm-10-2020-0249>
- Santos, I. M. C.; Bodstein, R. C. A.; Tesser, C. D. Práticas Integrativas E Complementares Na Atenção Primária À Saúde Brasileira: Situação Atual, Problemas E Estratégias De Enfrentamento. Saúde Debate, Rio De Janeiro, V. 43, N. Spe7, P. 118-135, 2019.
- Schouten, H., Heusinkveld, S., Van Der Kam, W. E Benders, J. (2021), "Implementando O Projeto Hospitalar Liderado Pelo Lean; Lições Adquiridas Em Um Pioneiro", Revista De Organização E Gestão Da Saúde, Vol. 35 No. 1, Pp. 1-16. <https://doi.org/10.1108/Jhom-08-2019-0250>
- Silva, J. Barreiras Atitudinais: Discutindo Inclusão No Cotidiano Escolar Através Do Combate Ao Capacitismo. Revista Educação, 2023. Disponível Em: <http://educacao.fcc.org.br/scielo.php?script=sci_arttext&pid=S1984-686X2023000100316>.
- Sohal, A., De Vass, T., Singh, P., Al Balushi, S., Al Hajri, A.S., Al Farsi, Y. E Al Arbi, R. (2021), "Assessing Readiness For Lean Thinking In Healthcare Settings: The Case For Oman", Industrial Management & Data Systems, Vol. 121 No. 11, Pp. 2338-2361. <https://doi.org/10.1108/Ijmds-02-2021-0120>
- Solaimani, S., Veen, J.V.D., Sobek li, D.K., Gulyaz, E. E Venugopal, V. (2019), "On The Application Of Lean Principles And Practices To Innovation Management: A Systematic Review", The Tqm Journal, Vol. 31 No. 6, Pp. 1064-1092. <https://doi.org/10.1108/Tqm-12-2018-0208>
- Sunder M., V., Ganesh, L.S. E Marathe, R.R. (2018), "A Morphological Analysis Of Research Literature On Lean Six Sigma For Services", International Journal Of Operations And Production Management, Vol. 38 No. 1, Pp. 149-182. <https://doi.org/10.1108/Ijopm-05-2016-0273>
- Timmy Ho, Dewayne M. Pursley. Economics At The Frontline: Tools And Tips For Busy Clinicians, Seminars In Perinatology, Volume 45, Issue 3, 2021, 151396, Issn 0146-0005, <https://doi.org/10.1016/j.semperi.2021.151396>.
- Tortorella, G., Van Dun, D.H. E De Almeida, A.G. (2020), "Leadership Behaviors During Lean Healthcare Implementation: A Review And Longitudinal Study", Journal Of Manufacturing Technology Management, Vol. 31 No. 1, Pp. 193-215. <https://doi.org/10.1108/Jmtm-02-2019-0070>
- Trakulsunti, Y.; E Trakoonsanti, L. (2021), "The Use Of Lean Tools To Reduce Hospitalpatient Time In A Thai Public Hospital: An Action Research Study", Leadership In Health Services, Vol. 34 No. 2, Pp. 84-97. <https://doi.org/10.1108/Lhs-10-2020-0080>
- Unibra. Soft Skills: O Impacto Das Competências Comportamentais No Mundo Contemporâneo. Centro Universitário Brasileiro, 2023. Disponível Em: <<https://www.unibra.edu.br/soft-skills-competencias-comportamentais>>.
- V., V., M., S. E Dutta, P. (2019), "Modelling The Readiness Factors For Agility In Healthcare Organization: A Tism Approach", Benchmarking: An International Journal, Vol. 26 No. 7, Pp. 2372-2400. <https://doi.org/10.1108/Bij-06-2018-0172>
- Vaishnavi, V.; E Suresh, M. (2021), "Assessment Of Readiness Level For Implementing Lean Six Sigma In Healthcare Organization Using Fuzzy Logic Approach", International Journal Of Lean Six Sigma, Vol. 12 No. 2, Pp. 175-209. <https://doi.org/10.1108/Ijlss-07-2019-0081>
- Van Beers, J.C.A.M., Van Dun, D.H. E Wilderom, C.P.M. (2022), "Effective Hospital-Wide Lean Implementation: Top-Down, Bottom-Up Or Through Co-Creative Role Modeling?", International Journal Of Lean Six Sigma, Vol. 13 No. 1, Pp. 46-66. <https://doi.org/10.1108/Ijlss-02-2021-0024>
- Vogus, T.J., Gallan, A., Rathert, C., El-Manstrly, D. And Strong, A. (2020), "Whose Experience Is It Anyway? Toward A Constructive Engagement Of Tensions In Patient-Centered Health Care", Journal Of Service Management, Vol. 31 No. 5, Pp. 979-1013. <https://doi.org/10.1108/Josm-04-2020-0095>

Work in Progress Papers

Being Bypassed: Uncovering Skip-Level Meetings from U.S. Frontline Technology Leaders' Perspectives

Samuel Blacher

Anderson University, South Carolina, USA

samuel@managementatwork.org

Abstract: This exploratory qualitative study examined the practice of skip-level meetings, in which employees meet with a manager above their direct supervisor. Scholar research on this leadership practice is scarce, while it is widely yet inconsistently implemented in industry and frequently discussed in business publications outside academia. The study focused on investigating the experiences and perspectives of the potentially “skipped” managers, who may have the most unpredictable views on the practice. A diverse group of 25 first-level engineering managers from U.S. technology organizations, differing in individual and organizational contexts, participated. Findings revealed surprisingly broad support and implementation, with perceptions linked to culture, generation, meeting format, and other aspects. Synthesized with existing literature and intersecting theories, various insights and practical implementation guidelines emerged, along with recommendations for future research directions.

Keywords: Skip-level meetings, Skip-Level, Leader–Member exchange, Employee voice, Leadership communication, Skip-Level voice

1. Introduction

Research has extensively examined traditional hierarchical communication; however, the literature on skip-level meetings, where employees interact directly with higher-level leaders, is scarce. In contrast, such meetings are common in industry, as also indicated by this study, and discussed in well-regarded non-academic outlets (e.g., Nawaz, 2025; Zebroski, 2023). They may benefit employees, managers, and organizations (e.g., Detert & Treviño, 2010; Xu, Liu & Jia, 2012) but can also have adverse effects (e.g., Parsons, 1974; Xu, Liu & Jia, 2012).

This study qualitatively explored the perceptions of skipped leaders in the multicultural and otherwise leadership-challenging (as will be established) U.S. technology sector. As the ones being bypassed, skipped leaders may have the most unpredictable perspectives among all involved stakeholders. Some findings were surprising, diverging from expectations based on earlier studies, yet potentially explainable when considering specific contexts and related theories. Other findings aligned with and extended existing theories.

2. Theoretical Background

Skip-level meetings' roots lie in works such as System 4 Management, which advocated bypassing hierarchy (e.g., Likert, 1961; Nealey & Fiedler, 1968), followed by intersecting theories such as adaptive and inclusive leadership, employee voice, and leader-member-exchange (e.g., Detert & Burris, 2007; Thompson & Matkin, 2020; Yammarino, 2013). Direct empirical research remains limited, primarily confined to case studies or anecdotes. Specifically, no study was found via Google Scholar that focused on examining the perceptions of skipped leaders across individual or organizational contexts, in any industry or country. Nevertheless, such meetings are widely yet inconsistently implemented, and frequently discussed in popular business publications (e.g., Nawaz, 2025; Zebroski, 2023).

Effective implementation is theorized to enhance employee engagement, voice, trust, psychological safety, and organizational alignment (e.g., Detert & Treviño, 2010; Dirks & Ferrin, 2001; Parsons, 1974; Salamon & Robinson, 2008; Xu, Liu & Jia, 2012). Conversely, they may, especially when poorly executed, create tensions and misalignment, and reduce psychological safety (Burris, 2012; Detert & Treviño, 2010; Liu, Tangirala & Ramanujam, 2013; Parsons, 1974; Xu, Liu & Jia, 2012).

The U.S. technology industry is characterized by a high reliance on foreign-born employees, primarily from India and China (American Immigration Council, 2022), which introduces highly diverse workplace cultural norms (e.g., Hofstede, 1983). The sector also experiences high rates of turnover (Li et al., 2021) and remote work (Flex Index, 2024), overall elevating leadership challenges, while first-tier engineering leaders tend to lack leadership skills (Coetzee, Johnston & Van Belle, 2014), which are even more important than technical skills (e.g., Kalliamvakou et al., 2019), offering a unique environment for skip-level meetings' examination.

3. Method

Using qualitative exploration with elements of interpretive phenomenology and thematic analysis (Braun & Clarke, 2006; Tuohy et al., 2013), 25 first-tier engineering managers in mid- and large-sized U.S. technology companies, differing in individual (e.g., age) and organizational (e.g., workplace or team size) attributes, were purposively selected. A small incentive was offered to encourage participation without introducing a significant ethical risk (Abdelazeem et al., 2022; Halpern et al., 2021).

Rich textual responses were collected through mostly open-ended online surveys and analyzed inductively and deductively. The analysis was then reviewed by ChatGPT in “Temporary Mode” (Bijker et al., 2024; Lee et al., 2024), along with a review by an external researcher, to increase rigor.

4. Results

Findings suggested that skip-level meetings are widely adopted in U.S. Tech, more than in other contexts (Zebroski, 2023). Surprisingly, participants almost unanimously favored the concept of skip-level meetings, and the vast majority expressed positive sentiment towards their implementation in their referenced workplaces, contrary to assumptions (Burris, 2012; Parsons, 1974; Xu, Liu & Jia, 2012). Improved transparency, communication, and alignment were frequently highlighted.

Interestingly, both the subgroup of leaders who had not recently experienced relevant skip-level meetings and the subgroup of leaders who were able to compare recent work environments with and without such meetings had positive sentiment towards the concept. Table 1 summarizes various subgroups and sentiments within them:

Table 1: Overall sentiment towards skip-level meetings

Subgroup		Subgroup participants	Subgroup participants' sentiment towards skip-level meetings					
			Positive		Conditional negative		Negative	
		n	n	%	n	%	n	%
Referenced a current work environment with skip-level meetings, no comparison environment without		20	17	85%	2	10%	1	5%
Comparable	Current work environment with skip-level meetings and prior without	1	1	100%	0	0%	0	0%
	Current work environment without skip-level meetings and prior with	2	1.5	75%	0.5	25%	0	0%
	Total comparable	3	2.5	83%	0.5	17%	0	0%
Hypothetical (no relevant current or prior environment with skip-level meetings)		2	2	100%	0	0%	0	0%
Grand total		25	21.5	86%	2.5	10%	1	4%

Negative sentiments were rare and linked to the reported cultural backgrounds of stakeholders and to participants' generation and certain perceptions, such as about misalignments or disagreements with their state of inclusion or exclusion from these meetings. Skip-level meetings were mainly reported in two formats: One-on-ones, which usually excluded direct leaders, and multi-team, which usually included them. Interestingly, almost no team-unit skip-level meetings were reported, and surprisingly, participants generally preferred to be excluded, and exclusion was linked to positive sentiment.

While excluded participants (mostly from one-on-ones) reported more misalignments due to skip-level meetings, these virtually nullified when excluded participants were involved in follow-ups, suggesting that combining exclusion with follow-up involvement is the most preferable in terms of sentiment and misalignment concerns, likely also with employees' psychological safety. Inclusion (mostly from multi-team meetings) was linked with more misalignment reports due to skip-level interactions external to skip-level meetings, suggesting that direct leaders' inclusion, or perhaps the larger (multi-team) forums, hindered psychological safety and led employees to seek alternative voice opportunities. Nevertheless, inclusion has its advantages too, as also called out by participants.

Additionally surprising was that despite the importance of agendas (e.g., Bicharra Garcia et al., 2004; Flinchum et al., 2022) and follow-ups, many excluded leaders reported no involvement in these for skip-level meetings. Table 2 summarizes sentiment against inclusion/exclusion, follow-up involvement, and types of misalignment concerns:

Table 2: Participants' inclusion / exclusion, follow-ups, misalignment concerns, and sentiment

Overall sentiment	n	Included / excluded	Follow-ups involvement	Misalignment concerns due to			
				Skip-level meetings		External skip-level interactions	
				n	%	n	%
Negative	2	Excluded	No ^a	2	100%	0	0
	2	Included	Yes	0	0	1	50%
Positive	8	Excluded	Yes	1	12.5%	0	0
	5	Excluded	No	2 ^b	40% ^b	0	0
	6	Included	Yes	0	0	5	83.3%

^a One out of the two indicated they have a follow-up, but it was unclear whether it is with the follower or the manager. ^b Both participants mentioned a minor concern about misalignment.

Additional patterns and mediators, not described in this paper, were identified.

5. Conclusions

Skip-level meetings appear to be the norm and widely favored by skipped first-tier leaders in the U.S. tech industry. Generational and cultural influences, as well as alignment with skipped leaders, such as about their inclusion or exclusion, and via follow-ups, play a significant role and should be addressed in implementation.

This study fills a literature gap in an understudied topic, offering insights that are sometimes novel, unexpected, or extend other theories. Combined with existing knowledge and acknowledging limitations (e.g., the small and purposively selected sample), an early practical implementation framework can emerge. Future research should extend to other sectors, cultures, organizational tiers, and contexts.

Acknowledgements

This study was based on the author's research for his PhD dissertation at Anderson University, South Carolina (Blacher, 2025). A full-length manuscript, with additional insights and information, is under review for publication in a scholarly journal.

I sincerely thank my parents, Yuli and Adela Blecher, for their unwavering support, guidance, and love, which laid the foundation for my academic and professional path.

Ethical statement: The study received IRB clearance. All participants explicitly acknowledged a waiver of consent statement.

AI statement: ChatGPT in "Temporary Mode," with data excluded from training and not saved beyond a short period, was used to review the analysis, increasing rigor and ensuring that no significant bias effect occurred, as established earlier, in addition to non-A.I. methods.

References

- Abdelazeem, B., Abbas, K. S., Amin, M. A., El-Shahat, N. A., Malik, B., Kalantary, A., & Eltobgy, M. (2022). The effectiveness of incentives for research participation: A systematic review and meta-analysis of randomized controlled trials. *PLOS ONE*, 17(4). doi:10.1371/journal.pone.0267534
- American Immigration Council. (2022, June 22). *Foreign-born STEM workers in the United States*. <https://www.americanimmigrationcouncil.org/research/foreign-born-stem-workers-united-states>
- Bicharra Garcia, A. C., Kunz, J., & Fischer, M. (2004). Cutting to the chase. *Proceedings of the 2004 ACM Conference on Computer Supported Cooperative Work*, 346–349. doi:10.1145/1031607.1031664
- Bijker, R., Merkouris, S. S., Dowling, N. A., & Rodda, S. N. (2024). CHATGPT for automated qualitative research: Content analysis. *Journal of Medical Internet Research*, 26. doi:10.2196/59050
- Blacher, S. (2025). *Skip-Level Meetings: Perspectives of Skipped First-Tier U.S. Tech Leaders* [PhD Dissertation, Anderson University, SC]. ProQuest Dissertations & Theses.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. doi:10.1191/1478088706qp063oa
- Burris, E. R. (2012). The risks and rewards of speaking up: Managerial responses to employee voice. *Academy of Management Journal*, 55(4), 851–875. doi:10.5465/amj.2010.0562
- Coetzee, A., Johnston, K., & Van Belle, J. P. (2014). People management skills of information systems managers. *Information Management in the Networked Economy: Issues & Solution*, 622–630.
- Detert, J. R., & Burris, E. R. (2007). Leadership behavior and employee voice: Is the door really open? *Academy of Management Journal*, 50(4), 869–884. doi:10.5465/amj.2007.26279183
- Detert, J. R., & Treviño, L. K. (2010). Speaking up to higher-ups: How supervisors and skip-level leaders influence employee voice. *Organization Science*, 21(1), 249–270. doi:10.1287/orsc.1080.0405
- Dirks, K. T., & Ferrin, D. L. (2001). The role of trust in organizational settings. *Organization Science*, 12(4), 450–467. doi:10.1287/orsc.12.4.450.10640
- Flex Index. (2024). The Flex Report Q4 2024. https://www.canva.com/design/DAGXmAgpbxM/6f8VQt9salcgC2CeJ8DI5Q/view?utm_content=DAGXmAgpbxM&utm_campaign=designshare&utm_medium=link&utm_source=publishsharelink
- Flinchum, J. R., Kreamer, L. M., Rogelberg, S. G., & Gooty, J. (2022). One-on-one meetings between managers and direct reports: A new opportunity for meeting science. *Organizational Psychology Review*, 13(4), 478–505. doi:10.1177/20413866221097570
- Halpern, S. D., Chowdhury, M., Bayes, B., Cooney, E., Hitsman, B. L., Schnoll, R. A., Lubitz, S. F., Reyes, C., Patel, M. S., Greysen, S. R., Mercede, A., Reale, C., Barg, F. K., Volpp, K. G., Karlawish, J., & Stephens-Shields, A. J. (2021). Effectiveness and ethics of incentives for research participation. *JAMA Internal Medicine*, 181(11), 1479. doi:10.1001/jamainternmed.2021.5450
- Hofstede, G. (1983). The cultural relativity of organizational practices and theories. *Journal of International Business Studies*, 14(2), 75–89. doi:10.1057/palgrave.jibs.8490867
- Kalliamvakou, E., Bird, C., Zimmermann, T., Begel, A., DeLine, R., & German, D. M. (2019). What makes a great manager of software engineers? *IEEE Transactions on Software Engineering*, 45(1), 87–106. doi:10.1109/tse.2017.2768368
- Lee, V. V., van der Lubbe, S. C., Goh, L. H., & Valderas, J. M. (2024). Harnessing ChatGPT for thematic analysis: Are we ready? *Journal of Medical Internet Research*, 26. doi:10.2196/54974
- Li, Y., Liu, W., Qi, C., & Zhu, H. (2021). Factors and potential solutions of high turnover rates of tech companies and based on mathematical statistics analysis. *2021 International Conference on E-Commerce and E-Management (ICECEM)*, 174–179. doi:10.1109/icecem54757.2021.00042
- Likert, R. (1961). *New patterns of management*. McGraw-Hill.
- Liu, W., Tangirala, S., & Ramanujam, R. (2013). The relational antecedents of voice targeted at different leaders. *Journal of Applied Psychology*, 98(5), 841–851. doi:10.1037/a0032913

- Nawaz, S. (2025, January 27). How to build a relationship between your employee and your boss. Harvard Business Review. <https://hbr.org/2025/01/how-to-build-a-relationship-between-your-employee-and-your-boss>
- Nealey, S. M., & Fiedler, F. E. (1968). Leadership functions of middle managers. *Psychological Bulletin*, 70(5), 313–329. doi:10.1037/h0026505
- Parsons, S. (1974). The ten commandments for organizational effectiveness. *Proceedings of the Human Factors Society Annual Meeting*, 18(3), 325-332.
- Salamon, S. D., & Robinson, S. L. (2008). Trust that binds: The impact of collective felt trust on organizational performance. *Journal of Applied Psychology*, 93(3), 593–601. doi:10.1037/0021-9010.93.3.593
- Thompson, H., & Matkin, G. (2020). The evolution of inclusive leadership studies: A literature review. *Journal of Leadership Education*, 19(3), 15–31. doi:10.12806/v19/i3/r2
- Tuohy, D., Cooney, A., Dowling, M., Murphy, K., & Sixsmith, J. (2013). An overview of interpretive phenomenology as a research methodology. *Nurse Researcher*, 20(6), 17–20. doi:10.7748/nr2013.07.20.6.17.e315
- Xu, E., Liu, W., & Jia, R. (2012). The cost to go the extra mile: Consequences of skip-level voice. *Academy of Management Proceedings*, 2012(1), 13525. doi:10.5465/ambpp.2012.13525abstract
- Yammarino, F. (2013). Leadership. *Journal of Leadership & Organizational Studies*, 20(2), 149–155. doi:10.1177/1548051812471559
- Zebroski, M. (2023). *An examination of skip-level meetings and their relationship with job embeddedness* [Master's thesis, The University of North Carolina at Charlotte]. ProQuest Dissertations & Theses.

When AI Changes its Tone, Does Acceptance Follow?

Kevin Lejeune¹ and Corentin Burnay²

¹Department of Strategic Support, CHU UCL Namur, Belgium and NADI - MINDIT Research Center, University of Namur, Belgium

²Department of Business administration and Management, NADI - MINDIT Research Center, University of Namur, Belgium

kevin.lejeune@unamur.be

corentin.burnay@unamur.be

Abstract: The integration of artificial intelligence (AI) into decision-making processes raises numerous questions about acceptance, particularly in hospital environments marked by strong professional identities. This working paper presents an ongoing experimental study that explores how the conversational tone of an AI agent might influence the acceptance of its recommendations, depending on the psychological profile of the healthcare professional. Building on a 2x2x2 model structured around three dimensions of ego (personal value, perceived competence and social role), the study aims to demonstrate that adapting the tone can significantly improve acceptance to algorithmic recommendations. The experimental protocol involves profession-specific scenarios in which participants assess a series of AI-generated messages, each introduced during the option evaluation stage of the decision-making process. By proposing a novel identity-based approach to AI design, this study seeks to contribute to both theory and practice. It is expected to open perspectives for the development of conversational agents capable of dynamically adjusting their tone to enhance acceptability and support professional autonomy in hospital settings.

Keywords: Conversational AI, Ego profiles, Decision-Making process, AI recommendation acceptance, Hospital professionals

1. Introduction

Artificial intelligence (AI) is gradually transforming decision-making practices in healthcare organizations, providing algorithmic support that is both powerful and fast (An et al, 2023; Davenport & Kalakota, 2019). However, this technological promise faces a more nuanced reality: the acceptance of AI-generated recommendations by healthcare professionals remains partial, uneven, and often silently resistant (Coeckelbergh, 2020; Martineau & Godin, 2023).

A substantial body of literature has examined the conditions for technology adoption, notably through models such as TAM (Davis, 1989), UTAUT (Venkatesh et al, 2003) and UTAUT2 (Venkatesh et al, 2012). These approaches explain adoption in terms of perceived usefulness, ease of use, or trust in the system. Yet, they do not always account for the identity-related specificities of hospital professionals, nor the interactional dimension of certain types of AI, such as conversational recommendation agents.

Our research aims to address this gap by investigating a central hypothesis: the acceptance of an AI recommendation depends not only on its content or source, but also on its tone; and how that tone resonates with the recipient's psychological profile. This represents an original theoretical and empirical contribution, seeking to better understand the mechanisms of interaction between humans and intelligent systems in contexts where professional identity plays a central role in stability, legitimacy, and decision-making power.

2. Conceptual Framework

2.1 Conversational Recommendation AI in Hospital Settings

This study focuses on a specific form of AI: the conversational recommendation agent. Such systems deliver suggestions in natural language to support professional reasoning. Unlike rule-based engines or silent interfaces, they initiate exchanges sometimes perceived as "human-like", distinguishing them from other interaction modes. Rather than being prescriptive or autonomous, they belong to the category of "augmented" or "collaborative AI" (Glikson & Woolley, 2020), designed to enhance, rather than replace, human analytical capabilities.

In our protocol, the AI intervenes during a key stage of the decision-making process: option evaluation, situated between problem identification and final decision (Simon, 1960). This moment of subjective arbitration involves complex interactions between professional judgment, self-image, and message formulation. The importance of this stage stems from the fact that the healthcare professional is not yet

committed to action but is situated in a cognitive deliberation space, where the tone of a message can subtly, yet decisively, shape how its content is received.

2.2 Ego as a Moderating Variable

Professional ego is conceived here as a relatively stable set of internal representations, structured around three components: *personal value*, defined as the recognition of one's own professional legitimacy; *perceived competence*, referring to the confidence an individual has in their ability to act effectively; and *social role*, understood as the perceived position within a hierarchy or institution. Unlike *identity threat* (Selenko et al, 2022), a contextual reaction triggered by the introduction of a new technology, ego here is a pre-existing structural filter, present before any interaction with the AI.

To explain reactions to tone-ego mismatches, three psychological mechanisms are mobilized. *Cognitive dissonance* (Festinger, 1957) helps explain how a message contradicting one's positive self-image may lead to rejection. *Threat to autonomy* (Deci & Ryan, 2000) arises when a message is seen as overly directive, potentially restricting freedom of action, especially for professionals with high perceived competence. Lastly, *system justification* (Jost, 2020; Jost & Banaji, 1994) sheds light on defensive or identity-based reactions when a de-hierarchized message is interpreted as delegitimizing institutional status. These established mechanisms in the social sciences offer a novel framework for linking tone preferences to identity dynamics, especially salient in hospital environments.

2.3 The 2x2x2 Model: Ego Profiles and Tone Hypotheses

Combining two levels (low/high) for each of the three ego dimensions yields eight theoretical psychological profiles. Each is associated with a theoretical preference for AI message tone. For instance, a professional with high personal value, high perceived competence, and a strong social role might respond positively to a collaborative and affirming tone, but negatively to a neutral, impersonal tone.

The central hypothesis is that alignment between message tone and ego profile maximizes recommendation acceptance. Eight hypotheses (H1 to H8) have been formulated, each corresponding to a specific profile and its preferred tone. This framework enables the prediction of optimal interactional conditions to foster the acceptance of AI-generated messages.

3. Methodology

3.1 Experimental Design and Scenario Preparation

The study follows a two-phase protocol. The first phase establishes each participant's psychological profile using a structured questionnaire composed of nine items, equally covering the three ego dimensions. Personal value is assessed via an adaptation of the Rosenberg Self-Esteem Scale (Rosenberg, 1965), focused on professional self-esteem; perceived competence through the General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995); and social role using an adapted Subjective Social Status Scale (Adler et al, 2000), measuring perceived recognition within the organization.

In the second phase, participants review AI-generated messages identical in content but differing in tone. Eight messages correspond to profiles from the 2x2x2 model, while a ninth, neutral-toned message serves as a baseline. These messages are presented within profession-specific scenarios, selected from a set of six realistic options prepared for each professional group by a panel of experts. The AI message is introduced during the option evaluation stage of the decision-making process. It is not intended to prescribe a course of action, but rather to support professional reasoning. This ensures both contextual realism and a clear distinction from systems that operate autonomously or impose decisions. Participants rate each message by answering: "To what extent does this message seem appropriate and worthy of being considered in your professional reasoning?", using a seven-point Likert scale (1 = not at all, 7 = completely).

3.2 Planned Analysis

Data analysis will begin with an ANOVA to test interactions between ego profiles and message tones. This initial step aims to empirically verify whether certain combinations are statistically associated with higher acceptance. A second step will involve regression models to estimate the specific contribution of each ego dimension to the level of acceptance. This will help determine whether certain dimensions have a more structuring effect on message reception than others. Finally, classification analyses will explore the influence of control variables (profession, experience, gender, age, etc.) on the expressed preferences. The objective is to assess whether contextual or professional status effects modulate the observed results.

This protocol isolates tone effects while accounting for interindividual variability. It also opens the door to identifying atypical profiles or counterintuitive configurations that could enrich theoretical modeling and inspire new directions in the conversational design of AI systems in hospital environments.

4. Expected Discussion

This study could lead to a psychological segmentation of AI users in hospital settings. It would suggest that, beyond technical aspects (such as usefulness or explainability), message reception may depend on tone and its alignment with the recipient's identity. Such findings would complement work on system personalization (Seeber et al., 2020) and highlight the potential of ego-based adaptive design. It might also raise important questions about the role of language as a symbolic mediator in human-AI relationships, an aspect still largely underexplored in research dominated by functionalist perspectives.

5. Future Perspectives

Beyond the empirical validation of the proposed model, this research could open avenues for developing AI systems capable of adjusting their tone to user's psychological profiles, in the interest of ethical acceptability and effective support. It would also invite reflection on which stages of the decision-making process AI should be involved in, without undermining professional autonomy. Ultimately, these results might inform the design of health systems that are more attuned to identity dynamics, enhancing their effectiveness while respecting the human and institutional balance specific to hospital environments.

Ethics Declaration: Ethical approval was not required for the research presented in this paper.

AI Declaration: AI was employed to generate the simulated recommendation messages used in the experimental phase, based on predefined tone variations. As the study focuses on the impact of such messages, its use was intentional and aligned with the research objectives. All conceptual design and theoretical framework were entirely developed by the authors.

References

- Adler, N.E., Epel, E.S., Castellazzo, G. and Ickovics, J.R. (2000) "Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy, White women", *Health Psychology*, Vol 19, No. 6, pp. 586–592. <https://doi.org/10.1037/0278-6133.19.6.586>
- An, A., Rahman, M.S., Zhou, J. and Kang, J.J. (2023) "A comprehensive review on machine learning in healthcare industry: Classification, restrictions, opportunities and challenges", *Sensors*, Vol 23, No. 9, 4178. <https://doi.org/10.3390/s23094178>
- Coeckelbergh, M. (2020) *AI Ethics*, MIT Press.
- Davenport, T.H. and Kalakota, R. (2019) "The potential for artificial intelligence in healthcare", *Future Healthcare Journal*, Vol 6, No. 2, pp. 94–98. <https://doi.org/10.7861/futurehosp.6-2-94>
- Davis, F.D. (1989) "Perceived usefulness, perceived ease of use, and user acceptance of information technology", *MIS Quarterly*, Vol 13, No. 3, pp. 319–340. <https://doi.org/10.2307/249008>
- Deci, E.L. and Ryan, R.M. (2000) "The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior", *Psychological Inquiry*, Vol 11, No. 4, pp. 227–268. https://doi.org/10.1207/S15327965PLI1104_01
- Festinger, L. (1957) *A theory of cognitive dissonance*, Stanford University Press.
- Glikson, E. and Woolley, A.W. (2020) "Human trust in artificial intelligence: Review of empirical research", *Academy of Management Annals*, Vol 14, No. 2, pp. 627–660. <https://doi.org/10.5465/annals.2018.0057>
- Jost, J.T. (2020) *A Theory of System Justification*, Harvard University Press.
- Jost, J.T. and Banaji, M.R. (1994) "The role of stereotyping in system-justification and the production of false consciousness", *British Journal of Social Psychology*, Vol 33, No. 1, pp. 1–27. <https://doi.org/10.1111/j.2044-8309.1994.tb01008.x>
- Martineau, J.T. and Godin, F.R. (2023) "Tour d'horizon des enjeux éthiques liés à l'IA en santé", *Éthique publique*, Vol 25, No. 1. <https://doi.org/10.4000/ethiquepublique.7978>
- Rosenberg, M. (1965) *Society and the adolescent self-image*, Princeton University Press. <https://doi.org/10.1515/9781400876136>
- Schwarzer, R. and Jerusalem, M. (1995) "Generalized Self-Efficacy Scale", in Weinman, J., Wright, S. and Johnston, M. (eds.) *Measures in health psychology: A user's portfolio. Causal and control beliefs*. Windsor, UK: NFER-NELSON, pp. 35–37.
- Seeber, I., Bittner, E.A.C., Briggs, R.O., de Vreede, T., de Vreede, G.-J., Elkins, A., Maier, R. and Merz, A.B. (2020) "Machines as teammates: A research agenda on AI in team collaboration", *Information & Management*, Vol 57, No. 2, 103174. <https://doi.org/10.1016/j.im.2019.103174>
- Selenko, E., Leicht-Deobald, U., Charlier, S.D. and Baldry, C. (2022) "Artificial intelligence and the future of work: A functional-identity perspective", *Group & Organization Management*, Vol 47, No. 4, pp. 737–773. <https://doi.org/10.1177/09637214221091823>

- Simon, H.A. (1960) *The New Science of Management Decision*, New York: Harper & Brothers.
- Venkatesh, V., Thong, J.Y.L. and Xu, X. (2012) "Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology", *MIS Quarterly*, Vol 36, No. 1, pp. 157–178. <https://doi.org/10.2307/41410412>
- Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D. (2003) "User acceptance of information technology: Toward a unified view", *MIS Quarterly*, Vol 27, No. 3, pp. 425–478. <https://doi.org/10.2307/30036540>

Workplace Learning Potential as a Mediator Between Psychological Safety and Strategy Implementation

Teemu Ojala and Soila Lemmetty

Philosophical faculty, School of Educational Sciences and Psychology, University of Eastern Finland, Finland

teemu.ojala@uef.fi

soila.lemmetty@uef.fi

Abstract: Organisations are required to strategically renew to survive the competition and sudden shifts in the modern world. In addition to making the right choices, a successful strategic change entails implementation. However, strategy implementation often fails due to problems in communication and inadequate information sharing. This study conceptualizes strategy implementation as the concrete actions and interactions that employees participate during their everyday work. Consequently, implementing a new strategy demands that employees adapt to new actions and thinking – in other words, learning. Thus, the success of the implementation process depends on learning. A growing body of literature recognizes the importance of psychological safety in learning processes. Psychological safety fosters an environment of trust in which employees can voice their true opinions regarding the strategy and are not afraid to learn through trial and error. Yet, the current understanding of the relationships between strategy implementation (SI), learning potential of the workplace (LPW) and psychological safety (PS) is fragmented. Previous studies have recognized the significance of learning in organisational change and strategy process, but they suffer from vague definitions of learning. Furthermore, research on the relationship between strategy implementation and psychological safety is lacking. The aim of this multidisciplinary empirical study is to fill mentioned research gap and create an understanding of how these phenomena are connected by examining their relationships with quantitative methods, utilizing scientifically valid measures. The sample consists of Finnish working-age adults ($n = 1023$). A mediation model confirmed significant associations between 1) PS and SI, 2) LPW and SI, 3) PS and LPW, and 4) an indirect effect of PS on SI via LPW. Besides confirming prior findings and opening new insights, the results of this study can be applied in organisations to improve and build sustainable practices for strategy implementation, change management, learning, and to cultivate open communication and collaboration in teams.

Keywords: Strategy implementation, Learning potential of the workplace, Psychological safety, Organisational change

1. Introduction and Theoretical Background

Organisations must adapt constantly to survive. Effective strategy implementation benefits organisations as well as the employees. A successful change requires not only a well thought out strategic plan, but a well-executed implementation too, or the thoughtfully formulated strategy might not deliver the desired results (Noble, 1999). Despite previous studies recognizing the significance of learning in the strategy process (e.g. Crossan and Berdrow, 2003; Kenny, 2006) and the learning confirming traits of psychological safety (e.g. Edmondson, 1999; Kim et al, 2021), prior research examining strategy implementation (SI) and psychological safety (PS) is scarce, not to mention learning potential of the workplace (LPW) added in the equation.

SI refers to the process by which a strategy is systematically translated into concrete organisational actions aimed at achieving long-term strategic objectives (Whittington et al, 2023). The analysis of strategy through daily practices has gained increasing attention within the Strategy-as-Practice (SAP) stream (Vaara and Whittington, 2012). In this approach SI is not merely an administrative exercise, but a dynamic participatory process, that involves learning: engaging employees in practices that enable and are shaped by the strategy. As a result, interaction and communication between all levels of the organisation becomes significant. Indeed, prior studies recognize reasons for implementation failures as poor or inadequate information sharing (Hrebiniak, 2006) and problems in communication (Aaltonen and Ikävalko, 2002). Notably, Beer and Eisenstat (2000) state that the absence of open communication limits the organization's ability to implement strategy, in essence, to learn. In this study, SI is conceptualized as a collective level engagement in strategically aligned actions and interactions (Van Riel et al, 2009).

When learning is recognized as an invaluable organisational asset, fostering learning becomes a strategic priority for organisations (Nikolova et al, 2014). The discourse on workplace learning highlights the role of participation in workplace practices, where learning depends on the opportunities afforded by the workplace (Billett, 2004). Nikolova et al (2014) identify core components of work-based learning as interactional (learning from colleagues and supervisors) and task-based (learning through reflection and experimentation) learning.

Given that SI and LPW benefit from open communication and knowledge sharing, exploring their interaction with PS is relevant, as prior studies suggest it fosters these conditions. In essence, PS is a perception that the

benefits of speaking up outweigh the costs to the speaker and that making a mistake won't be used against you (Edmondson, 1999). It is this atmosphere of mutual trust and respect that enables more open communication, enhanced knowledge sharing and openness for learning experiences (Newman et al, 2017) – all of which can be seen as critical elements during strategic transitions.

Hence, the following hypotheses were set:

H1. Psychological safety predicts strategy implementation.

H2. Learning potential of the workplace predicts strategy implementation.

H3. Psychological safety predicts learning potential of the workplace.

H4. Learning potential of the workplace mediates the relationship between psychological safety and strategy implementation.

2. Research aim and Questions

The aim of the study is to explore the relationships between SI, LPW and PS and address gaps found in the previous research.

The study poses four research questions:

RQ1: Does psychological safety predict strategy implementation?

RQ2: Does learning potential of the workplace predict strategy implementation?

RQ3: Does psychological safety predict learning potential of the workplace?

RQ4: Does learning potential of the workplace mediate the relationship between psychological safety and strategy implementation?

3. Data and Methodology

Data were collected using an online questionnaire during April 2025. The study participants (n = 1023) were Finnish working-age adults. A correlation matrix and a mediation model were conducted to answer the research questions. The analyses were performed using Mplus software version 8.11 (Muthén & Muthén, 2017). The scales were as follows: SI (Van Riel et al, 2009), LPW (Nikolova et al, 2014) and PS (Edmondson, 1999). Reliability was assessed with Cronbach's alpha (SI $\alpha = 0.84$; LPW $\alpha = 0.85$; PS $\alpha = 0.83$). All measures were standardized to ensure comparability. The measures were translated into Finnish by the researchers and back into English by a native English-speaking professional translator to confirm the quality of the questionnaire. Descriptive statistics are reported in Table 1.

Table 1: Descriptive statistics

		<i>n</i>	%
Position (n = 1023)	Employee	808	79.0
	Manager	111	10.9
	Leader	104	10.1
Working mode (n = 1023)	On-site	608	59.4
	Remote	98	9.6
	Hybrid	317	31.0
Type of work (n = 996)	White collar	425	42.6
	Blue collar	377	37.9
	Combined	194	19.5

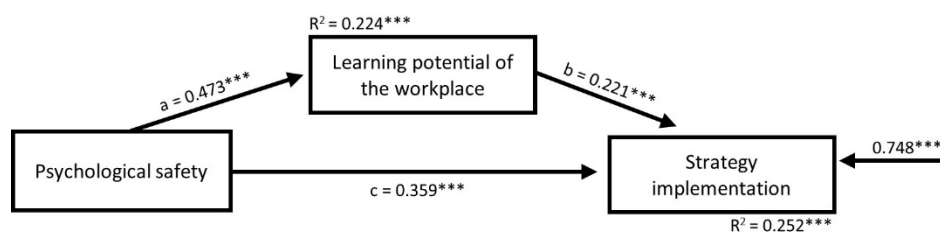
4. Preliminary Findings

First, Pearson correlations were calculated to examine associations among the variables (see Table 2). All variables were positively and statistically significantly correlated, supporting the theoretical assumptions.

Table 2: Correlation matrix (n = 1023, *p<0,001)**

Variable	1 SAB	2 LPW	3 PS
1 SAB	1.00		
2 LPW	0.391***	1.00	
3 PS	0.463***	0.473***	1.00

Second, a mediator model was conducted to test the presented hypotheses and to assess the mediating role of LPW in the relationship between PS and SI. Figure 1 displays the saturated mediator model ($\chi^2(0) = 0$, $p = 0$; CFI = 1.00; TLI = 1.00; RMSEA = 0.00). The analysis revealed that both LPW ($\beta = 0.221$) and PS ($\beta = 0.359$) significantly predicted SI and that PS significantly predicted LPW ($\beta = 0.473$). There was also a statistically significant indirect effect of PS on SI via LPW ($\beta = 0.105$, 95% CI [0.077, 0.135], $p < 0.001$), supporting the presence of partial mediation. The total effect of PS on SI was also significant ($\beta = 0.463$). Therefore, all four hypotheses were supported. The model explained 25.2 % of the variance in SI and 22.4 % of variance in LPW. Results of the mediation analysis are displayed in Table 3.

**Figure 1: Mediation model (n = 1023, ***p<0.001)****Table 3: Results of the mediation analysis**

				95 % CI		
Effect	Path	β	S.E.	Lower	Upper	p
Total	PS -> SI	0.463	0.028	0.417	0.519	<0.001
Indirect	PS -> LPW -> SI	0.105	0.018	0.071	0.140	<0.001
Direct	PS -> SI	0.359	0.032	0.298	0.421	<0.001

5. Conclusion and Contribution

All hypotheses were statistically supported: both PS and LPW predicted SI as well as PS predicted LPW. In addition, a partial mediation was confirmed between PS and SI via LPW. These findings indicate that PS enhances SI not only directly but also indirectly through increased LPW. In addition to acting as a mechanism linking PS to SI, LPW can strengthen SI independently. These results reinforce extant work (Kim et al, 2021) while contributing novel empirical findings. Consequently, fostering trustful and respectful environment, along with providing working conditions that support learning through interaction, experimentation and the acceptance of mistakes, both appear as core components in facilitating strategy implementation. Moreover, promoting psychological safety appears to be critical in advancing learning opportunities of the workplace.

In practice, managers play an instrumental role in cultivating PS by leading through example, encouraging participation and normalizing mistakes as opportunities to learn (Althammer et al, 2025), while consistently aligning their words and actions. Furthermore, employees should be provided with opportunities to reflect, experiment and engage in discussions about their work tasks with both colleagues and supervisors (Nikolova et al, 2014).

Future research could explore possible moderation and group differences (e.g. working mode and type of work) in associations between SI, PS and learning. Following analyses should replicate the model with latent constructs to assess the quality of measurement and for better theoretical validity (Kelloway, 2015). Moreover, subsequent studies should consider qualitative methods to explore the underlying mechanisms between strategy implementation, learning and psychological safety in greater depth.

Acknowledgements

We gratefully acknowledge funding from Finnish Cultural Foundation (00240776).

Ethics statement: No ethical clearance was required for this research.

AI statement: No AI tools were used in the creation of this paper.

References

- Aaltonen, P., Ikävalko, H., (2002) *Implementing strategies successfully* 13, 415–418. <https://doi.org.ezproxy.utu.fi/10.1108/09576060210436669>
- Althammer, S.E., Wöhrmann, A.M., Michel, A., (2025) The effectiveness of a team intervention to enhance team regulation in hybrid teams: a randomized controlled trial. *Eur. J. Work Organ. Psychol.* 0, 1–19. <https://doi.org/10.1080/1359432X.2025.2562306>
- Beer, M., Eisenstat, R.A., (2000) The Silent Killers of Strategy Implementation and Learning.
- Billett, S., 2004. Workplace participatory practices: Conceptualising workplaces as learning environments. *J. Workplace Learn.* 16, 312–324. <https://doi.org/10.1108/13665620410550295>
- Crossan, M.M., Berdrow, I., (2003) Organizational learning and strategic renewal. *Strateg. Manag. J.* 24, 1087–1105. <https://doi.org/10.1002/smj.342>
- Edmondson, A., (1999) Psychological Safety and Learning Behavior in Work Teams. *Adm. Sci. Q.* 44, 350–383. <https://doi.org/10.2307/2666999>
- Edmondson, A.C., (2004) Psychological Safety, Trust, and Learning in Organizations: A Group-Level Lens, in: Kramer, R.M., Cook, K.S. (Eds.), *Trust and Distrust In Organizations, Dilemmas and Approaches*. Russell Sage Foundation, pp. 239–272.
- Hrebiniak, L.G., (2006) Obstacles to Effective Strategy Implementation. *Organ. Dyn.* 35, 12–31. <https://doi.org/10.1016/j.orgdyn.2005.12.001>
- Kelloway, E.K., (2015) *Using Mplus for Structural Equation Modeling: A Researcher's Guide*. SAGE Publications, Inc. <https://doi.org/10.4135/9781483381664>
- Kenny, J., (2006) Strategy and the learning organization: a maturity model for the formation of strategy. *Learn. Organ.* 13, 353–368. <https://doi.org/10.1108/09696470610667733>
- Kim, S.M., Kim, M.J., Jo, S.J., (2021) The relationships between perceived team psychological safety, transactive memory system, team learning behavior and team performance among individual team members. *Leadersh. Organ. Dev. J.* 42, 958–975. <https://doi.org/10.1108/LODJ-09-2020-0402>
- Newman, A., Donohue, R., Eva, N., (2017) Psychological safety: A systematic review of the literature. *Hum. Resour. Manag. Rev.* 27, 521–535. <https://doi.org/10.1016/j.hrmr.2017.01.001>
- Nikolova, I., Van Ruysseveldt, J., De Witte, H., Syroit, J., (2014) Work-based learning: Development and validation of a scale measuring the learning potential of the workplace (LPW). *J. Vocat. Behav.* 84, 1–10. <https://doi.org/10.1016/j.jvb.2013.09.004>
- Noble, C.H., (1999) The Eclectic Roots of Strategy Implementation Research. *J. Bus. Res.* 45, 119–134. [https://doi.org/10.1016/S0148-2963\(97\)00231-2](https://doi.org/10.1016/S0148-2963(97)00231-2)
- Vaara, E., Whittington, R., (2012) Strategy-as-Practice: Taking Social Practices Seriously. *Acad. Manag. Ann.* 6, 285–336. <https://doi.org/10.1080/19416520.2012.672039>
- Van Riel, C.B.M., Berens, G., Dijkstra, M., (2009) Stimulating Strategically Aligned Behaviour Among Employees. *J. Manag. Stud.* 46, 1197–1226. <https://doi.org/10.1111/j.1467-6486.2009.00837.x>
- Whittington, R., Johnson, G., Regner, P., Scholes, K., Duncan, A., (2023) *Exploring strategy: text and cases*, Thirteenth edition. ed. Harlow, England: Pearson.

Healthcare Lean Readiness Assessment in a Territorial Outpatient System

Caterina Pozzan¹, Anna Tiso¹, Maria Crema² and Chiara Verbano¹

¹Department of Management and Engineering, University of Padova, Vicenza, Italy

²Azienda Ulss 2 Marca Trevigiana, Treviso, Italy

caterina.pozzan.1@phd.unipd.it

anna.tiso@unipd.it

maria.crema@aulss2.veneto.it

chiara.verbano@unipd.it

Abstract: Healthcare organisations are increasingly compelled to adopt innovative managerial approaches to meet the high standards of care quality demanded by demographic changes, particularly the ageing population and the rising diffusion of chronic diseases. In this context, strengthening territorial care is essential to guarantee universal healthcare coverage. Providing care in outpatient and primary care settings enables more effective responses to population health needs, supports the prevention of chronic disease progression, and helps to reduce costly hospital admissions and clinical risks. However, implementing managerial innovation in territorial settings presents significant challenges due to the involvement of multiple care providers who must effectively coordinate and communicate to ensure continuity and integration of care. In this context, Healthcare Lean Management (HLM) emerges as a managerial approach that can reduce wastes while enhancing process performance and care quality. Nonetheless, many HLM initiatives fail due to insufficient organisational readiness to implement such a complex approach. To overcome this challenge, HLM readiness assessments are essential for identifying all those managerial, organisational, and cultural factors that must be strengthened before launching an HLM initiative. To this purpose, the current study aims to conduct an HLM readiness assessment within an outpatient territorial healthcare system in Italy, to identify critical areas for improvement and support the organisation in preparing for future HLM implementation. The evaluation was conducted using a previously developed model. A questionnaire was administered to employees and managers within the targeted setting, enabling the mapping of the readiness level and the identification of the weakest factors to be improved. Preliminary findings indicate key weaknesses in the diffusion of a culture that promote change acceptance and continuous improvement. In fact, despite strong support from top and middle management, there is a limited presence of HLM experts and leaders responsible for guiding and facilitating HLM and quality improvement projects. Results will be shared with participants to identify root causes and discuss possible countermeasures. This study represents an initial example of HLM readiness assessment in a non-hospital setting, providing valuable insights for initiating sustainable and effective improvement processes in this underexplored context. It advances knowledge in this field by proposing a model applicable in a territorial healthcare setting, without requiring prior expertise in HLM, and by integrating data analysis results with health staff insights. The contribution, both academic and managerial, also supports social sustainability and promotes patient well-being.

Keywords: Healthcare lean management, Territorial healthcare, Outpatient, Readiness, Sustainability

1. Introduction and Theoretical Background

The European territorial healthcare context is currently undergoing significant changes and reforms aimed at improving healthcare services and strengthening universal healthcare coverage. These efforts are designed to address the pressing challenges faced by health systems, such as resource shortages and demographic shifts (World Health Organization, 2022). Effective territorial care services play a crucial role in managing elderly and chronic patients at the local level, preventing disease exacerbations and thereby reducing avoidable hospital admissions (Young et al., 2021).

To achieve these goals, given the managerial complexity and the need to effectively integrate multiple care services, it is essential to innovate and implement structured approaches for quality improvement from a managerial and organizational perspective (World Health Organization and United Nations Children's Fund, 2018). Among these, Healthcare Lean Management (HLM) is the most widely used approach within this sector, although its adoption within territorial healthcare settings remains limited (Tiso et al., 2022). HLM leverages a set of principles, practices, tools, and techniques to enhance all aspects of value for patients, reduce wastes, and improve patient safety and satisfaction and process performance (Talero-Sarmiento et al., 2024).

Despite the numerous benefits associated with HLM (Antony et al., 2019), its successful implementation is often challenging. Many HLM projects either remain incomplete or fail to sustain improvement over time because the target healthcare setting is not sufficiently "ready" for the introduction of such methodologies (Narayanamurthy et al., 2018). Several managerial, cultural, and organizational factors must be considered before initiating an HLM implementation, as their presence or absence can significantly influence the likelihood of success. These

factors, referred to in the literature as Critical Readiness Factors (CRF), are assessed in HLM readiness evaluations based on their presence within the target context and their relative importance in supporting the successful implementation of HLM. This evaluation enables organizations to determine the overall level of HLM readiness within the target setting and to identify key areas requiring improvement to support future HLM initiatives (Narayanamurthy et al., 2018).

In light of the existing literature, this study aims to advance knowledge regarding HLM readiness assessment in territorial healthcare contexts. Specifically, this study seeks to conduct an HLM readiness assessment within an outpatient territorial healthcare system in Italy, with the objective of identifying critical areas for improvement and supporting the organization in preparing future successful HLM implementation.

2. Methodology

To address the objective of this study, the HLM readiness assessment model developed by Pozzan et al. (2024) was adopted. The application of this model entails, first, the identification of the relevant setting in accordance with the research objectives, and subsequently, the determination of the HLM readiness level through the assessment of 39 CRFs.

Specifically, a structured questionnaire was developed to assess, for each CRF, the perceived level of presence within the healthcare setting (Table 1). The evaluation involved six healthcare professionals, including individuals in top and middle management roles, physicians, and nurse coordinators, all belonging to the same territorial healthcare setting. The questionnaire was distributed via an email link, and assistance was provided throughout its completion. A facilitator, one of the authors, was available to address any questions or doubts raised by the respondents. Respondents were selected for their commitment to the study and their willingness to contribute not only by completing the questionnaire but also by engaging in subsequent phases, including result sharing and follow-up activities. All respondents successfully completed the questionnaire. Additionally, the perceived importance of each CRF in supporting sustainable HLM implementation was evaluated through a separate questionnaire, which was administered to HLM experts during interviews. Six HLM experts from academia, as well as private and public health organizations, were involved. The data collected through the questionnaires were analyzed by associating fuzzy numbers with linguistic variables and employing descriptive statistics to achieve two distinct objectives: 1) To provide a descriptive analysis of the target setting's level of readiness 2) To identify the weakest CRFs requiring improvement.

To address the first data analysis objective, the readiness level of the target setting was calculated by weighting the perceived level of presence by the perceived level of importance assigned by HLM experts for each CRF, and then averaging these values for the entire target setting and for each stakeholder category. To achieve the second objective, the fuzzy Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) was applied to rank the CRFs. The aim was to prioritize those factors considered highly important by HLM experts but perceived as less present in the target setting by health staff. The results obtained were shared with the health personnel involved in the assessment. This step aimed to suggest possible directions for improvement by discussing the identified weakest CRFs with the staff, thereby fostering a collaborative approach to continuous improvement.

Table 1: Example of a questionnaire for assessing the perceived level of importance and presence, with the corresponding supporting literature: case of the CRF related to cross-functional project teams.
Table by authors

CRF	Likert scale		Reference
Project team members are selected from different departments to create a cross-functional healthcare team to improve patient satisfaction and system-wide performance rather than focusing on individual results	<i>Perceived level of presence</i>	<i>Perceived level of importance</i>	(Alnajem et al., 2019; Costa et al., 2024; de Souza & Pidd, 2011; Delgado et al., 2010; Desai et al., 2012; Narayanamurthy et al., 2018)
	1 = totally disagree	1 = important	
	2	2 = very important	
	3	3 = essential	
	4		
	5 = totally agree		

3. Preliminary Results

In line with the research objectives, the selected target setting for conducting the HLM readiness assessment was an outpatient healthcare system in Italy, which provides both primary and specialist ambulatory care services to a population of over 200,000 residents.

The data analysis findings are presented according to three distinct phases.

3.1 Determining the HLM Readiness Level

The HLM readiness level was calculated as described in the methodology section, both for the target setting as a whole and disaggregated by stakeholder categories. As shown in Figure 1, while the overall HLM readiness level is challenging to interpret in absolute terms, it may serve as a useful metric for longitudinal comparisons within the same setting or for benchmarking across different settings. Furthermore, the readiness levels of different stakeholder categories can be compared both among themselves and against the overall HLM readiness level. The results indicate that CRFs related to top and middle management, as well as to the healthcare organization, exhibit higher readiness compared to the overall average.

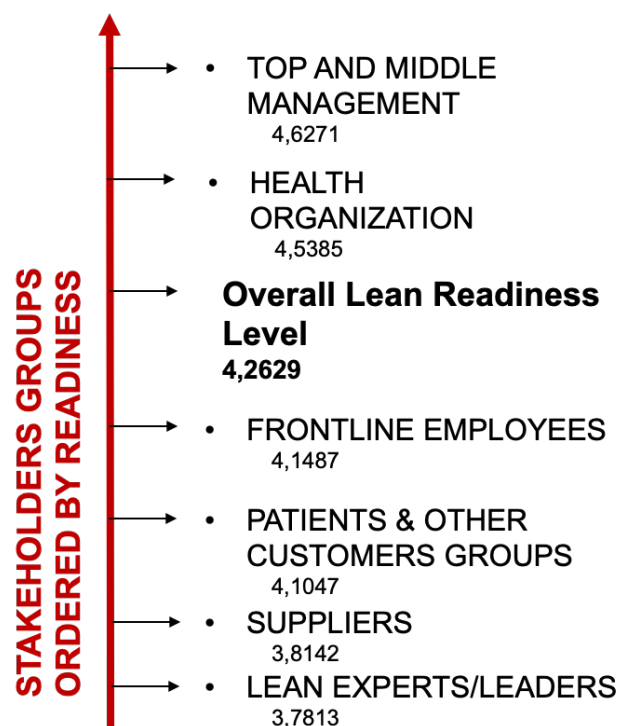


Figure 1: HLM Readiness Levels. Figure by authors

3.2 Identifying the Weakest CRFs to be Improved

As outlined in the methodology section, to address the second research objective, the ten weakest CRFs were identified:

1. Frontline employees' acceptance of change
2. HLM experts fostering a culture of continuous improvement
3. HLM experts acting as improvement project facilitators
4. Presence of roles dedicated to facilitating improvement process within the organization
5. Stakeholders' expectations alignment
6. Adoption of a project implementation plan
7. Cross-functional project team creation
8. Training for frontline employees and project team
9. Participation of frontline employees in decision-making processes
10. Employees commitment in their daily work activities

The results were subsequently shared with the health staff involved in the project, with the aim of identifying critical areas and exploring potential solutions tailored to the specific context.

3.3 Sharing Results with the Health Personnel Involved

A focus group with healthcare staff was conducted to discuss and validate the results of the data analysis. This collaborative step was crucial for confirming the critical issues identified and for co-developing realistic, context-specific improvement strategies. Within the selected setting, two primary challenges emerged: a) resistance to change and b) difficulties in multidisciplinary collaboration across hospital and territorial care services.

Regarding change acceptance, staff often experience top-down decisions with insufficient time to adapt and little communication about the rationale, goals, or expected outcomes. Engagement opportunities are limited, partly due to concerns that open dialogue might reveal challenges the organization feels unprepared to address, often rooted in a limited understanding of frontline work. Consequently, management may propose changes that lack practical feasibility. A key finding is the need for greater managerial awareness of day-to-day staff activities to design realistic, sustainable interventions. External facilitators could support this process by mediating between management and staff, facilitating communication, analysing, and mapping processes, and supporting the training and development of healthcare professionals.

As for the challenges of implementing multidisciplinary improvement projects, particularly those integrating hospital and territorial services, obstacles are linked to the siloed structure of the healthcare system and poor interprofessional understanding. This issue reflects broader health policy limitations: reforms have not unified hospital and territorial services, which continue to function independently. Fragmentation is worsened by the presence of providers outside the national healthcare system, hindering shared goals. Improved communication, supported by digital tools, is essential but must be accompanied by cultural change. Transitioning from a hospital-centric to a patient-centred system requires long-term commitment and cannot be achieved through short-term measures alone.

4. Conclusions

This study contributes to both the academic and managerial advancement of knowledge on the sustainability of HLM initiatives in territorial healthcare. Specifically, the application of this HLM readiness assessment model represents one of the first attempts to evaluate HLM readiness within a complex territorial healthcare setting. A key innovative aspect of this work lies in conducting the assessment in a context where HLM has been minimally, or not yet, implemented. Furthermore, the model offers not only a descriptive tool but also a prescriptive one, demonstrating how data analysis can be integrated with the active involvement of healthcare staff to identify context-specific improvement strategies.

These features, in addition to distinguishing this work from previous studies, provide valuable support to healthcare management and clinical leadership in promoting HLM initiatives that can succeed and whose outcomes can be sustained over time. Furthermore, the study contributes to support social sustainability by fostering the delivery of high-quality care and enhancing the well-being of both citizens and healthcare staff. The implementation of the HLM readiness assessment model and the results obtained in this study may prove highly valuable within the European context of strengthening territorial healthcare. Sustainable HLM initiatives can support proximity care, tailored to the specific needs of citizens, while also contributing to the pursuit of universal healthcare coverage.

Acknowledgements

Caterina Pozzan gratefully acknowledges the financial support of the European Union – NextGenerationEU, Mission 4 Component 1 [CUP C96E22000360007].

Ethics declaration: The authors declare that no patient-related information was used in the preparation of this manuscript. The paper does not contain any detailed case descriptions that could lead to the identification of individuals or specific organizations.

AI declaration: During the preparation of this work, the authors used ChatGPT to improve the readability of the manuscripts. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

References

- Alnajem, M., Garza-Reyes, J. A., & Antony, J. (2019). Lean readiness within emergency departments: a conceptual framework. *Benchmarking*, 26(6). <https://doi.org/10.1108/BIJ-10-2018-0337>
- Antony, J., Sunder M, V., Sreedharan, R., Chakraborty, A., & Gunasekaran, A. (2019). A systematic review of Lean in healthcare: a global prospective. In *International Journal of Quality and Reliability Management* (Vol. 36, Issue 8, pp. 1370–1391). Emerald Group Publishing Ltd. <https://doi.org/10.1108/IJQRM-12-2018-0346>
- Costa, F., Portioli-Staudacher, A., Alemsan, N., & Luz Tortorella, G. (2024). Readiness level assessment for lean Six Sigma implementation in the healthcare sector. *International Journal of Lean Six Sigma*, 15(1), 131–152.
- de Souza, L. B., & Pidd, M. (2011). Exploring the barriers to lean health care implementation. *Public Money and Management*, 31(1). <https://doi.org/10.1080/09540962.2011.545548>
- Delgado, C., Ferreira, M., & Branco, M. C. (2010). The implementation of lean Six Sigma in financial services organizations. *Journal of Manufacturing Technology Management*, 21(4). <https://doi.org/10.1108/17410381011046616>
- Desai, D. A., Antony, J., & Patel, M. B. (2012). An assessment of the critical success factors for Six Sigma implementation in Indian industries. *International Journal of Productivity and Performance Management*, 61(4). <https://doi.org/10.1108/17410401211212670>
- Narayanamurthy, G., Gurumurthy, A., Subramanian, N., & Moser, R. (2018). Assessing the readiness to implement lean in healthcare institutions – A case study. *International Journal of Production Economics*, 197. <https://doi.org/10.1016/j.ijpe.2017.12.028>

Educating Sustainable Leadership Through Academia–Industry Collaboration for Shared Value and Resilience

Iskra Rodríguez

Tecnológico de Monterrey, School of Business, Aguascalientes, México

iskr.rodriguez@tec.mx

Abstract: Sustainability and resilience are no longer optional; they are at the heart of how organizations and leaders must act today. Research shows that collaborations between academia and industry can significantly enhance organizational innovation, student employability, and entrepreneurial skills. For example, a recent study in *Sustainability* found that academia–industry linkages improve students’ ability to engage in real-world challenges, increase employability, and boost entrepreneurial capabilities (Shanavas et al., 2023). This paper shares lessons learned from a model that combines education, real-world collaboration, and a shared commitment to positive impact. At Tecnológico de Monterrey, students take courses on conscious capitalism, shared value, conscious leadership, and triple impact, where theory is quickly put into practice. Each semester, every student works directly with three different companies (spanning small start-ups, large corporations, and non-profit organizations) that share a real problem or need to be solved. This approach exposes students to diverse industries and business models, while companies benefit from fresh insights and practical proposals. Students address these challenges by utilizing updated course content, leadership tools, artificial intelligence (AI) applications, business simulators, global sustainability reports, and creativity from fresh perspectives unencumbered by routine or “workshop blindness.” The results have been highly encouraging. Many of the student-led ventures that emerged from this methodology now carry a strong social and environmental focus, embedding sustainability into their DNA. At the same time, the organizations involved implemented several of the students’ recommendations—adapting practices, exploring circular economy solutions, and integrating sustainability into strategies—proposals inspired by classroom theory but translated into actionable innovations. What makes this model distinctive is its dual impact: it fosters leaders ready to face global challenges while helping organizations of all sizes view sustainability not as a cost but as an opportunity for innovation, resilience, and shared value. This paper highlights experiences and reflections from these projects, demonstrating how academia–industry collaboration can play a crucial role in shaping sustainable leadership and building resilient organizations that create value for business, society, and the planet.

Keywords: Leadership, Business, Sustainable leadership, Academia–Industry collaboration, Shared value, Organizational resilience, Educational innovation, Higher education

1. Introduction

Organizations operate in an environment characterized by volatility, uncertainty, complexity, and ambiguity (VUCA), intensified by climate change, social inequality, and technological disruption (Horney et al., 2010). In this context, sustainable leadership is increasingly recognized as a fundamental competence for long-term competitiveness, integrating economic, social, and environmental dimensions (Avery & Bergsteiner, 2011). However, the transition from theoretical understanding to practical application remains a persistent challenge for many organizations.

Higher education institutions play a pivotal role in bridging this gap. Traditional instruction often prioritizes abstract theory, whereas challenge-based models promote experiential learning and applied problem solving. The Tecnológico de Monterrey’s *Tec21 Educational Model* represents this paradigm, emphasizing flexibility, mentoring, and real-world challenges (Tec de Monterrey, 2019). Within the School of Business, the Bachelor in Business Strategy and Transformation (LAET) program operationalizes this model by embedding direct collaborations between students and organizations.

This paper examines the LAET model as an empirical example of how academia–industry partnerships can foster sustainable leadership and generate innovation in participating companies. The central hypothesis states that integrating challenge-based learning with sustained collaboration enhances students’ leadership competencies and produces measurable organizational outcomes related to resilience and sustainability.

2. Literature Review

Leadership scholarships have evolved from transactional and transformational paradigms toward frameworks that emphasize sustainability, ethics, and systemic thinking. Avery and Bergsteiner (2011) argue that sustainable leadership emphasizes long-term stewardship and interdependence among economic, social, and environmental objectives. Maak and Pless (2006) conceptualize responsible leadership as a moral and relational process grounded in stakeholder engagement and collective purpose. These perspectives position leadership as an organizational capability that links performance with responsibility.

Academia–industry collaboration has been identified as a catalyst for innovation and employability. Plewa et al. (2015) demonstrate that partnerships structured around reciprocity and co-creation facilitate mutual learning and knowledge transfer. Shanavas et al. (2023) extend this by linking such collaborations to measurable sustainability outcomes, emphasizing the development of adaptive competencies such as systems thinking and cross-sector collaboration. These studies provide an empirical foundation for integrating academia–industry initiatives into higher education curricula.

Porter and Kramer’s (2011) theory of Creating Shared Value (CSV) reinforces the argument that social impact can drive competitiveness when embedded in business strategy. Resilience theory (Lengnick-Hall et al., 2011) complements this view by describing how adaptive learning processes enable organizations to evolve in the face of uncertainty. Together, these frameworks suggest that sustainable leadership education should not only impart values but also develop the analytical and adaptive skills necessary for managing complexity.

Kolb’s (2014) experiential learning theory, along with its applications through Problem-Based Learning (PBL) and Challenge-Based Learning (CBL), provides pedagogical support for linking management theory to practice. Brundiers et al. (2020) emphasize that sustainability education achieves a more profound impact when students engage directly with real-world challenges and stakeholders. The Tec21 model embodies these principles, transforming classroom knowledge into applied experience and allowing empirical evaluation of leadership and sustainability outcomes.

3. Methodology

A mixed-methods design was implemented to analyze the effects of the LAET collaboration model. Quantitative data were collected through surveys from students (n=180) and participating companies (n=15). The surveys, designed *ad hoc* and validated by faculty experts, measured leadership, ethics, teamwork, innovation, resilience, and digital fluency using five-point Likert scales. The analysis compared cohorts that completed theoretical courses only with those engaged in direct company projects. Results showed that average competence scores were 20–30% higher among students who worked with real companies.

Qualitative data were gathered through open-ended survey questions and reflective reports, facilitating triangulation of the quantitative findings. Responses were coded thematically to identify recurring patterns related to accountability, decision-making, and sustainability awareness. The reliability of the instruments was confirmed through internal consistency (Cronbach’s alpha >0.80).

Projects lasted five weeks per company. Two professors taught the theoretical component, and a third professor coordinated with organizational leaders to ensure alignment between academic content and business challenges. This triadic structure facilitated immediate application of theory and feedback. Ethical considerations included voluntary participation, informed consent, and anonymization of all data.

4. Results

Quantitative findings indicate significant improvements in all targeted competencies, with the most pronounced gains in teamwork, sustainable leadership, and strategic thinking. Companies reported tangible benefits, emphasizing creativity and the feasibility of student proposals.

Table 1: Student perceptions of competencies developed (n=180)

Competency	% reporting improvement
Teamwork & collaboration	95%
Sustainable leadership & ethics	92%
Strategic thinking & resilience	88%
Entrepreneurial/innovation mindset	84%
AI and digital tools usage	79%

A comparative analysis confirmed that students rated their competence growth higher than companies rated the applicability of proposals, suggesting differing perspectives on the feasibility of implementation.

Table 2: Student versus company perceptions of project impact

Indicator	Students (%)	Companies (%)
Leadership skills improved	90	86
Sustainability mindset enhanced	95	72
Practical applicability	80	82
Innovation capacity increased	87	78

Qualitative analysis highlighted recurring insights. Students reported increased accountability when presenting to real company executives, contrasting this experience with theoretical coursework. They recognized the strategic and ethical weight of executive decision-making and learned to balance profitability with environmental and social considerations. Companies described student proposals as innovative and valuable but noted that full implementation would require additional feasibility studies.

A clear correlation emerged: the more students interacted with real problems and executives, the greater their commitment and leadership growth. The projects also fostered sustainability awareness beyond immediate team departments, which often adopted suggested practices. These findings suggest that collaboration cultivates both individual competence and organizational learning.

5. Discussion

The results validate the hypothesis that structured academia–industry collaboration enhances sustainable leadership competencies while benefiting organizations. Quantitative comparisons demonstrated measurable learning gains, while qualitative data confirmed that exposure to real decision-making contexts strengthens accountability and ethical awareness. These findings align with experiential learning theory (Kolb, 2014) and CSV (Porter & Kramer, 2011), evidencing how academic practice can generate applied innovation.

The dual benefit of the Tec21 model lies in the simultaneous development of human and organizational capital. For students, interaction with executives builds confidence and systems thinking. For companies, collaboration yields fresh insights and low-cost innovation pilots. However, limited timeframes and resource constraints restrict the scope of implementation. Organizations also noted the need for follow-up studies to deepen feasibility assessments.

This study contributes to the sustainability education literature by empirically linking experiential learning to measurable outcomes in leadership and resilience. It demonstrates that short-term, structured collaborations can bridge the gap between theoretical instruction and strategic practice, predominantly when guided by coordinated faculty mentorship. Future studies should adopt longitudinal designs to evaluate long-term impacts on graduates' leadership behavior and organizational innovation trajectories.

6. Conclusion

The findings indicate that integrating challenge-based learning with sustained academia–industry collaboration effectively develops sustainable leadership and contributes to organizational resilience. Students demonstrated significant improvements in key competencies, and companies reported actionable proposals that aligned with their sustainability goals. Empirical evidence supports the value of real-world, faculty-guided engagement as a driver of both educational quality and business innovation.

The Tec21 and LAET model demonstrates that academic programs can become laboratories for sustainable transformation when theory, practice, and purpose converge. These results reinforce the relevance of collaboration-based education in advancing leadership capable of addressing global challenges while fostering shared value creation.

Ethics Declaration: All surveys were conducted voluntarily, with participants providing informed consent and responding anonymously.

AI Declaration: This paper was partially drafted and structured using ChatGPT (OpenAI) as a writing assistant. Final interpretation and responsibility remain with the author.

References

Avery, G.C. and Bergsteiner, H. (2011) *Sustainable Leadership: Honeybee and Locust Approaches*. Routledge, London.

- Brundiers, K., Barth, M., Cebrián, G., Cohen, M., Diaz, L., Doucette-Remington, S. et al. (2020) 'Key competencies in sustainability in higher education—toward an agreed-upon reference framework', *Sustainability Science*, 15, pp. 885–900.
- Elkington, J. (2018) '25 Years Ago I Coined the Phrase "Triple Bottom Line." Here's Why It's Time to Rethink It', *Harvard Business Review*, June.
- Horney, N., Pasmore, B. and O'Shea, T. (2010) 'Leadership agility: A business imperative for a VUCA world', *People and Strategy*, 33(4), pp. 32–38.
- Kolb, D.A. (2014) *Experiential Learning: Experience as the Source of Learning and Development*. Pearson, New Jersey.
- Lengnick-Hall, C.A., Beck, T.E. and Lengnick-Hall, M.L. (2011) 'Developing a capacity for organizational resilience through strategic human resource management', *Human Resource Management Review*, 21(3), pp. 243–255.
- Maak, T. and Pless, N. (2006) *Responsible Leadership*. Routledge, London.
- Plewa, C., Korff, N., Baaken, T. and Macpherson, G. (2015) 'University–industry linkage evolution: An empirical investigation of relational success factors', *R&D Management*, 45(1), pp. 22–46.
- Porter, M.E. and Kramer, M.R. (2011) 'Creating Shared Value', *Harvard Business Review*, 89(1/2), pp. 62–77.
- Shanavas, A., Jayakrishnan, M. and Rahim, A. (2023) 'Academia–industry collaboration for sustainable development: A systematic review', *Sustainability*, 15(2), pp. 1–18.
- Tec de Monterrey (2019) *Modelo Educativo Tec21*. Monterrey, México: Tecnológico de Monterrey.
- United Nations (2015) *Transforming our world: the 2030 Agenda for Sustainable Development*. United Nations, New York.
- World Economic Forum (2020) *The Future of Jobs Report 2020*. Geneva: WEF.

Late Submissions

Synthesising Challenges and Opportunities in Human Resource Development for Productivity Enhancement: Toward a Framework for Malaysia's High-Income Transition

Shahrul Azuwar Abdul Aziz and Norhasni Zainal Abiddin

National Defence University of Malaysia, Malaysia

norhasni@upnm.edu.my (Corresponding author)

Abstract: This paper provides an in-depth synthesis of Malaysia's human resource development (HRD) strategies, highlighting their role in promoting productivity enhancement and supporting the nation's transition toward a high-income economy. Malaysia has placed HRD at the centre of its economic planning through the 12th Malaysia Plan, the MyDIGITAL blueprint, and other policy initiatives. However, challenges remain in addressing the persistent issues of skill mismatch, limited TVET participation, talent mobility, and inclusivity in workforce development. Drawing from literature published between 2018 and 2023, supplemented by foundational studies that capture Malaysia's HRD evolution, this review analyses the alignment between HRD policies, institutional mechanisms, and productivity performance. It proposes a conceptual framework that links HRD challenges, policy enablers, and productivity outcomes. The framework demonstrates how human capital development contributes to innovation, competitiveness, and sustainable economic upgrading. The paper concludes with policy recommendations and a research agenda focusing on HRD-productivity linkages, coordination mechanisms, and longitudinal policy evaluation.

Keywords: Human resource development, Human capital, Skills training, Workforce development, Productivity; Malaysia

1. Introduction

Human Resource Development (HRD) has become one of Malaysia's most critical policy levers for economic and social transformation. The government's aspiration to achieve high-income status requires not only an expansion in industrial capacity but also a sustained rise in workforce productivity. In a rapidly changing global economy, characterised by technological disruption, demographic shifts, and increasing competition for skilled labour, HRD represents a key strategic driver that determines Malaysia's ability to remain competitive. Over the past two decades, Malaysia has implemented numerous HRD policies aimed at strengthening its labour market and improving employability outcomes. The 12th Malaysia Plan (2021–2025), the MyDIGITAL blueprint, and the National Fourth Industrial Revolution (4IR) Policy each emphasise the development of a future-ready workforce. Yet, despite these efforts, several challenges persist — particularly the limited uptake of technical and vocational education and training (TVET), persistent skills mismatches, and the ongoing outmigration of talent.

To sharpen the analytical focus and demonstrate the review's distinct contribution, this paper addresses the following research questions:

RQ1: Which human resource development (HRD) challenges most constrain Malaysia's transition toward a high-income, productivity-driven economy?

RQ2: What policy and governance levers show the greatest potential to enhance workforce skills, innovation, and productivity outcomes?

RQ3: How can a synthesised HRD framework support coherent strategies that link education, training, and institutional coordination for long-term productivity growth?

In answering these questions, this review synthesises and evaluates the literature to construct a framework that links HRD mechanisms to productivity enhancement. The framework is intended to assist policymakers, educators, and industry stakeholders in identifying priority areas for reform, coordination, and investment. It also clarifies how human capital development underpins productivity improvement, technological adoption, and Malaysia's long-term economic transformation.

2. Literature Review

2.1 HRD in Malaysia: Background and Evolution

Human resources are the foundation of every organization, uniting individuals of diverse roles toward shared goals (Abiddin, 2007; Abiddin & West, 2007; Hassan et al., 2016). In Malaysia, Human Resource Development (HRD) has evolved alongside the nation's economic transformation. Since the 1980s, HRD has been a key policy

instrument for enhancing productivity, driving industrialisation, and strengthening competitiveness. The government has long recognized human capital as central to sustainable growth, and HRD's evolution mirrors successive phases of national development planning. The First and Second Industrial Master Plans (IMP I: 1986-1995; IMP II: 1996-2005) focused on industrial diversification and workforce upgrading to support export-led growth. HRD policies during this era expanded vocational and technical education, promoted science and technology training, and strengthened industrial linkages to meet labor market needs. The Human Resources Development Act 1992 and the establishment of the Human Resources Development Fund (HRDF) institutionalized employer-based training, linking workforce competencies to enterprise productivity.

In the 2000s, Malaysia entered a new phase emphasizing knowledge-based economic development. The Knowledge Economy Master Plan (2001) and the 10th Malaysia Plan (2011–2015) redefined HRD as a driver of innovation, entrepreneurship, and global competitiveness. Major initiatives such as the National Dual Training System (NDTS) and the strengthening of Technical and Vocational Education and Training (TVET) institutions integrated academic learning with industrial experience to produce a high-skill labor force adaptable to technological change. The 11th Malaysia Plan (2016–2020) marked a shift toward inclusivity and equitable access to education and training. HRD strategies began addressing demographic challenges, regional disparities, and gender gaps. Yet productivity growth remained moderate compared to regional peers, revealing ongoing issues in skill utilization, technology adoption, and institutional coordination.

Under the 12th Malaysia Plan (2021-2025) and MyDIGITAL, HRD focuses heavily on digital skills, innovation ecosystems, and productivity enhancement. Within the Fourth Industrial Revolution (IR4.0) context, automation and data-driven technologies reshape work and skills demand. Key initiatives such as the National TVET Council, Digital Economy Blueprint, and Future Skills Framework illustrate Malaysia's intent to align human capital strategies with digital transformation and reduce skills mismatch through cross-ministerial coordination. Over time, HRD in Malaysia has progressed from a training-oriented model emphasizing skill acquisition to a strategic framework integrating education, technology, and governance reform. Nonetheless, persistent constraints remain—fragmented coordination, limited private-sector involvement, and inconsistent evaluation mechanisms hinder effectiveness. While HRD policies increasingly link to productivity goals, measurable impact indicators remain weak.

Major challenges include: (1) Skills mismatch - the gap between graduate competencies and industry needs limits innovation capacity; (2) Low TVET participation - vocational pathways remain undervalued, restricting technical talent supply; (3) Ageing workforce - demographic shifts increase the need for re-skilling and lifelong learning; (4) Brain drain - nearly two million Malaysians abroad represent a major loss of skilled labor; and (5) Inclusion gaps - gender, regional, and socioeconomic disparities reduce workforce efficiency. These structural barriers continue to constrain productivity and human capital efficiency. Overcoming them requires aligning HRD planning with economic diversification and digital transformation strategies.

In summary, Malaysia's HRD evolution reflects sustained policy commitment to human capital as a cornerstone of economic progress. However, translating this commitment into measurable productivity outcomes remains uneven. Continuous investment in skills, coupled with stronger integration of HRD governance into national productivity strategies, is essential. Figure 1 shows the conceptual framework illustrating the relationship between HRD challenges, policy enablers, and productivity outcomes in Malaysia.

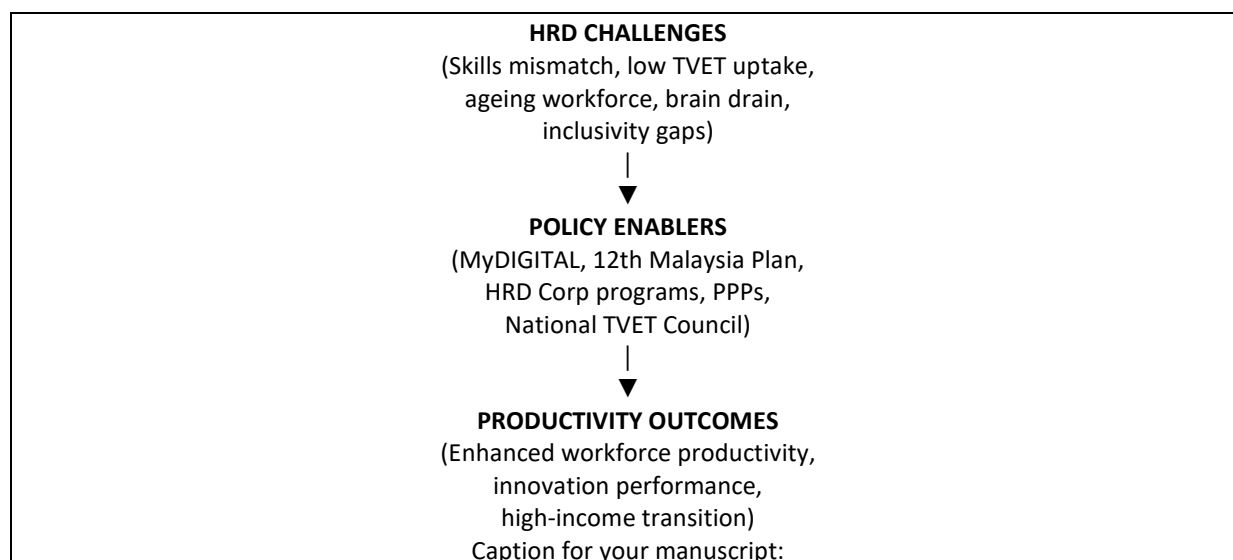


Figure 1: Conceptual Framework Illustrating the Relationship between HRD Challenges, Policy Enablers, and Productivity Outcomes in Malaysia

3. Methodology

This paper adopts a structured narrative review to analyse Malaysia's human resource development (HRD) policies and their relationship with productivity enhancement. The approach combines systematic elements of database searching with interpretive synthesis to capture both the breadth of existing studies and the depth of policy insights. The objective is to develop an integrated understanding of HRD mechanisms and their role in improving productivity outcomes across Malaysia's evolving economic landscape. The review process followed a transparent and replicable design. Academic sources were drawn from recognised databases including Scopus, Web of Science, and Google Scholar, while policy documents were obtained from official repositories such as the Economic Planning Unit (EPU), Ministry of Human Resources (MOHR), Ministry of Higher Education (MOHE), and National TVET Council. The time frame was set between 2018 and 2023, aligning with Malaysia's current policy cycle and the implementation of digital and productivity-led strategies. However, to capture Malaysia's HRD evolution, several foundational studies predating 2018 were also included based on their enduring conceptual relevance and citation influence.

The review process consisted of three sequential stages: (1) Identification: Relevant materials were located using combinations of keywords such as "human resource development," "Malaysia," "skills," "productivity," and "TVET."; (2) Screening: Studies were filtered for relevance to HRD governance, workforce development, or productivity enhancement. Duplicates, non-English sources, and purely descriptive reports were excluded, and (3) Inclusion: A final set of academic papers, policy documents, and institutional reports was selected for qualitative synthesis and framework construction. In total, the process yielded 96 initial records, of which 54 were screened for relevance and 35 were included in the final synthesis. These included empirical studies, conceptual papers, and government policy documents. Figure 2 presents a simplified flow diagram that illustrates the search and selection process.

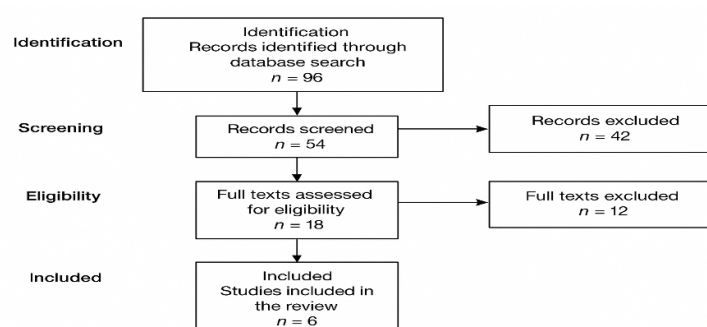


Figure 2: Flow Diagram that Illustrates the Search and Selection Process

Although the review incorporates structured search procedures, the diverse nature of HRD literature, spanning policy, management, education, and labour economics, renders a strictly systematic review less feasible. Therefore, this study applies a structured narrative synthesis approach, combining analytical rigour with interpretive flexibility. This enables the inclusion of both academic and policy-oriented perspectives while maintaining methodological transparency. To ensure clarity in interpreting earlier works, “foundational” sources published before 2018 were identified based on their theoretical or institutional significance. These sources are presented separately in Table 1 to distinguish their contextual relevance. This approach provides continuity between historical HRD evolution and recent productivity-oriented policies, ensuring that the final synthesis captures both legacy and contemporary dimensions of Malaysia’s HRD ecosystem. Among these, seven foundational HRD studies published before 2018 are summarised in Table 1 to illustrate the historical context of Malaysia’s HRD evolution.

Table 1: Foundational HRD Studies (Pre-2018) Included in the Review

No.	Author(s) / Year	Title / Focus	Key Contribution to HRD and Productivity in Malaysia
1	Economic Planning Unit (2004)	<i>Malaysia: 8th Malaysia Plan (2001–2005)</i>	Early articulation of HRD as a key pillar in national productivity and industrial policy.
2	Ministry of Human Resources (2009)	<i>Human Capital Development Master Plan</i>	Framework for linking HRD to national innovation and productivity outcomes.
3	Rahim, A. & Zain, M. (2011)	<i>Workforce Skills and Employability in Malaysia</i>	Highlights persistent skills mismatch between tertiary education and industry demand.
4	Kaur, S. (2012)	<i>TVET Policy Implementation in Malaysia</i>	Evaluates the gaps between policy design and institutional capacity in vocational education.
5	UNESCO (2014)	<i>Malaysia Education Blueprint (Higher Education)</i>	Positions higher education as a driver of workforce productivity and innovation.
6	World Bank (2016)	<i>Malaysia’s Digital Economy and Human Capital Report</i>	Introduces productivity-linked measures for assessing HRD readiness for Industry 4.0.
7	Abd. Rahman, R. (2017)	<i>Human Capital and Economic Transformation</i>	Establishes linkages between HRD, productivity, and Malaysia’s competitiveness in ASEAN.

4. Results

The structured narrative review reveals a complex but coherent relationship between Malaysia’s human resource development (HRD) policies and national productivity outcomes. The findings indicate that while the country has made consistent progress in strengthening its HRD ecosystem, productivity growth remains below potential due to structural, institutional, and perception-based constraints. The results are organised around three interrelated themes: (1) HRD challenges and constraints, (2) policy and institutional enablers, and (3) HRD–productivity linkages; and (4) HRD Opportunities in Malaysia. Collectively, these findings show that the effectiveness of HRD in Malaysia depends not only on training provision but also on how policy design, implementation, and coordination translate into measurable productivity improvements.

4.1 HRD Challenges and Constraints

The review highlights five critical HRD challenges that constrain productivity enhancement in Malaysia: skills mismatch, low TVET participation, an ageing workforce, talent mobility and brain drain, and persistent inclusion gaps. Despite significant progress, Malaysia continues to face several persistent HRD challenges. One major issue is the shortage of highly skilled workers and the mismatch between graduates’ qualifications and industry needs, particularly in technical fields and the digital economy (Abdullah, 2009; Ismail & Abiddin, 2014).

Malaysia’s HRD system continues to face structural challenges that constrain productivity growth. The most pressing issue is the skills mismatch between education outcomes and industry demand, particularly in digital and technical fields. Despite numerous training programs, many graduates lack practical competencies aligned with labour market needs. A second challenge is the low uptake of Technical and Vocational Education and Training (TVET), often perceived as a secondary option compared to academic pathways. This perception limits the supply of skilled technicians and mid-level professionals essential for industrial productivity. The ageing

workforce further complicates the landscape. As Malaysia advances toward high-income status, the share of older workers is increasing, underscoring the urgency of lifelong learning and re-skilling initiatives. Another concern is the ongoing brain drain, with skilled Malaysians seeking better opportunities abroad. This talent outflow reduces the nation's innovative and managerial capacity.

Finally, inclusion gaps persist among women, rural communities, and persons with disabilities. Unequal access to quality education and training opportunities restricts the productive potential of significant segments of the labour force. Together, these five challenges illustrate the critical need for a coherent, productivity-oriented HRD framework capable of aligning talent development with Malaysia's economic transformation goals.

4.2 Policy and Institutional Enablers

The Malaysian government has introduced a broad set of HRD policies and institutional mechanisms to stimulate productivity-led growth. The review identifies five major enablers: strategic policy frameworks, institutional coordination, private-sector engagement, digital skills initiatives, and performance-based funding systems.

First, the 12th Malaysia Plan (2021–2025) and MyDIGITAL Blueprint place human capital development at the centre of productivity-driven economic transformation. These frameworks prioritise digital competency, innovation ecosystems, and the integration of education and industry. For example, the “Boosting Labour Productivity” strategy under the 12th Plan explicitly targets productivity growth of 3.6% annually, to be achieved through workforce upskilling, automation, and HRD-led innovation. Second, the establishment of the National TVET Council represents a major governance breakthrough. It serves as a coordination hub across the Ministry of Human Resources (MOHR), Ministry of Higher Education (MOHE), and Ministry of Education (MOE). By aligning curriculum design, industry standards, and certification processes, this council promotes consistent training outcomes and directly links skills formation with productivity improvement. Effective coordination at this level prevents policy fragmentation and ensures that investments in training translate into measurable productivity impacts. Third, HRD Corp (Human Resource Development Corporation) acts as a key intermediary between employers and policymakers. Its levy-based funding model incentivises companies to invest in staff training, thereby improving firm-level productivity. Evaluations show that organisations participating in HRD Corp schemes report higher labour efficiency and innovation rates compared to non-participants. This indicates that public–private training partnerships can yield tangible productivity dividends. Fourth, Malaysia has intensified its focus on digital and technological skills as enablers of productivity growth. Programs under MyDIGITAL, such as the Digital Skills Training Directory and the Future Skills Framework, promote upskilling in artificial intelligence, data analytics, and automation. These initiatives equip the workforce to adapt to Industry 4.0 demands, increasing labour productivity and accelerating the country's transition to a high-income economy.

Finally, performance-based funding mechanisms now link HRD programs to measurable productivity indicators. Institutions receiving government grants must report output-oriented metrics, such as employment outcomes, innovation capacity, and productivity growth rates. This results-oriented approach marks a shift from training quantity to training quality, ensuring that HRD investments generate real economic value. Together, these policy and institutional enablers demonstrate that Malaysia's HRD model is progressively evolving from a human-capital accumulation framework to a productivity optimisation system where every HRD intervention is evaluated by its contribution to productivity growth.

4.3 HRD-Productivity Linkages

A central finding of the review is that HRD effectiveness in Malaysia is strongly correlated with productivity performance at both firm and national levels. The literature identifies three main linkages: (1) workforce capability and output efficiency, (2) organisational innovation capacity, and (3) systemic policy coordination.

First, workforce capability directly affects labour productivity. Empirical studies indicate that workers with continuous training exhibit up to 20% higher productivity than untrained counterparts. This productivity gain arises from enhanced task efficiency, reduced error rates, and improved technological adaptability. HRD initiatives that promote continuous learning, skill upgrading, and competency-based progression therefore yield cumulative productivity gains across industries. Second, HRD contributes to organisational innovation capacity, a key driver of total factor productivity (TFP). Companies that integrate HRD with research and development (R&D) activities report higher innovation output, product diversification, and export competitiveness. These effects demonstrate that HRD not only raises individual skills but also strengthens collective capabilities for innovation, the foundation of productivity-led growth. Third, policy coordination and

governance quality determine the overall productivity payoff of HRD programs. Fragmented or overlapping initiatives dilute impact, whereas coordinated frameworks such as the alignment of MOHR, MOHE, and MOE under the National TVET Council create synergies that multiply productivity effects. This systemic linkage reinforces the argument that productivity is not a by-product of HRD but its ultimate measure of success.

In conclusion, the results confirm that Malaysia's HRD ecosystem possesses substantial potential for productivity enhancement. The challenge now lies in translating policy coherence into measurable outcomes ensuring that every HRD strategy, from TVET modernisation to digital-skills investment, contributes directly to labour productivity growth, technological innovation, and sustained national competitiveness.

4.4 HRD Opportunities in Malaysia

Malaysia possesses several emerging opportunities to enhance human resource development and address future workforce needs. One significant opportunity lies in the strategic utilization of its youthful and diverse population. With a median age of approximately 30 years, Malaysia has a demographic advantage that can be leveraged through targeted youth-focused development programs. Initiatives that foster entrepreneurial skills, leadership development, and digital literacy among the younger generation can help build a resilient and adaptive workforce (Khazanah Research Institute, 2018). Another promising area is the strengthening of lifelong learning ecosystems. Malaysia is increasingly emphasizing continuous education and micro-credentialing through online platforms and flexible learning arrangements. This approach enables the working population to reskill and upskill without leaving employment, particularly in high-demand sectors such as green technology, healthcare, and the digital economy (Ministry of Human Resources Malaysia, 2022).

Moreover, Malaysia's aspiration to become a regional education and training hub presents new HRD opportunities. The influx of international students and collaborations with foreign universities and industries contribute to knowledge transfer, innovation, and cross-border mobility (Ismail & Abiddin, 2009). These engagements also support the development of globally competitive human capital (Ministry of Higher Education Malaysia, 2020). The integration of ESG (Environmental, Social, and Governance) principles in business strategy also opens up avenues for HRD by encouraging ethical leadership, inclusive workplace practices, and sustainability-related skills training. Such trends are aligned with global best practices and enhance Malaysia's appeal as a talent destination (World Bank, 2021). Additionally, increased investment in digital infrastructure under the MyDIGITAL initiative and the National Fourth Industrial Revolution Policy provides momentum for future-ready skills development. Public-private partnerships in this domain, including collaborations with global tech companies, are expected to accelerate Malaysia's transition into a knowledge-driven economy (Economic Planning Unit, 2021). Table 2 shows the literature search on human resource development in Malaysia which include the objective of the article and the main findings.

Table 2: Literature Search on the Progress of Human Resource Development in Malaysia

Author, Year	Objectives	Method	Sample	Theme	Main Findings
Azizan, N., Pangil, F., & Zin, M.L.M. (2021)	To present an overview of human capital development in Malaysia	Literature review and document analysis	-	Overview of human capital development	The education and training system is a key platform for HR development; the government emphasizes improving human capital quality to remain globally competitive.
Widarni, E. L., & Wilantari, R. N. (2021)	To identify the influence of health and education on Malaysia's economic growth	Quantitative – Threshold Autoregressive	World Bank secondary data	Training and economic performance	Health and education are critical to productivity and national performance; education strengthens human capital effectiveness.
Ismail, A., & Abiddin, N. Z. (2014)	To identify issues and challenges of TVET education for human capital development	Literature review	-	Issues in HRD	Despite a sizable workforce, only about 28% were highly skilled in 2010; TVET struggles with perception and industry relevance.
Abdullah, H. (2009)	To explore HR challenges in manufacturing firms	In-depth interviews	HR managers	HRM and technical workforce	Major challenges include recruiting technical experts and adapting senior staff to automation and tech evolution.

5. Discussion

5.1 A Productivity-Oriented HRD Framework

This discussion interprets the findings through a productivity-oriented HRD framework. Malaysia's HRD architecture has evolved through multiple policy phases, yet productivity performance still hinges on integrating skills, governance, and institutional coordination. HRD must not only expand human capital but ensure competencies translate into measurable productivity gains. Education reform and TVET modernization are crucial to resolve skill, productivity mismatches, while governance improvements such as cross-ministerial collaboration and industry partnerships are vital to avoid duplication and enhance training outcomes. Productivity growth depends on synergy between HRD design and implementation at national, organizational, and sectoral levels. Malaysia's HRD has progressed through structured government strategies and inter-agency collaboration. However, challenges such as skill mismatches, low TVET uptake, an aging workforce, and brain drain continue to impede outcomes. A key issue is the persistent gap between graduate supply and industry demand. Despite curriculum reforms and university–industry partnerships, employers still report difficulty finding job-ready graduates (Azizan et al., 2021; Sparrow et al., 2016), particularly in digital technology, advanced manufacturing, and green industries (Economic Planning Unit, 2021). This highlights the need for a more labor-market-responsive education and training system.

Low public perception of TVET remains a barrier to building a skilled workforce. Despite promotional campaigns, many students and parents still see TVET as a second-choice pathway (Ismail & Abiddin, 2014). Consequently, Malaysia faces shortages in technical fields even as TVET institutions expand. Strengthening public-private partnerships, offering employer incentives, and creating clear progression routes for TVET graduates into higher education and careers are essential to boost enrollment and prestige. An aging and digitally unprepared workforce is another challenge. Many older workers lack digital skills and are excluded from lifelong learning initiatives, limiting productivity in a digital economy (Abdullah, 2009). With the proportion of workers aged 50 and above steadily rising (Department of Statistics Malaysia, 2022), upskilling programs must become more inclusive and flexible for older employees.

Brain drain also poses a persistent threat, as over 500,000 Malaysians, many of them professionals work abroad (World Bank, 2021). This results in both talent loss and underutilization of public investment in education. Policies such as return migration incentives, improved career pathways, and competitive compensation are needed to retain and attract talent. The COVID-19 pandemic exposed further structural vulnerabilities. While digitalization accelerated, many especially informal workers were left behind due to limited access to training and technology (International Labour Organization, 2021). Government programs like the Penjana HRDF Training Scheme provided short-term relief, but long-term strategies must institutionalize reskilling and digital inclusion as core HRD pillars (Ministry of Finance Malaysia, 2020).

Women's participation in the labor force also remains below potential, hindered by career interruptions linked to caregiving responsibilities (Khazanah Research Institute, 2021). Initiatives such as flexible work options, subsidized childcare, and women-focused upskilling can enhance female participation and national productivity. Strategically, frameworks like the Shared Prosperity Vision 2030, MyDIGITAL Blueprint, and Malaysia's Education Blueprint 2013-2025 align human capital development with future economic goals. Yet fragmented implementation across ministries often leads to inefficiencies (World Bank, 2020). A more integrated and adaptive governance structure is needed to synchronize HRD policies with evolving labor market realities. In summary, Malaysia's HRD trajectory shows a strong policy foundation but remains constrained by systemic gaps in skills development, labor market integration, and inclusion. A holistic, evidence-based, and future-oriented HRD strategy is essential to sustain economic growth and social equity in the decades ahead.

5.2 Policy and Managerial Implications

Strengthening Malaysia's human resource development (HRD) ecosystem requires policies that directly link training initiatives with measurable productivity outcomes. Institutional coordination among the Ministry of Human Resources (MOHR), Ministry of Higher Education (MOHE), and Ministry of Education (MOE) must be improved to avoid program overlap and ensure efficient resource allocation. Establishing a central coordination mechanism or productivity-focused task force could align HRD strategies with national economic priorities.

To enhance firm-level productivity, the government should introduce incentives for SME upskilling and stronger industry education partnerships. Such collaboration ensures that training programs reflect real

market needs and yield measurable productivity gains. Additionally, integrating TVET-to-higher education pathways can motivate participation by improving social recognition and creating upward mobility for technical graduates. Digitalisation and lifelong learning must remain central pillars of HRD reform. Expanding access to digital skills programs under MyDIGITAL and Industry4WRD initiatives will improve labour efficiency, while continuous reskilling programs can mitigate the risks posed by technological disruption and an ageing workforce.

Finally, inclusive HRD policies are essential for maximising Malaysia's productive potential. Targeted initiatives for women, rural communities, and persons with disabilities can broaden labour participation and contribute to equitable productivity growth. A productivity-oriented HRD framework that integrates inclusivity, coordination, and innovation will strengthen Malaysia's competitiveness in its transition to a high-income economy.

6. Limitations and Future Research Agenda

While this paper provides a comprehensive synthesis of Malaysia's human resource development (HRD) policies and their relationship with productivity, several limitations must be acknowledged. Recognising these constraints is essential for guiding future research that seeks to deepen empirical understanding and strengthen the policy practice interface.

The first limitation concerns the literature-only design of the review. The analysis relied primarily on secondary data from academic publications, policy documents, and institutional reports. Although this approach offers a broad overview of HRD trends and productivity dynamics, it does not capture the full complexity of implementation realities at firm or sectoral levels. Future research should incorporate empirical fieldwork, case studies, or longitudinal surveys to assess the real productivity impact of HRD interventions on workers and enterprises. Second, the temporal scope of the review (2018-2023) limits its ability to track long-term productivity trajectories. Malaysia's HRD landscape is continuously evolving through new industrial strategies, digital transformation initiatives, and post-pandemic labour reforms. Longitudinal studies are needed to examine how sustained investments in HRD translate into productivity improvements over time and across economic cycles. Such research would enable policymakers to identify which programs yield the highest productivity returns and under what conditions. Third, the review acknowledges potential biases in policy documents and official reports. Government publications often emphasise intended outcomes rather than empirical performance, leading to optimistic interpretations of HRD effectiveness. Future research could triangulate policy claims with independent data sources, firm-level productivity indicators, and worker experiences to provide a more balanced assessment. A fourth limitation involves the measurement of productivity itself. Different studies use varying indicators labour productivity, total factor productivity (TFP), or organisational performance making direct comparison challenging. There is an urgent need to develop a standardised framework for measuring HRD-linked productivity outcomes that can be applied consistently across institutions and sectors.

Building on these limitations, several avenues for future research are proposed:

- Longitudinal impact evaluations of HRD and TVET programs to determine sustained effects on workforce productivity and innovation.
- Experimental or quasi-experimental studies testing behavioural interventions that influence training participation and productivity attitudes, particularly among youth and SMEs.
- Return-migration and re-skilling evaluations, focusing on the productivity potential of Malaysian talent abroad and mechanisms for reintegration into domestic industries.
- Digital skills measurement and ROI assessments, quantifying the productivity gains derived from MyDIGITAL and Industry 4.0 initiatives.
- Institutional effectiveness studies, examining how coordination between MOHR, MOHE, MOE, and HRD Corp impacts productivity-driven HRD governance.

Future studies that combine quantitative and qualitative methodologies will be crucial to advancing Malaysia's HRD productivity evidence base. Rigorous impact evaluation and productivity analytics can support evidence-based policymaking and ensure that HRD remains a central engine for national transformation.

7. Conclusion

This paper has examined the evolution of human resource development (HRD) in Malaysia and its critical linkage to national productivity performance. The review synthesised evidence from policy documents, institutional frameworks, and academic sources spanning foundational studies to recent initiatives under the 12th Malaysia Plan and MyDIGITAL Blueprint. Through this analysis, the study demonstrated that Malaysia's HRD system has undergone significant transformation from capacity-building and training-oriented models to a more strategic, productivity-centred approach.

The findings highlight that productivity enhancement must become the central criterion for HRD policy effectiveness. Traditional indicators such as training participation, certification counts, and budget utilisation no longer suffice to gauge success. Instead, HRD policies and programs should be evaluated based on measurable productivity gains at the individual, organisational, and national levels. Skills development is productive only when it translates into innovation, efficiency, and higher output per worker. Key challenges persist, including skills mismatch, limited TVET attractiveness, weak coordination among ministries, and the outflow of talent abroad. These structural constraints reduce Malaysia's potential to achieve a high-income economy grounded in productivity-led growth. However, recent institutional reforms particularly the establishment of the National TVET Council, enhancement of HRD Corp's role, and the digitalisation initiatives of MyDIGITAL represent strong steps toward a more coherent HRD-productivity framework.

The review also underscores the need for inclusive HRD strategies that harness the full potential of Malaysia's diverse workforce. Ensuring equal access to reskilling and upskilling opportunities, particularly for women, rural populations, and older workers, not only promotes equity but also expands the effective labour force contributing to productivity. Productivity growth and inclusivity are mutually reinforcing goals that together underpin sustainable national development. From a policy standpoint, Malaysia's future HRD strategy must focus on three priorities: (1) strengthening governance integration across ministries and industry partners, (2) embedding productivity metrics in all HRD evaluation systems, and (3) institutionalising continuous learning pathways from TVET to higher education. A productivity-driven HRD framework will not only sustain economic resilience but also enable Malaysia to compete effectively in an innovation-based global economy. In essence, this paper contributes a synthesised understanding of how HRD functions as both a means and a measure of productivity. The conceptual framework and policy recommendations presented here aim to inform decision-makers, industry leaders, and researchers seeking to enhance the impact of HRD on Malaysia's long-term productivity trajectory. Sustained investment in human capital guided by productivity outcomes remains the cornerstone of Malaysia's journey toward inclusive and high-income growth.

Acknowledgements

The authors sincerely appreciate National Defence University of Malaysia's financial assistance in publishing this article.

Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

Ethics Declaration: The authors declare that they have no competing interests.

AI Declaration: This work involved the use of AI tools to assist with [e.g., grammar checking, idea generation, formatting, summarization]. The final content was reviewed and edited by the author(s) to ensure accuracy, originality, and adherence to academic standards. No AI-generated content was submitted without critical human oversight.

References

- Abdullah, H. (2009). Major challenges to the effective management of human resource training and development activities. *Journal of International Social Research*, 2(8), 20-38.
- Abd. Rahman, R. (2017). *Human capital and economic transformation in Malaysia*. Kuala Lumpur: Institute of Labour Market Information and Analysis.
- Abiddin, N. Z. (2007). Challenges in Ph.D. Studies: The Case of Arts Student. *European Journal of Social Sciences*, 5(2), 83-93.
- Abiddin, N. Z., & West, M. (2007). Supervision Practices for Foreign Graduate Research Student. *American Journal of Applied Sciences*, 4(6), 362-370.
- Alagaraja, M. (2013). HRD and HRM perspectives on organizational performance: A review of literature. *Human Resource Development Review*, 12(2), 117-143.

- Azizan, N., Pangil, F., & Zin, M. L. M. (2021). Human Capital Development in Malaysia: Issues and Challenges. *Modeling Economic Growth in Contemporary Malaysia*, 151–175.
- Cho, E., & McLean, G. N. (2004). What we discovered about NHRD and what it means for HRD. *Advances in Developing Human Resources*, 6(3), 382–393.
- Department of Statistics Malaysia. (2022). *Labour Force Survey Report 2021*. <https://www.dosm.gov.my>
- Economic Planning Unit (EPU). (2021). *Twelfth Malaysia Plan (2021–2025)*. Prime Minister's Department. <https://rmke12.epu.gov.my>
- Economic Planning Unit. (2004). *Eighth Malaysia Plan (2001–2005)*. Putrajaya: Prime Minister's Department.
- Hamlin, B., & Stewart, J. (2011). What is HRD? A definitional review and synthesis of the HRD domain. *Journal of European Industrial Training*, 35(3), 199–220.
- Hassan, A., Maharoff, M., Abiddin, N. Z. & Ro'is I. (2016). Teacher trainers' and trainee teachers' understanding towards the curriculum philosophy regarding soft skills embedment in the Malaysian Institute of Teacher Education. *Policy Futures in Education*, 14(2), 164–175.
- Human Resources Development Corporation (HRD Corp). (2022). *Annual report 2022: Upskilling Malaysia's workforce*. Kuala Lumpur: HRD Corp.
- International Labour Organization (ILO). (2021). *Building Forward Fairer: Women's rights to work and at work at the core of the COVID-19 recovery*. <https://www.ilo.org>
- Ismail, A., & Abiddin, N. Z. (2014). Issues and challenges of technical and vocational education and training in Malaysia towards human capital development. *Middle-East Journal of Scientific Research*, 19(2), 7–11.
- Ismail, A. & Abiddin, N. Z. (2009). The Importance of Graduate Students' Needs on Supervisory Contribution in a Malaysian Public University. *The Social Sciences*, 4(4), 355–365.
- Kaur, S. (2012). *TVET policy implementation in Malaysia: Challenges and perspectives*. Kuala Lumpur: University of Malaya Press.
- Khazanah Research Institute. (2018). *The School-to-Work Transition of Young Malaysians*. <https://www.krinstitute.org>
- Ministry of Finance Malaysia. (2021). *Budget 2021 Speech and Initiatives*. <https://www.mof.gov.my>
- Ministry of Higher Education Malaysia. (2020). *Malaysia Education Statistics 2020*. <https://www.mohe.gov.my>
- Ministry of Human Resources Malaysia (MOHR). (2022). *National Human Resource Policy Report 2022*.
- Ministry of Human Resources (MOHR). (2020). *National Human Resource Policy Framework*. Putrajaya: Government of Malaysia.
- Ministry of Human Resources (MOHR). (2009). *Human Capital Development Master Plan*. Putrajaya: Government of Malaysia.
- MyDIGITAL. (2021). *Malaysia Digital Economy Blueprint*. Putrajaya: Government of Malaysia.
- Okoye, P. V., & Ezeiofor, R. A. (2013). The effect of human resources development on organizational productivity. *International Journal of Academic Research in Business and Social Sciences*, 3(10), 250–268.
- Osman, I., Ho, T. C. F., & Carmen Galang, M. (2011). The relationship between human resource practices and firm performance: an empirical assessment of firms in Malaysia. *Business Strategy Series*, 12(1), 41–48.
- Prime Minister's Department of Malaysia. (2021). *Malaysia Productivity Blueprint*. <https://www.mpc.gov.my>
- Rahim, A., & Zain, M. (2011). Workforce skills and employability in Malaysia. *Asian Journal of Education and Training*, 3(2), 45–57.
- Salleh, F. (2012). Competency-based human resource development strategy. *Asian Social Science*, 8(10), 132–138.
- Sparrow, P., Brewster, C., & Chung, C. (2016). *Globalizing human resource management*. Routledge.
- TalentCorp Malaysia. (2021). *Critical Occupations List 2021*. <https://www.talentcorp.com.my>
- Tien, N. H., Jose, R. J. S., Ullah, S. E., & Sadiq, M. (2021). Development of human resource management activities in Vietnamese private companies. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(14), 4391–4401.
- Tien, N. H. (2019). Human resource development in the digital age. *International Journal of Research in Business and Social Science*, 8(5), 20–30.
- UNESCO. (2014). *Malaysia Education Blueprint (Higher Education 2015–2025)*. Paris: UNESCO.
- Van Hiep, N. (2021). High Quality Human Resources Development. *PalArch's Journal of Archaeology of Egypt/Egyptology*, 18(4), 3818–3830.
- Widarni, Eny L., Regina, N. W. (2021). The relationship between human capital development and economic growth: Evidence from Malaysia. *The Journal of Asian Finance, Economics and Business*, 8(6), 641–650.
- World Bank. (2022). *Productivity drivers in Malaysia's manufacturing and services sectors*. Washington, DC: World Bank.
- World Bank. (2021). *Malaysia Economic Monitor: Weathering the Surge*. <https://www.worldbank.org/en/country/malaysia>
- World Bank. (2020). *The future of work in Malaysia: Harnessing human capital for productivity*. Washington, DC: World Bank.
- World Bank. (2016). *Malaysia's digital economy and human capital report*. Washington, DC: World Bank.
- Yusoff, R., & Omar, M. (2019). Enhancing workforce productivity through digital transformation: Evidence from Malaysian SMEs. *Journal of Human Resource and Sustainability Studies*, 7(3), 145–160.