

Proceedings of the
7th International Conference on
Gender Research

**Hosted by the Universitat Autònoma
de Barcelona
Spain**

25-26 April 2024



Prof. Carmen-Pilar Martí Ballester

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Proceedings of the

**7th International Conference on
Gender Research**

ICGR 2024

**hosted by
The Universitat Autònoma de
Barcelona
Spain**

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ICGR Preface

These proceedings represent the work of contributors to the 7th International Conference on Gender Research (ICGR 2024), hosted by The Universitat Autònoma de Barcelona, Spain on 25-26 April 2024. The Conference Chair is Professor Carmen-Pilar Martí Ballester, from the Universitat Autònoma de Barcelona, Spain.

ICGR is a well-established event on the academic research calendar and now in its 7th year the key aim remains the opportunity for participants to share ideas and meet the people who hold them. The scope of papers will ensure an interesting two days. The subjects covered illustrate the wide range of topics that fall into this important and ever-growing area of research.

The opening keynote presentation is given by Professor Olga Salido, from Complutense University of Madrid, Spain, on the topic of *The Third Puzzle of Gender and Science: Gendering Knowledge Transfer*. The second day of the conference will open with an address by Professor Sara Martín Alegre, Universitat Autònoma de Barcelona, Spain, who will talk about *Doing Masculinities Studies as a Feminist Woman: Aims and Gains*.

With an initial submission of 161 abstracts, after the double blind, peer review process there are 49 Academic research papers, 7 PhD research papers, 1 Masters Research paper and 3 work-in-progress papers published in these Conference Proceedings. These papers represent research from Austria, Belgium, Canada, China, Egypt, Ethiopia, Finland, Germany, Iceland, India, Indonesia, Ireland, Italy, Kazakhstan, Kenya, Lebanon, Malaysia, México, Morocco, Netherlands, Nigeria, Pakistan, Philippines, Poland, Portugal, Riyadh, Romania, Slovenia, South Africa, Spain, Sweden, Syria, Türkiye, UK, and USA.

We hope you enjoy the conference.

Professor Carmen-Pilar Martí Ballester
The Universitat Autònoma de Barcelona
Spain
April 2024

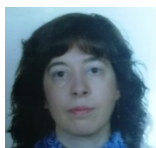
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Biographies

Conference Chair



Carmen-Pilar Martí Ballester (PhD) is an associate professor in the Business Department of the Universitat Autònoma de Barcelona. Her research focuses on (1) analysing the financial and social performance of thematic mutual funds taking into account gender issues, and (2) examining investor behaviour in the thematic mutual funds industry. She is an active reviewer in a range of international journals and also has published research papers in many other international journals.

Keynote Speaker



Professor Sara Martín Alegre is Senior Lecturer at the Department of English and German, Universitat Autònoma de Barcelona (Spain), where she teaches English Literature and Cultural Studies. Martín's research focuses on Gender Studies mainly applied to popular fictions, with a special emphasis on Critical Studies of Men and Masculinities. She is at work currently on a volume on masculinity in science fiction authored by men.



Olga Salido holds a PhD in Political Science and Sociology and is Professor of Sociology at the Department of Applied Sociology, Complutense University of Madrid, where she has been Deputy Director (2018-2022) and Director of the *Master in Applied Sociology*. Salido's research interests focus on the study of socio-economic inequalities and social mobility as well as the analysis of family and gender equality policies in comparative perspective.

Mini-Track Chairs



Tindara Addabbo is a full Professor in Economic Policy at the University of Modena and Reggio Emilia. Her current main research areas include wage discrimination by gender, well-being, gender budgeting, gender gap in education, gender equity firm's certification. She is the coordinator of Leading Towards Sustainable Gender Equality Plans in research institutions – (H2020-SwafS-2019 –873072).



Claudia Canali is Associate Professor in Information Engineering at the University of Modena and Reggio Emilia. Her research interests focus on cloud/fog computing systems and gender equality in ICT. She is responsible for her university in the Horizon 2020 Project EQUAL-IST Gender Equality Plans for Information Sciences and Technology Research Institutions and for the 'Ragazze Digitali' Summer Camp project.



Dr. Serene Dalati is director of Equality and Sustainability center (E&S center) and head of management department at the faculty of Business administration, at Arab International University, Syria (<https://www.aiu.edu.sy/>). Serene obtained a PhD in Leadership, Organizational Culture and Job satisfaction in 2008 which was preceded by British Chevening scholarship to study for an MBA in Banking and Finance from University of Wales, Bangor in 2002. She teaches for areas in Organizational Behavior, Leadership, Culture and Job satisfaction. Serene has also established experience in Erasmus+ Capacity Building in Higher Education and developed a project application with acronym FREE which has a scope of Female Resilience and Empowerment in Higher Education in the South Mediterranean Region.



Emília Fernandes is an Assistant Professor in the School of Economics and Management of the University of Minho, Portugal, lecturing at undergraduate and post-graduate levels in courses of Management, Human Resources Management. Her publications have been in research

areas related to gender discourses and identities, practices of resistance, entrepreneurship and small and medium enterprises, and professional embodiment.



Dr Rafidah Abd Karim is a Senior Lecturer at Universiti Teknologi MARA, Malaysia. She is also a research fellow at Anadolu University, Turkey. She serves an editorial board, and she is also an active and reviewer for more than 10 numerous distinguished international journals. She has published more than 70 academic articles mainly in digital mind mapping, mobile technology, language learning, and multiple fields in both national and international journals published by various publishers. Her current research projects include gender studies, women studies and indigenous studies funded by Ministry of Higher Education and UiTM, Malaysia.



Regina Leite is an Assistant Professor in Organizational Behaviour and HRM in the Department of Management of the School of Economics and Management at the University of Minho. Former coordinator of the master course in Human Resource Management. Research interests: Work and non-work spheres, privacy in the workplace, sexual and moral harassment, and gender issues.



Dr. Sílvia Donoso López is a gender expert at Institut de Ciències del Mar (ICM/CSIC) in Barcelona. She holds a PhD in Social Anthropology and a Master in Gender and Equality Policies. She has wide experience as a consultant in gender and diversity, formulating and monitoring Equality Public Policies. Her main research interests are institutional violence against women and integrating a gender dimension in STEM research.



Dr Navjot Sandhu an Associate Professor is a currently Deputy Head of College at the Graduate School of Management within the Birmingham City Business School. She has extensive research publication and conference presentations within the domain of financing marginal farmers/ small and medium enterprises microfinancing, innovative technologies, gender, entrepreneurial education. Dr Navjot has experience of supervising and examining PhDs nationally and internationally. Dr Sandhu also completed certifications on Fintech and disruptive technologies from Said Business School, University of Oxford.

Indigenous Women's Perspectives on Gender Equality and Feminism: A Case Study of Jahai Women in Peninsular Malaysia

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Abstract: Most research on gender equality and feminism have been concentrated on non-indigenous women worldwide, with very few studies focusing specifically on Jahai tribe women. Indigenous women are important in advancing the ideas of feminism and gender equality within their societies. This paper is a case study focuses on the indigenous women which is the Jahai tribe women in Royal Belum State Park, Malaysia. In this case study, we explored Jahai women's perspectives of gender equality and feminism aspects in this indigenous society. This case study employed a quantitative and a qualitative method for data collection. A total of 20 Jahai women were selected to complete a set of questionnaires and five of them were chosen for the in-depth interview. From the study, there were four main themes that emerged including socio-economic equality, equal treatment, gender responsibilities and egalitarian leadership and decision-making prospects. This research study was guided by the Transnational Feminism Theory and Theory of Gender Equality approach. The findings revealed that there was the similarities and distinctions perceptions in gender equality and feminism aspects among Jahai women. The study's conclusions shed new light on the gender equality and feminism interpretations and challenges those women in indigenous societies face. As a result, this study is important for future research since it adds to the body of knowledge about gender equality and concerns pertaining to indigenous women.

Keywords: Gender equality, Feminism, Indigenous Society, Jahai Women

1. Introduction

Many scholars have argued that gender equality is one of the human right issues that has been addressed and acknowledged by many. Feminism is not only vital for women, but also for people of all sexes, genders, social classes, and beliefs, and the belief of feminism only benefits women, is a misconception (Jiménez-Moya et al., 2022). In contrast, gender equality highlights the condition in which every individual, irrespective of gender, enjoys equal rights and chances for personal growth and development. Many past studies related to this indigenous community were conducted, however most of the studies only discussed the issues related to their education, health, and their lifestyles. There is a gap in the corpus of knowledge related to feminism and gender equality within the indigenous community, and very few existing literatures that discussed on the two subjects can be found. Thus, for Malaysia to be able to achieve both feminism and gender equality in its society, as much as the involvement from the majorities of the nation matters, the involvement of indigenous society in realizing this effort is also crucial. Hence, this research attempts to examine the perspectives of feminism and gender equality aspects among Jahai women in indigenous society of Malaysia.

2. Literature Review

2.1 Gender Equality and Feminism

Gender equality research is no longer a relatively new subject of inquiry within the research community, and numerous researchers have been focusing on carrying out the research in relation to this topic of study. The United Nations (UN, 2022) described gender equality as the concept that stressed on providing the equal opportunities and privileges for both men and women in the society. It was stated that despite the progress over the last decades, gender equality persisted and affected women more than men in the society. The opportunities for women to obtain the equal opportunities in terms of education, enjoy the discrimination and violence free society, as well as the ability for both men and women to work alongside each other in the society can be achieved through the realization of gender equality. Gender equality refers to the idea that all people, men and women, boys and girls, have equal access to opportunities, resources, and treatment in order to fulfil their potential, uphold their human rights and dignity, and contribute to and profit from political, social, cultural, and economic advancement (Guthridge et al., 2022). Despite numerous research that have been conducted, gender equality however is still far from reach and inequality between genders is still persistent up until now both in the developed as well as in developing countries. According to Papadakis (2018), the gender stereotype exists within the early children's education curriculum. This proves that social stereotypes are being instilled among the younger generations which will result in continuous gender equality issues in the future. Karim et al. (2023) found that the Jahai women in Royal Belum did not experience any inequalities especially particularly when it comes to splitting up home chores, as the respondents stated that their husbands assisted and participated in this regard.

In discussions of women development and empowerment, feminism topic is inevitable to be included in the debate. The Transnational Feminism Theory which was first used by Grewal and Kaplan (1994), is a theory that is very closely related in encouraging women's social development. The theory explores discrepancies and inequalities among women, such as diverse objectives and approaches to comprehending gender issues, and refutes the idea that women everywhere experience the same kinds of oppressions, forms of exploitation, and privileges. (Enns et al., 2020). Transnational Feminism is a movement that fights for gender justice and women's rights across national boundaries, which include women's voting rights, educational and economic rights (Desai, 2023). Within the indigenous community however, there has been a gap in addressing the feminism issues, as supported by Dattaray (2015), where it was stated that feminists' scholars viewed indigenous women as insignificant subjects of study. This shows that although feminism has been discussed for so long, indigenous women are however still excluded from being the subjects of study, which proves the urgency of including indigenous women as subjects of feminism study. Padzil and Somiah (2023) stated that the Orang Asli society shown that they refused to appoint only one man or one woman as the leader and they nowadays believe that indigenous women are also entitled to the rights towards leadership.

2.2 The Jahai Tribe of Malaysia

According to Mat Dong et al. (2022), the Orang Asli refers to Malaysia's first indigenous inhabitants who have lived in Malaysia's thick rain forests for 5,000 years ago. They also presented that there are 18 tribes of Orang Asli which are divided into three primary subgroups, which are the Negrito, Senoi, and Proto-Malay. The Jahai tribe was selected as the main subject of study for this research. This tribe resides in Royal Belum State Park, Malaysia have mostly continued to live nomadic, forest-based lives, which include making sporadic settlements and depending mostly on activities and products from the forest for food and revenue (WWF Malaysia, 2007). Loke et al. (2020) presented that the Jahai hunter-gatherers belongs to the Negrito subgroup, and they inhabit the area around Royal Belum State Park, one of the most significant conservation locations in the Peninsular Malaysia. Many Jahai people rely on fishing and hunting as their primary means of sustenance. Karim et al. (2023) stated that Jahai people continue to live a nomadic lifestyle and frequently relocate due to disease, death, internal conflicts, scarcity of food, and the arrival of new family members.



Figure 1: The indigenous women from the Jahai tribe in Malaysia

3. Purpose of Study

This study aims to explore the gender equality and feminism aspects in indigenous society in Malaysia, specifically within the Jahai women tribe. In this study, we formulated three research questions as following:

1. What are Jahai women's perspectives of gender equality aspects?
2. What are Jahai women's perspectives of feminism aspects?
3. How Jahai women perceived gender equality and feminism aspects?

4. Method

This study focuses on Jahai women and this case study employed a quantitative method. Besides, this study also utilised a qualitative method for data collection. In this methodology section, we presented the details in several subsections as the following.

4.1 Research Site

The research site for this study is in the Royal Belum State Park, Malaysia, which is the settlement area for Jahai tribe. Two selected research sites that were involved in this study were in Kampung Klewang and Kampung Sungai Tiang. Originally gazetted as Belum Forest Reserve in 1971, the Royal Belum State Park was designated as National Heritage in 2007 to support ecotourism, research, and education has been referred to as the hotspot for biodiversity because it provides a range of ecosystems and habitats for the many species of plants and animals that make Malaysia and its surroundings home. Many of these species are rare, threatened, or native to the region.

4.2 Participant

The study involved a total of 20 indigenous women among Jahai tribe from Kampung Klewang and Kampung Sungai Tiang at Royal Belum State Park, Malaysia. A stratified random sampling was used to collect data from the questionnaire whereas a snowballing sampling was used to collect data from the interviews. From this total of participants, 5 Jahai women were selected for the semi-structured interview sessions. For the snowball sampling technique, the selected participants of the interviews were based on the suggestions from the headman. The women participants involved were in the mean age of 41 years old.

4.3 Instrument

In this case study, we designed and utilised two instruments which were the questionnaire and the semi-structured interview as the instruments for collecting data of the study. First, the questionnaire was distributed to answer research question 1 and research question 2 which were to examine the Jahai women's perspectives of gender equality and feminism aspects. The questionnaire consisted of 8 items of respondent's profile (Part A), 17 items to determine the perspectives of feminism aspects (Part B) and 18 items to determine the perspectives of gender equality aspects (Part C). To answer research question 3, the semi-structured interview was employed to explore the Jahai women's ideas, emotions, and convictions about the gender equality and feminism aspects, and get extensively into private issues.

4.4 Data Collection Procedures

In this study, we distributed the questionnaire to 20 Jahai women. The data was collected to examine their perceptions of gender equality and feminism aspects. Then, we selected 5 women from these total participants and carried out the semi-structured interview sessions. We gave the open-ended questions to the participants for exploring in-depth perceptions of Jahai women on gender equality and feminism aspects.

4.5 Data Analysis

Both quantitative and qualitative data were analyzed during the data collection process for this study. The questionnaire data was analyzed using the SPSS software version 26. Thematic analysis was used to analyze data from the interviews. For the semi-structured interview data, we verified the accuracy of the transcription after listening to each audio recording. Line by line examination of all the data was done, and thematic analysis (Atlas.ti software) along with continuous data comparison were used to identify and code the major categories and themes. All the data was coded, verified, and discussed by the researchers.

5. Results and Discussion

The study's results are presented in this section. The questionnaire has a total of 43 items that consisted of 8 items for respondent profile and 35 items for the respondents' perspectives parts. The data analysis from the questionnaire and semi-structured interview were presented in two main parts: (i) the quantitative and (ii) the qualitative. Table 1 depicted the profile of the respondents for this study.

5.1 Profile of the Respondents

The respondent profile of the study as shown in Table 1. The total number of indigenous women from Jahai tribe involved in this study is 20. There are five categories of age groups in this study. The highest category of age group involved in this study is below 20 years, which is 50% respondents. The age group of 30-39 years is 20% respondents. The responders are individuals 50 years of age and older, which is 15% respondents and the age group of 40-49 years which is 10% respondents. Only 5% of respondents come from the age group of 20-29 years. All respondents were married (100%). Regarding the number of children, most respondents have 1-3 children, which is 65%. The respondents who have 4-6 children is the second highest (30%) in the group. 5% of respondents have many children which is 7-9 children. In terms of level of education, most respondents do not go to school, which is 40% respondents. Several of them attended primary school, which is 30% respondents. Likewise, 30% of them also attended secondary school. No one goes to higher institutions for education. The analysis also shows their husband's level of education, majority of their husband went to primary school which is 60% respondents. 35% of respondents answered that their husband did not go to school. Only 5% of respondents said that their husband attended secondary school followed by no one responded that their husband went to higher institution for studying. All respondents said that they have a job whereas their husbands also have a job which is 90% respondents. Only 2% of respondents said that their husbands do not have a job. All respondents countered that they do not hold any position in the indigenous society.

Table 1: Profile of Jahai Tribe Women (n=20)

Characteristics	Frequency	%
Age (years)		
Below 20	10	50.0
20-29	1	5.0
30-39	4	20.0
40-49	2	10.0
50 and above	3	15.0
Marital Status		
Married	20	100.0
Number of Children		
None	0	0

Characteristics	Frequency	%
1-3	13	65.0
4-6	6	30.0
7-9	1	5.0
Level of Education		
Higher Institution	0	0
Secondary School	6	30.0
Primary School	6	30.0
Not schooling	8	40.0
Husband Level of Education		
Higher Institution	0	0
Secondary School	1	5.0
Primary School	12	60.0
Not schooling	7	35.0
I have a job		
Yes	20	100.0
No	0	0
Husband has a job		
Yes	18	90.0
No	2	10.0
Have a position in the indigenous society		
Yes	0	0
No	20	0

5.2 Quantitative Data Analysis Results

This part presents the quantitative data analysis results from the questionnaire. The results were presented in two main parts which are the perceptions of feminism aspects and the perceptions of gender equality aspect among Jahai tribe women. Five components made up the interpretation of the study's mean values. The 5-point Likert Scale was used as the description: Strongly Agree (4.21-5.00), Agree (3.41- 4.20), Uncertain (2.61-3.40), Disagree (1.81-2.60) and Strongly Disagree (1.00-1.80). We presented the the three highest mean and the three lowest mean values results.

Table 2 displayed 17 items that measured the perceptions of feminism aspect among Jahai women respondents. The results indicated that most respondents strongly agreed, according to the three highest means. (M=4.90; SD=0.31) that they feel secure living in their village (item 5). Next, the respondents also strongly agreed (M=4.35; SD=0.49) that they know that they are not supposed to get hit (item 8). Item 7, which had the third-highest mean score, indicated that the respondents agreed (M=4.15; SD=0.88) that they are aware that, going back a long way, they have been regarded the same as Jahai men. Regarding the three lowest means, the first lowest mean value showed that the respondents disagreed (M=1.70; SD=1.22) that women can become a leader in my community in item 15. After that, item 12 was presented, suggesting that the participants did not agree (M=2.25; SD=1.12) that their teacher looked down on them in school. Finally, the same results of mean values showed the respondents also disagreed (M=2.45; SD=1.23) that other students of different races were routinely bullying them (item 10) and they believed that their friends of different races avoided them in conversation at school (item 11).

Table 2: Feminism Aspect Perspectives by Jahai Women

Item	Statement	M	SD	Interpretation
1	I can speak about any issue without my spouse's approval	4.05	1.40	Agree
2	I believe other people can accept my opinion	3.60	1.27	Agree
3	I do not need approval from my husband to go anywhere	3.15	1.63	Uncertain

Item	Statement	M	SD	Interpretation
4	I can go to work without my husband's approval to get money	3.15	1.80	Uncertain
5	I live in a safe society	4.90	0.31	Strongly Agree
6	As the Jahai woman, I know my rights	3.10	1.29	Uncertain
7	I understand that since a long time ago I am treated the same as Jahai men	4.15	0.88	Agree
8	I should not be hit by anyone	4.35	0.49	Strongly Agree
9	I have everything that I need in my life	2.50	1.19	Disagree
10	I was regularly being bullied by people from other races at school	2.45	1.23	Disagree
11	I think races did not like to speak to me	2.45	1.23	Disagree
12	My teacher looked down on me in school	2.25	1.12	Disagree
13	I was gazed strangely by the strangers I went outside	3.10	1.12	Uncertain
14	I think the government helps given to Jahai women are not fair	2.40	0.82	Disagree
15	Women can become a leader in my community	1.70	1.22	Disagree
16	I can speak my opinion in any cultural ceremony	3.15	1.57	Uncertain
17	I help the headman to resolve the problems in the society	2.55	1.61	Disagree
	Total average	3.16	0.24	Uncertain

According to Table 3, there are 18 items showed the perceptions of gender equality aspect among Jahai women respondents. Item 7 revealed that the respondents firmly believed that Jahai women take better care of the children than males, as evidenced by the first highest mean value ($M=4.70$; $SD=0.92$). With regards to item 17, many respondents strongly agreed ($M=4.35$; $SD=0.93$) that they can certainly get medicine when they are sick. The last highest mean value are item 16 and item 18. The results show that the respondents strongly agreed ($M=4.25$; $SD=1.21$) that they can use a phone to talk to people for item 18 and highly agreed ($M=4.25$; $SD=0.91$) that they had a house to live in for item 16. The results indicated that, regarding the lowest mean value (item 11), respondents disagreed ($M=1.85$; $SD=1.18$) that they find forest products profitable. The respondents disagreed ($M=1.90$; $SD=1.17$) with item 12 as well, saying that they would not track for wildlife in the forest to obtain money. In item 9, the respondents were unsure ($M=2.75$; $SD=1.83$) about planting trees for financial gain, as indicated by the lowest mean value.

Table 3: Gender Equality Aspect Perspectives by Jahai Women

Item	Statement	M	SD	Interpretation
1	Jahai women practice Jahai culture more than men	3.00	1.26	Uncertain
2	I acquired Sewang dance from my mother	3.85	0.88	Agree
3	I perform Sewang dance and I continue the inherited beliefs more than men	3.95	0.10	Agree
4	More than Jahai males, Jahai women have a regard for taboos	3.10	1.29	Uncertain
5	I converse with people in Jahai more often than men do	2.95	1.23	Uncertain
6	Jahai women protect the culture more than men	3.10	1.25	Uncertain
7	Jahai women take care of the children more than men	4.70	0.92	Strongly Agree
8	I give more to the Jahai community than to men	3.25	1.29	Uncertain
9	I grow trees in order to make money	2.75	1.83	Uncertain
10	I make handicrafts to help my family income	3.25	1.74	Uncertain
11	I look for forest products to earn money	1.85	1.18	Disagree
12	I trail for wildlife in the forest to get money	1.90	1.17	Disagree
13	As Jahai woman, I go to work to get money	3.50	0.83	Agree
14	I have food to eat daily	3.00	1.52	Uncertain
15	I have clothes to be worn daily	3.90	1.21	Agree
16	I live in a house	4.25	0.91	Strongly Agree
17	When I am sick, I easily have medicine	4.35	0.93	Strongly Agree
18	I can talk to other people on the phone	4.25	1.21	Strongly Agree
	Total average	3.38	0.48	Uncertain

5.3 Qualitative Data Analysis Results

The study's second set of findings includes the semi-structured interviewing process presents the qualitative data. There were no outsiders present during the researcher and informant's interview sessions. For a more comprehensive understanding, the data and information from the interview sessions are transcribed and analyzed using thematic analysis to explore the perspectives of gender equality and feminism aspects.

Therefore, the semi-structured interview findings revealed four main themes: (1) socio-economic equality, (2) equal treatment, (3) gender responsibilities and egalitarian leadership and (4) decision-making prospects.

5.3.1 Socio-Economic Equality

First, a theme was identified from the thematic analysis was socio-economic equality. The interviews with Jahai women revealed that they had positive opinions on the socio-economic aspect. Most of Jahai men work as forest product gatherer and seller, hunter, and fisherman. Conversely, Jahai women do not work, and they are mostly housewives. Respondent 1, 2, 3, 4 and 5 from Jahai tribe women provided the same response, stating that they are housewives who stay at home instead of going to work.

"No... only my husband works to earn money. He works as a fisherman". (Respondent 1, 2 and Respondent 5)

"My husband works as honey collector and fisherman. I am a housewife". (Respondent 3)

Therefore, the primary source of income for Jahai women is their spouse's revenue generation for the household. This theme supports the gender equality aspects perspectives that showed the Jahai women were treated equally by men and they shared their responsibilities in socio-economic aspect as husband and wife in getting source of income for the family.

5.3.2 Equal Treatment

Equal treatment emerged as the second theme based on the semi-structured interview results. Respondent 1 and Respondent 2 said that men had more opportunities than women in the indigenous society. Other respondents agreed that they were treated equally and they were given freedom for schooling and voice out their opinions. According to Kamaruddin and Jusoh's (2008) study, the Orang Asli populations' income, employment prospects, and general well-being are significantly influenced by their level of education. Unlike other responses, Respondent 4 highlighted that there is a difference treatment between women and men in her society. While men go to work, women are supposed take responsibility for the family at home.

"Yes... men have more advantages. However, we have freedom to go for schooling and voice out our opinions". (Respondent 1 and Respondent 2)

"Men and women are treated the same. Yes...I can voice out my opinions". (Respondent 5)

"Yes... male and female treatment differs from one another. Men are able to work, and women should stay at home to care for the family." (Respondent 4)

Overall, the responses from the respondents showed disagreement regarding the equal treatment among Jahai women in the society. However, they are being treated well related to freedom for schooling and giving opinion in their society. The results also demonstrated how gender stereotypes are created by the way men and women are categorized differently in society and the assumptions that this causes regarding the traits unique to each gender (Koenig & Eagly, 2014).

5.3.3 Gender Responsibilities and Egalitarian Leadership

The study's third major finding concerned about gender roles and equal leadership. Four respondents (Respondent 1, 2, 3 and 5) agreed that men have more responsibilities than men except for Respondet 4 who said that women have more responsibilties than men in family and society. From the analysis, it displayed that men and women have their own responsibilities in family and society. They are also acknowledged their own roles in contributing their effort toward the family and society.

"Men have bigger responsibilites...". Women in this village can become a leader if they are given the opportunities". (Respondent1, 2, 3 and 5)

"Women have bigger responsibilities...we need to take care of children and husband when they are sick...and we need to do house chores and help people in difficulties". (Respondent 4)

Although women in leadership are essential to achieve gender equality, in comparison to men, they are less likely to hold positions of coveted leadership. (Appelbaum et al., 2013; Galsanjigmed et al., 2023). The Jahai women mostly serve as a housewife. However, the Jahai women hope that they also can be a leader in the indigenous society. As a result, if given the chance to lead their community, they can now take on greater responsibility and enhance their positions by getting implicated in actions pertaining to leadership. It conveys the rights of women to assume greater responsibility and rights in the workplace by means of gender-responsive policies that cater to their distinct needs and objectives, irrespective of their gender.

5.3.4 Decision-Making Prospects

This analysis also revealed the emerged theme on Jahai women contribution in decision making prospects. Most respondents concurred that everyone has an equal chance to make their own judgments. All respondents answered that they are allowed to make decision for themselves, family and society. However, Respondent 2 and 3 mentioned that they need to seek permission from their husband in decision making. The argument posits that involving men and women in taking decisions broadens the skill set of each group, enhances decision-making, expands perspectives to comprehend issues thoroughly, fosters creativity and invention, and lessens conflict.

"Yes...I can do my own decision for myself, my family and my society (Respondent 1, Respondent 4 and Respondent 5)

"I have to ask my husband before I make decision". (Respondent 2 and Respondent 3)

The opportunity for women decision-making adds to the advantages of diversity in the Jahai community, as women are more considerate of others' needs, particularly when it comes to handling personal relationships or family issues. Additionally, they are prepared to discuss ideas with others in their community and work towards achieving understanding among Jahai people. Thus, these four main themes highlighted that the Jahai women's perspectives of feminism and gender equality aspects contribute to new knowledge in this field of the study. This study contributes to the exploration of new studies about indigenous feminism and gender equality in indigenous society.

6. Conclusion

The Jahai tribe women is a valuable contributor to the indigenous community's advancement of feminism and gender equality in Malaysia. The study's findings demonstrated that the roles that men and women are equally acknowledged by society, as well as their similarities and distinctions. The study's findings demonstrated that there were four major themes initiated in this study which are socio-economic equality, equal treatment, gender responsibilities and egalitarian leadership and decision-making aspects. All the themes illustrate the importance of gender equality and feminism aspects within Jahai women in indigenous society. Besides, they are fundamental in advancing the ideas of feminism and gender equality. Closing gender gaps among Malaysia's indigenous people could result in gender equality and the liberation of Jahai women in this indigenous civilization. Theoretically, this case study advances new concepts on indigenous feminism and gender equality, particularly about the indigenous people of Malaysia. In summary, these findings of the study may contribute to a new understanding that decision-makers will use as a reference, a roadmap and assist social stakeholders to address the issues of gender equality globally.

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Gender Differentials for Participation in Producer Organization Among Smallholder Farmers: Evidence from Nigeria

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Abstract: Linking smallholder farmers to formal markets through producer organizations is increasingly becoming a pathway toward agricultural inclusivity. This study investigated the disparities in participation between male and female groups in Nigeria. Data was collected from 604 farmers and decomposition analysis for three gender categories was carried out using the Fairlie decomposition technique. The results showed a 24.2% higher actual mean probability of participation for males over females and a 20.1% actual mean probability higher for male-headed households compared to female-headed households. There was also a 27.59% actual mean probability higher for the *de facto* female-headed households over *de jure* female-headed households. Diverse factors were found to push the gender gap at various magnitudes. Interventions targeting gender equality should be entrenched in understanding the social and cultural practices and norms in Nigeria.

Keywords: Participation, Producer Organization, Gender, Fairlie Decomposition, Nigeria

1. Introduction

Agriculture remains the major livelihood for smallholder farming households (Khan et al, 2020, WHO, 2022) and the majority of the world's poor and low-resourced farmers belong to this class worldwide (Markelova & Mwangi, 2010). Smallholder agriculture is the main source of food consumed in many developing countries consisting of about 90% of the world's 570 million farmers and providing income sources for an estimated two billion people (IFAD, 2013; FAO, 2019). In Nigeria, smallholder agriculture contributes significantly to the economy, serving as an employer to over 70% of its population, especially in rural areas (Jos et al., 2016; Oluwatayo, 2019). More than half of this category of the population are women. (World Bank, 2014).

Linking smallholder farmers to the formal market has become an important part of global research and development goals. One of the approaches to achieve this is through increased participation in producer organizations (Njuki *et al.*, 2011; Mwambi *et al.*, 2021). Producer organizations help small-scale farmers to address market inefficiencies, product and resource coordination, and increase the bargaining power of the farmers (Shiferaw et al., 2011). However, one of the biggest challenges of producer organizations in meeting the needs of farmers is inequalities entrenched in community gender biases, norms, and expectations which disenfranchise some categories of people (Meinzen-Dick, *et al.*, 2004). Past studies showed that females are less likely to participate in producer organizations compared to their male counterparts and this includes female heading and within households (Sellare *et al.*, 2023).

Despite the significant contribution of smallholder farmers in Nigeria's agriculture, they are technically excluded from the formal market as over 65% of food sales are done through the informal market (Plaisier *et al.*, 2019). Worst still is the gendered pattern of smallholder agricultural exclusivity which reflects the overall gender disparities in Nigeria. In 2023, with a gender gap index of 0.637, Nigeria ranked 130th out of 146 countries, a decline from 123rd rank with an index of 0.635 in 2022. Although the basis or extent of gender inequality varies across different societies, of outstanding concern is that women tend to have less control over resources such as land, inputs, market access, and other inputs (Leder, 2022), as well as in decision-making (Gebre, 2019). Due to unequal access to major agricultural resources (Wambugu *et al.*, 2018; Farnworth *et al.*, 2016) and assumed homogeneity of female-headed households (Gebre *et al.*, 2019), women's participation in organizations providing market access in Nigeria was reportedly low (Technoserve, 2019).

While there is an increased participation of women in agriculture, the level of decision-making and access to tangible and intangible resources is low compared to men (Slavchevska et al., 2019). The increasing feminization of agriculture driven by the out-migration of males from rural areas has placed responsibilities on women to

become household heads, placing them in a position to make decisions (Kawarazuka *et al.*, 2022). This role shift potentially creates new gender dynamics and expectations, opportunities available for households, and the household decision-making process. This therefore pushes the rhetoric for a better understanding of gender dynamics among smallholder farmers.

In Nigeria, tomatoes and potatoes are well cultivated by smallholder farmers (Plaisier *et al.*, 2019). The country is the highest producer and fourth largest producer of tomatoes and potatoes respectively in sub-Saharan Africa (Obisesan, 2021; Ibrahim, *et al.*, 2021). However, due to the lack of producer organizations and business skills that could give the required bargaining power to interact on similar terms with other market intermediaries, smallholder farmers are subtly cut off from the growing formal markets in Nigeria (Pyburn *et al.*, 2015). The limited available producer organizations are faced with gaps in their gender inclusivity approaches. This study therefore investigated the gendered differentials for participation in producer organizations in Nigeria.

Grounded in the neo-classical theory of marketing cooperative firm, this study represented the producer organization as the decision maker who paid optimized prices to its members for the produce sold via the organization as its objective. The organizations explored by this study purchase tomatoes and potatoes from their members and sell outputs to processing firms and, food retail outlets after assembling and grading the commodity. The excess fund after the deduction of the transaction cost is shared among members as patronage refunds (Royer, 2014). To reflect a gendered perspective, this theory was integrated with the Women's Empowerment (Longwe) framework which argues that development should enable people to take charge of their own lives and escape from poverty not necessarily from lack of productivity but from exploitation and oppression. This framework hinges the development process on women's equality with men.

Several studies examine gender disparity as a binary option but this study utilized the Fairlie decomposition which beyond showing the gender gap shed light on the variable contribution to the gap between two groups within the multivariate models (Fairlie, 2005). The method became necessary given the criticism against the Blinder-Oaxaca Decomposition Analysis as it failed to manage non-linear regressions such as the logit and probit model (Fairlie, 2017).

2. Methodology

2.1 Study Design

A cross-sectional design was employed for the study. Primary quantitative data were collected using a semi-structured interviewer-administered questionnaire via an electronic data collection platform (Kobocollect toolbox).

2.2 Study Area

The study area was Kano and Plateau states, Nigeria. The choice of the two states was based on their relatively high production of tomatoes and potatoes respectively in the country. Kano, accounting for 20% of national production is the second largest producer state of tomatoes in Nigeria while Plateau State accounts for 45% of potato production in Nigeria (Plaiser *et al.*, 2019).

2.3 Sample Size

The sample size for this study was calculated using the Cochran method (Kotrlík & Higgins, 2001).

$$n_0 = \frac{Z^2 pq}{e^2} \quad (1)$$

e= Margin of error

p= estimate of variance (0.05)

q= 1-p

Z=value for selected alpha level (1.96)

If this sample size exceeds 5% of the population, Cochran (1977) correction formula will be used to calculate the final sample size as follows:

$$n_1 = \frac{n_0}{(1+n_0/Population)} \quad (2)$$

n_0 =required returned sample size

n_1 = required return sample size because sample>5% of the population

A total of 604 respondents, consisting of 289 participants and 315 non-participants of producer organizations.

2.4 Sampling Technique

Using a multi-stage sampling technique, 604 farmers (259 producer organization participants and 345 non-participants) in Kano and Plateau States of Nigeria were sampled. The first stage involved the purposive selection of tomato and potato farmers from Kano and Plateau states. The second stage involved the selection of four Local Government Areas (LGAs) from each state based on the presence of producer organizations. The third stage involved the random selection of two communities in each LGA making a total of sixteen communities for the study. This consists of both the participants and non-participants in producer organizations with similar characteristics. The final stage involved the selection of participants and non-participants from each community. The selection strategy involved the selection of at least 40% female and 40% participants in producer organization where possible.

2.5 Data Collection

The data collection exercise was carried out over eight weeks between January and March 2020. The research instrument was developed from a comprehensive review of the literature. The reliability and validity were enhanced through pilot testing before deploying on Kobo toolbox, an electronic data collection platform that was used in this study. Ten experienced research assistants (RAs) with a minimum of Bachelors were engaged in each state. These RAs were trained for three days on the study objectives, research ethics, data collection, and data protection. Farmers were approached on the farms or in their houses where the interview was carried out.

2.6 Analytical Procedure

The socioeconomic characteristics of the respondents and group dynamics were analyzed using descriptive statistics. A t-test which is a parametric test of differences was employed to test the significance of the mean differences between the participation groups.

The non-linear decomposition of participation in producer organization for three gender categories (male/female, male-headed/female-headed households, and *de jure/de facto* female-headed households) was carried out using the Fairlie decomposition (which is a B-O decomposition technique for probit models). Following Gebre *et al.*, 2020 and Fairlie 2005, the non-linear decomposition of participation in producer organization only is expressed as:

$$\text{Gap} = \bar{P}_m - \bar{P}_f \left\{ \frac{1}{N_m} \sum_{i=1}^{N_m} \Phi(X_{im}\beta_f) - \frac{1}{N_f} \sum_{i=1}^{N_f} \Phi(X_{if}\beta_f) \right\} + \left\{ \frac{1}{N_f} \sum_{i=1}^{N_f} \Phi(X_{if}\beta_m) - \frac{1}{N_f} \sum_{i=1}^{N_f} \Phi(X_{if}\beta_f) \right\} + \left\{ \frac{1}{N_m} \sum_{i=1}^{N_m} \Phi(X_{im}\beta_m) - \frac{1}{N_m} \sum_{i=1}^{N_m} \Phi(X_{im}\beta_f) \right\} + \left\{ \frac{1}{N_f} \sum_{i=1}^{N_f} \Phi(X_{if}\beta_m) - \frac{1}{N_f} \sum_{i=1}^{N_f} \Phi(X_{if}\beta_f) \right\} \quad (1)$$

$\bar{P}_m - \bar{P}_f$ = the average probability of participation in producer organization by the gender groups.

Φ =the cumulative normal distribution function from the probit distribution

N_m = the sample size of male participants

N_f = the sample size of the female participants

The Fairlie model was formulated to decompose the mean outcome difference between the two groups.

As identified in the literature, the following variables highlighted in Table 1 influence gender differentials among smallholder farmers. The variables considered for study analysis are:

- X_1 Age of household head (Years)
- X_2 Educational status (Years)
- X_3 Size of landholding (Hectares)

X_4	Married (1= married, 2=unmarried)
X_5	Distance to market center (Kilometer)
X_6	Transportation facility (1=Yes, 2=No)
X_7	Access to remittance (1=Yes, 2=No)
X_8	Farming experience (years)
X_9	Household size (Number)
X_10	Off-farm activities
X_11	Market information (1= Yes, 2=No)
X_12	Formal savings (1=Yes, 2=No)
X_13	Informal savings (1=Yes, 2=No)
X_14	Hired labour (1=Yes, 2=No)
X_15	House chore time use (hours)
X_16	Productive activities time use (hours)
X_17	Adult Male
X_18	Adult female
X_19	Wet season production
X_20	Dry season production (1=Yes, 2=No)
X_21	Region (1=Kano state, 2=Plateau state)

3. Results and Discussion

3.1 Socioeconomic Distribution of Respondents

3.1.1 Distribution of Respondent by Participation in Producer Organizations

The mean age of the farmers was 40.13 ± 0.94 and their average years of education was 8.42 ± 0.23 . The average household size was 7.15 ± 0.14 . A total of 289 (47.85%) of the 604 households sampled were participating in producer organizations. Table 2 presents the t-test results for participants and non-participants in producer organizations. Age, household size, adult female in the household, educational status, size of land for production, distance from farm to the market, and access to formal and informal savings were found to be statistically different for participants and non-participants in producer organizations in the study area.

The household head is important in decision-making and could influence participation in collective actions (Doss et al, 2015). Figure 2 showed that 11.75% were headed by a female. This is in line with the findings of Nwaka et al., (2020) reinforcing the patriarchal nature of households in Nigeria, especially in the northern parts. Also, poor participation in the producer organization was found among the female-headed households. Further disaggregation of the female-headed households showed that 70.73% were *de jure* female-headed households while 29.27% were *de facto* female-headed households. This is also consistent with the findings of Joshi and Ramnarain (2020).

The participants were more educated than the non-participants (9.36 against 7.54 years of education). Household size was larger for participants than non-participants with adult female presence statistically different for both groups. This is in line with findings from an Ethiopian study where cooperative participants have slightly higher family sizes than non-participants (Leza & Kabule, 2019). The average land cultivated for tomatoes and potatoes was estimated at 2.03 hectares. This results emphasized that the farmers are smallholder farmers. Participants also had a larger land area for cultivation compared to the non-participants. While the findings of Kidane et al., 2018 were found to be in support of this submission, Leza & Kabule, 2019 negate it.

Comparing the distance of the farm to the market, participants had mean distance of 21.46 km while non-participants have 9.74km. This indicates that most of the non-participants were nearer to the traditional market

and this may increase the patronage of such sales markets instead of selling through the producer organizations. Participants also have more access to remittance, and formal and informal savings compared to their non-participants counterparts.

Table 2: Summary statistics for variables

Variable	Participants(n=315)	Non-participants (n=289)	Combined (n=604)	t-test
Sex of household head (Female)	25	57	82	2.5***
De jure female-headed households	13	45	24	
De facto female headed-households	12	12	58	2.53 **
Age	43.04 (0.65)	37.46 (0.68)	40.13 (0.94)	-5.89***
Years of education	9.36 (0.34)	7.54 (0.31)	8.42 (0.23)	-3.96***
Size of landholding	2.41 (0.75)	1.8 (0.50)	2.03 (0.45)	-0.82***
Distance to market	21.46 (1.17)	9.74 (0.46)	15.35 (0.61)	4.14***
Farming experience	11.31 (0.57)	9.77 (0.44)	10.51 (0.36)	-2.15
Household size	7.83 (0.22)	6.52 (0.18)	7.15 (0.14)	-4.72***
Household composition (Adult male)	0.93 (0.02)	0.90 (0.02)	0.92 (0.01)	0.02
Household composition (Adult female)	0.95 (0.02)	0.92 (0.01)	0.93 (0.01)	0.006**
Access to remittance	0.39 (0.03)	0.46 (0.03)	0.42 (0.02)	1.81*
Access to market information	0.97 (0.01)	0.93 (0.01)	0.95 (0.01)	-0.0049
Access to formal savings	0.75 (0.03)	0.66 (0.03)	0.71 (0.02)	-2.18**
Access to informal savings	0.80 (0.02)	0.70 (0.03)	0.75 (0.02)	-2.80***
Access to hired labour	0.93 (0.01)	0.94 (0.01)	0.94 (0.01)	0.44
Off farm activities	0.94 (0.01)	0.93 (0.01)	0.94 (0.01)	-0.22
House chore time use	0.02 (0.004)	0.02 (0.004)	0.02 (0.002)	-0.25
Productive activities time use	0.04 (0.007)	0.03 (0.004)	0.036 (0.004)	-1.05
Region	1.50	1.51	1.51	-0.26

Significant at the 10% level (*), 5% level (**) and 1% level (***)

Values in parentheses are the standard errors.

Source: Author's Computation, 2023

4. Gender Differential of the Participation in Producer Organization in Nigeria

4.1 Male versus Female

The results (Table 3) showed that there was an existence of membership gap in the probability of producer organization membership between males and females. The decomposition results indicate that males have a 0.56 likelihood of being a member of the producer organization compared to a 0.32 likelihood for females. The actual mean probability of participating in producer organization was 0.24 higher for the males when compared to their female counterparts. This implies that men were more likely to participate in producer organizations than their female counterparts. An estimated 0.17 (70.83%) of the gender gap was explained by the variables in the model. The detailed decomposition showed that years of education, access to remittance, presence of an adult male in the household, male family labour, and being married reduced the gap at various significant levels while wet season production and awareness of the existence of producer organization in the locality increased the gender gap.

Motivation for participating in collective action is higher among the educated (Evans & Nambiar, 2013). An increase in years of education reduced the probability of the gender gap in producer organization participation by 4.87%. A year increase in education will close the participation gap by 4.87% in favour of females. Access to remittance also reduced the gender differences in favour of the female. Access to remittance closed the gender gap and helped women to access productive assets thereby, closing the membership gap by 4.80%. The presence of an adult male in the household also reduced the gender gap by 9.17%. These adult males can also serve as family labour and as well assist with activities on the farm that are labor-intensive. Being married also reduced the gendered membership gap by 9.92% in favour of females. Wet season production increased the gender gap by 2.44%, significant at 10%. The wet season is the main production season and welcomes the glut season. The price of selling produce was relatively low during this season. Awareness of the existence of the producer organization in the locality increased the gendered membership gap by 20.58%.

4.2 Male-Headed vs. Female-Headed Households

Table 3 shows that there is the existence of membership difference between male and female-headed households in producer organizations indicating a 0.5057 likelihood of male-headed households participation in producer organization compared to 0.3049 for female-headed households. The actual mean difference is 0.20 higher for male-headed households than female-headed households, with 0.18 (91.90%) of the gap explained by the variables in the model. The detailed decomposition by several variables showed that the presence of an adult male in the household reduced the gap while wet season production, being married and awareness of the existence of producer organization in the locality increased the participation gap.

Education increased the membership differences in the probability of participation for female-headed households and was significant at 1%. This implies that educated female household heads are less likely to participate in producer organization. Being married increased the membership differences between the group by 55.5%, and significant at 1%. This implies that being married increases the likelihood of women not participating in producer organizations.

4.3 De facto vs. De jure Female-Headed Household

Table 3 also shows that there is the existence of a gender gap in the probability of participation in producer organization between the two groups. The decomposition results indicate that *de facto* female-headed households have a 0.50 likelihood of participating in producer organization compared to 0.2241 for *de jure* female-headed households. The actual mean probability of *de facto* female-headed households participating in producer organization is 0.28 higher than for *de jure* female-headed households with 0.25 (89%) of the gap explained by the variables in the model. The detailed decomposition by several variables showed that years of education, the presence of a male adult, wet season production, and state of residency reduced the gap at various significant levels. Access to remittance, availability of male member and hired labour, married status, and awareness of the existence of producer organizations increased the gender gap.

The presence of males in the household increased the gender gap in probability of participation for *de jure* female-headed households and this was significant at 5%. Availability of male family and hired labours increased the gender gap in the probability of participation for *de jure* female-headed households at 16.25% and 12.19% respectively and these were significant at 5%. Being married increased the gender gap in the probability of participation for *de jure* female-headed households by 85.33% and this was significant at 1%. This implies that if *de jure* female household heads were married, they were more likely to participate in producer organization.

Table 3: Fairlie decomposition of producer organization membership gap by gender decomposition

	Male vs. female	Male vs. Female-headed households	De facto vs. De jure FHH
Variables		Coefficient	
Years of education	-0.0487(0.0095) ***	0.0337 (0.0075) ***	-0.0584 (0.0129) ***
Age of respondent	0.0184 (0.0124)	0.0090 (0.0069)	-0.0034 (0.0059)
Farming experience	0.0237 (0.0187)	0.0173 (0.0141)	-0.0107 (0.0051)
Household size	-0.0022 (0.0060)	-0.0031 (0.0086)	0.0033 (0.0160)
Land area cultivated	0.0115 (0.0133)	0.0088(0.0106)	-0.0014 (0.0037)
Access to remittances	-0.0118 (0.0041) ***	-0.0008 (0.0033)	0.0349 (0.0142) **
Access to formal savings	0.0008 (0.0118)	0.0002(0.0041)	-0.0008 (0.0043)
Access to informal savings	0.0007 (0.0013)	0.0007 (0.0025)	0.0184 (0.0126)
Off-farm activities	0.0005 (0.0031)	0.0002 (0.0024)	-0.0005 (0.0088)
Access to market information	0.0022 (0.0025)	0.0014 (0.0026)	0.0012 (0.0047)
House chore time use	0.0012 (0.0020)	0.0022 (0.0036)	-0.0025 (0.0034)
Productive activities time use	0.010 (0.0059) *	0.0062 (0.0045)	-0.0020 (0.0020)
Adult Male	-0.0223 (0.0103) **	-0.0513 (0.0242) **	-0.0585 (0.0251) **
Adult female	-0.0003 (0.0011)	-0.0005 (0.0022)	0.0004 (0.0030)
Male family labour	-0.0183 (0.0066) ***	0.0041 (0.0038)	0.0432 (0.0199) **
Access to hired labour	-0.0133 (0.0081)	-0.0049 (0.0036)	0.0323 (0.0157) **
Wet season production	0.0059 (0.0023) *	0.0063 (0.0035) *	-0.0183 (0.0072) **
Dry season production	0.0033 (0.0035)	0.0035 (0.0041)	-0.0040 (0.0054)
Region	0.0011 (0.0022)	0.0004 (0.0026)	-0.0091 (0.0109) **
Married	-0.0228 (0.0068) ***	0.1047 (0.0273) ***	0.2096 (0.0530) ***
Awareness of the existence of producer organization	0.0500 (0.0045) ***	0.0422 (0.0057) ***	0.0566 (0.0196) **
Number of obs =	604	604	604
N of obs G=0	219	522	24

	Male vs. female	Male vs. Female-headed households	De facto vs. De jure FHH
N of obs G=1	385	82	58
Pr (Y!=0 G=0)	.5662	.5057	0.5
Pr (Y!=0 G=1)	.3242	.3049	0.2241
Difference	0.242	0.2009	0.2759
Total explained	0.1691	0.1846	0.2461

Significant at the 10% level (*), 5% level (**) and 1% level (***)

Values in parentheses are standard errors.

Source: Authors' Computation, 2023

In this study, factors influencing the probability of participation in producer organizations were different for the gender groups at diverse magnitudes. For instance, education closed the gender gap for male vs. female and de facto vs. de jure FHH, but it increased the gap for FHHs vs. MHH. Again, access to remittance and availability of male family labour significantly influenced the participation of all the groups at different magnitudes except MHH vs. FHH.

Although awareness of innovations increased its adoption (Skaalsveen et al., 2020), awareness of the existence of the producer organization increased the gender gap in participation for all the gender groups in this study. This may be driven by the gendered perception that is widely upheld in the northern part of Nigeria where this study was conducted (Madama, 2013). The gender norms sustain the assumption that females are inferior to males and should be relegated to the care of the household and not accepted in the public sphere where information on producer organization are likely to be shared.

The presence of males in the household reduced the gender gap in participation in producer organization for all the gender groups. Patriarchy in Nigeria confers the males with leadership and the females with submission to an older male. This does not only affect females in male-headed households, widows are subjected to every male in her late husband's household (Para-Mallam, 2017). Again, cultural constraints are placed on the mobility of women through the mechanism of social segregation and purdah. These limit women's movement and restrain them from interacting in public, and from going out without a male escort or permission (Madama, 2013). While this was found to reduce the gender gap for Male vs. Female and De facto vs de jure FHH, it increased the gap for MHH vs. FHH. This may be because participation in producer organization includes several meetings which increases the double burden and triple role of women. This is in line with the findings of Mwambi et al. (2021). Although education has been shown to increase participation in producer organizations (Coleman & Mwangi, 2013, Kaaria et al., 2016), singlehandedly carrying the entire household burden, where survival is the main drive, may drown the effect of increased years of education.

5. Conclusion and Recommendation

The study separately examined the characteristics and causes of the disparities between males and females; MHHs and FHHs; *de jure* FHHs and *de facto* FHHs. The study revealed a significant disparity in producer organization participation using the Fairlie decomposition model.

From the analysis, we found a significant aggregate gender difference in the probability of group participation within the sampled households. Placing the sampled respondents into diverse gender categories, it was also found that the factors driving the gap differ for each gender category with awareness of the presence of producer organizations and the presence of a male adult found to be significant across the groups. The highest probability of gender gap was exhibited by the male vs. female category when compared to the other categories.

From the decomposition results for each category, the presence of a male adult was found to close up the gender gap in the probability of participating in producer organizations in favour of the females and the de jure FHHs. Improving education, especially for the de jure FHHs and female categories, reduces the participation gap likelihood but increases the gap for FHHs. Access to remittance was found to reduce the participation gap for females but increase the gap for the de jure FHHs. Again, being married tends to close up the gap for the female categories but increases the gap for the FHHs, especially the de jure FHHs. While wet season production reduces the gap for de jure FHHs it was found to increase the gap for the other female categories. This study showed lower female membership in producer organizations compared to their male counterparts.

Interventions targeted at closing the gender gap should consider the heterogeneous nature of female households and should be entrenched in understanding of the social and cultural practices and norms in Nigeria. Interventions aimed at female education, women's access to remittance and taking advantage of crop production during the wet season could be effective in increasing female participation in producer organizations in Nigeria.

6. Limitations

Similar to other research, this study has limitations. Firstly, it was difficult to verify claims made by the respondents, therefore elements of social desirability could not be ruled out from the farmers' responses. The study was also limited to tomato and potato farmers, hence generalization to all farmers should be done with caution. and as. However, the strength of this study is that it examined the heterogenous dimension of gender study of participation in producer organizations in Nigeria, which to the best of our knowledge, the first of such study in Nigeria.

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Implementation Research with Expressive Arts Therapy (EAT) to Support the Newcomer Survivors of Gender-based Domestic Violence (GBDV) in Toronto

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Abstract: *Context:* Canada hosts thousands of newcomers from disadvantaged economies. Because of cultural non-essentialism and stigma, newcomer women in Canada embrace multi-level barriers to express their everyday discrimination and trauma experienced at home. Language creates another level of challenge. To understand the under-expressed domestic violence and the level of their trauma, this study added an arts-based evidence-generation technique followed by healing strategies by expressive arts modalities for this implementation research. *Methodology:* This mixed-method implementation research adopted an outcome-harvesting approach. Peer researchers conducted a collaborative review of the literature to find the best arts practices for identifying violence (type, bases, frequency, and severity), sort out the best modalities of expressive arts therapy (EAT) for such a vulnerable population group, and efficient measures to evaluate the intervention findings. *Intervention:* After screening for eligible participants (not in a crisis state) and their preparedness, a series of twelve sessions of EAT were conducted by a registered therapist on a closed group of newcomer participants. In a pilot phase, therapies are completed with three linguistic newcomer women groups- Arabic, Farsi/Dari, and Bengali. Three more groups (women speaking Tigrinya, newcomer women living in a shelter, and members of the LGBTQ2S+ communities) are selected for the next therapy sessions. The three sequential modalities were movement and discussion, storytelling and cognitive, and visual art and journaling. The key procedures were psychoeducation, self-regulation, co-regulation, strength-based, cognitive/tactile, and collective painting. The peer researcher conducted a 1-to-1 telephone interview with every participant for wellness and vulnerability checks three months after the last session. A Focus Group Discussion (FGD) is done for every group six months after the last session to assess sustainability and emerging challenges. *Call into action:* After triangulation of quantitative, qualitative, and arts-based evaluation findings, the study team prepares a scalable culturally appropriate practice guideline, a resource navigation toolkit for the survivors, and a policy advocacy document for necessary legislative amendment.

Keywords: Arts-based therapy, Co-design, Intimate partner violence, Mental health, Outcome-harvesting, Peer researcher.

1. Introduction

Canada hosts thousands of immigrants (as newcomers) every year and has the highest rate of immigrants per population (almost 20% of the total Canadian population). Every year about 500,000 immigrants come to Canada, and nearly half of them are women (Statista, 2024). A culture of gender-attributable essentialism and stigma prevails in many economies that the newcomer women carry to Canada with immigration. Essentialism refers to the perception that some properties of a woman are necessary for family dynamics, while other qualities are “merely accidental” (Mikkola, 2017). In the context of traumatic experiences by gender violence, essentialism is considered to ‘rob them of agency’ and is harmful (Skidmore, 2019). Language creates another level of challenge for newcomer women from non-English speaking countries for open communication against any abuse or violence (Anisef et al. 2012). The Collectivist cultural beliefs and practices support women not to disclose any domestic violence (Tabibi et al., 2018). The newcomer immigrant women embrace multi-level barriers, such as immigration and structural factors, to express their everyday discrimination and trauma experienced at home (Kershaw et al. 2016).

To address this community-felt issue, Access Alliance Multicultural Health and Community Services (Access Alliance) designed this Hubs of Expressive Arts for Life (HEAL) implementation research project that involves and weaves together the expertise of settlement, healthcare, and expressive arts therapy to provide a holistic approach towards trauma recovery for newcomer women survivors of domestic violence. This program consists of three main intervention phases, i) Safety and Stabilization, ii) Identity, Culture, and Community, and iii) Towards Hope, Resilience, and the Future; and culminates in a collective celebratory event. Studies have confirmed that in addition to the psychotherapeutic healing effects, expressive arts groups provide survivors with many other benefits including breaking social isolation, strengthening community connections, raising awareness of their rights and available supports, promoting self-autonomy, self-care, and ultimately helping to restore the whole self (Malchiodi, 2020).

The HEAL program: The program is piloted as an implementation study on six different newcomer groups in two phases: 1) Arabic, Bengali, and Farsi-speaking newcomer women groups; and 2) newcomer members of LGBTQ+ community self-identifying as women, Tigrinya-speaking, and women living in shelters. Due to the unique experiences and needs of each newcomer group, the study team instrumentalized peer researchers as cultural consultants to tailor program activities, scope, and facilitation to meet the specific needs of each subgroup. To inform every iteration, the changes after intervention are thoroughly documented using a comprehensive pre-, during, and post-program evaluation cycle of the program with engaged participants and facilitator teams. The goal of the study team is to recognize the added benefits that evolve during the implementation phases of the project and will harness new learnings and findings to respond to the research questions- an outcome-harvesting approach (Wilson-Grau and Britt, 2012).

The research questions are: What are the needs of newcomer survivors of gender-based domestic violence? Which modalities of Expressive Art Therapy (EAT) implementation can improve their health and well-being? What are the outcomes of the EAT intervention?

2. Methodology

This was a mixed-method (Creswell, 2013) implementation research incorporating arts-based techniques with quantitative and qualitative approaches for identifying baseline needs and evaluating the intervention outcomes. The study team exploited the 'strategies to adopt and integrate' evidence-informed EAT interventions into community settings to improve individual outcomes and benefits in population health (Binagwaho et al., 2020). The research team conducted a collaborative review of the literature (co-design) to find the best arts practices for expressing violence (type, bases, frequency, and severity) by newcomer residents who may have language or cultural barriers (Malchiodi & Miller, 2012; Malankov & Mooney, 2022; Kalaf & Plante, 2019; Uddin et al, 2022; Ugurlu et al., 2016), decided together on the most appropriate modalities of expressive arts therapy (EAT) for such vulnerable population groups (Murphy, 2021; Luzzato et al., 2022; Cohen, 2013; Hannigan & McBride, 2011; Epp, 2013; Allen & Wozniak, 2010b), and efficient measures to evaluate (Burruss et al., 2021; Buckles, n.d.; Daykin, n.d.; Kowitt et al., 2016; Simons and McCormack, 2007; Tool, n.d.) the intervention findings. Peer researchers with support from immigrant insight scholars screened eligible participants following the inclusion and exclusion criteria. The study included newcomer women in Toronto having experienced gender-based domestic violence. The team also screened their preparedness (availability to attend 12 sessions, mental health status, and family dynamics or consequences with participation) to participate in the study program. Culturally appropriate registered expressive arts therapists facilitated twelve EAT sessions with a closed group of participants.

The facilitation guide was prepared in a co-design session with academics and experts, service providers, peers, researchers, and university students who participated in literature reviews. The principal investigator of this research (AA) is certified by the Canadian Institutes of Health Research (CIHR) after completing all three structured modules of the course "Integrating Sex and Gender in Health Research" (CIHR, 2023). All members of the research team completed the Tri-Council Policy Statement CORE 2 course on research ethics TCPS 2 CORE, 2022) and the training on data security protocol, particularly when they had to deal with Personal Health Information (PHI).

Considering the language barrier and a cultural newness environment in a new country for the women, the study adopted a poststructuralism approach (more than constructivism) meaning more focus on performativity, painting, singing, written text, and discourse as storytelling. Ugurlu et al. (2016) reported that an individual can express their thoughts, emotions, and feelings by drawing, colouring, and reflecting in a creative way through visual arts. The EAT facilitator supported by the peer-researcher, for activities and evaluation, implemented three mixed modalities in a sequence- movement and discussion, storytelling and clay work, and visual art and journaling followed by a culminating celebratory session.

2.1 Evaluation Framework

The evaluation framework (Table 1) started by creating a Theory of Change and a Program Logic Model; and involved the outcome-harvesting approach (Wilson-Grau and Britt, 2012) to capture all yields including the unintended but value-added ones. That means the logic of the research was neither 'inductive' nor 'deductive', rather 'abductive', which is Peirce's reasoning philosophy to engender 'new ideas, explanatory hypotheses, and scientific theories' (Levin-Rozalis, 2009).

Table 1: Evaluation design of the project

Needs Assessment & Intake Screening	Formative Evaluation			Summative Evaluation	
Recruitment & Screening for eligibility	Pre-Program Survey (in-person)	In Program Feedback Survey (in-person)	Post-Program Survey (in-person)	Follow-Up Call Interview (virtually)	Focus Group Discussion (in-person)
Before the start of the Expressive Arts Therapy program	Implementation of the 12-Week Expressive Arts Therapy Program The co-facilitators conduct surveys during sessions. Real-time reflective journals of the facilitators are included			3 – months following the end of the program (Well-being & vulnerability check)	6 – months following the end of the program (Adherence & sustainability check)

The peer researcher (PR) and the immigrant insight scholar (IIS) fellow conducted a baseline survey of the participants in the first session for situation analysis and identifying the needs. The baseline survey included a 9-question demographic questionnaire (for intersectional analysis). The PR and the IIS fellow evaluated the implementation outcome at the end of each of the three facilitated modalities (Post-test). The comparison is designed to be for an individual following the interpretive phenomenological analysis (Smith & Osborn, 2015) model and also to compare the changes as a group. The evaluation framework had quantitative, qualitative, and arts-based evaluation tools. After completion of three months after the last EAT session, the PR conducted a one-to-one virtual interview through Zoom with every participant for their wellness and vulnerability checks. Considering the individual unique storyline, the study adopted. A Focus Group Discussion (FGD) was done for all three completed groups six months after the last EAT session (3 months after the 1-1 telephone interview). The FGD assessed the sustainability of the intervention and recorded any new emerging challenges.

The team evaluated the effectiveness of the process and the outcomes. The evaluation process included the impact on the participants, and examining the debriefing meetings of the facilitator and the peer researcher after ending a modality series.

3. Intervention

The HEAL program is an intervention to help improve the health and well-being outcomes of newcomer survivors of domestic violence. The program comprises five distinct components with three unique phases, see Figure 1, that guide participants through a progression of expressive arts activities with integrated evaluation activities to capture the changes in participants' attitudes, behaviour, and perspectives. The program is based on Judith Herman's framework that provides a model of recovery informed by the stages of reparative processes for individuals who have experienced interpersonal violence and related forms of trauma (Herman, 2002). The three phases of the program focus on the progression toward trauma recovery, as follows:

Welcome and Orientation. Participants are informed and mutually agree upon the objectives, commitments, and process of the program by completing a consent form. They are acquainted with the program space and facilitator team. They share their accommodation needs or concerns to ensure their retention for the full program duration.

Phase I: Safety and Stabilization. This phase focuses on knowledge and skill building of self-regulation and co-regulation to overcome dysregulation. It involves psychoeducation to help individuals understand the impacts of trauma on the body and cognitive self (Malchiodi, 2020). Safety and stabilization are achieved by creating a non-abusive environment to help the body feel soothed and calm therefore helping with the management of trauma reactions (Malchiodi, 2020). Somatic therapy is the foundation approach for self- and co-regulation techniques using movement through the main arts modality, dance ribbons, in combination with guided discussion (Levine, 2024). Somatic resourcing gives evidence of how the body communicates its trauma story through posture, gesture, movement, breath, and other somatic responses (Malchiodi, 2020). In this way, participants can experience and make connections between the mind and body to understand their mental well-being. This phase is crucial for participants to feel equipped to engage with phases II and III of the HEAL program.

Phase II: Identity, Culture, and Community. Once a foundation of regulation techniques is established, remembering and mourning painful memories using coping techniques to overcome fear can aid in trauma recovery (Hermans, 2002). Expressive Arts Therapist guides with cultural sensitivity and care through topics including migration, culture and community to reclaim an individual's sense of identity while allowing practicing

self and co-regulation techniques (Malchiodi, 2020). In this way, participants can explore their past, present, and future selves with tools they can harness to self-regulate. The main arts modality includes plasticine, storytelling, and sound.

Guest Speakers: Between phases II and III, guest speakers from four partner organizations, Nellie's Shelter, Women's Assaulted Helpline, OCASI, and Barbra Schlifer, are invited to facilitate topics including human rights, empowerment, self-defence, and healthy relationships. Subject matter experts increase the knowledge and awareness of participants and facilitator teams and provide direct avenues for referrals as needed. The HEAL project values partnerships as an added value to bolster the educational aspects of the program and to connect participants directly to referral staff for greater tailored support.

Phase III: Towards Resilience, Hopes, and Future. The final stage of Herman's framework, used in this program, is reconnection and integration which focuses on the individual reinvention of the self, making meaning of past experiences, and envisioning the future (Herman, 2002 & Malchiodi, 2020). The main art modality used is visual arts and story-sharing to help foster a sense of restoration and reclaiming of one's self. The individual is no longer defined by their traumatic past but reinvented a new self. The program produces two collective acrylic paintings by each group with themes determined by the respective group as the symbolic representation of solidarity that extends beyond the completion of the HEAL program making it a protective tool against social isolation, despair, and traumatic experiences (Malchiodi, 2020).

Ending and Culminating Event. All HEAL programs conclude with a culminating event bringing together participants, their friends, and families to witness the completion of the program. It is about honouring their dedication to the process of trauma recovery through a certificate ceremony, celebratory event, and sharing of collective paintings. Beyond the completion of the HEAL program, participants continue to be connected through arts and culture visits to sites across Toronto, engage in the three and six-month evaluation feedback sessions, attend art-based mental health workshops at Access Alliance, and/or become a peer champion facilitator part of OCASI's gender-based violence project.

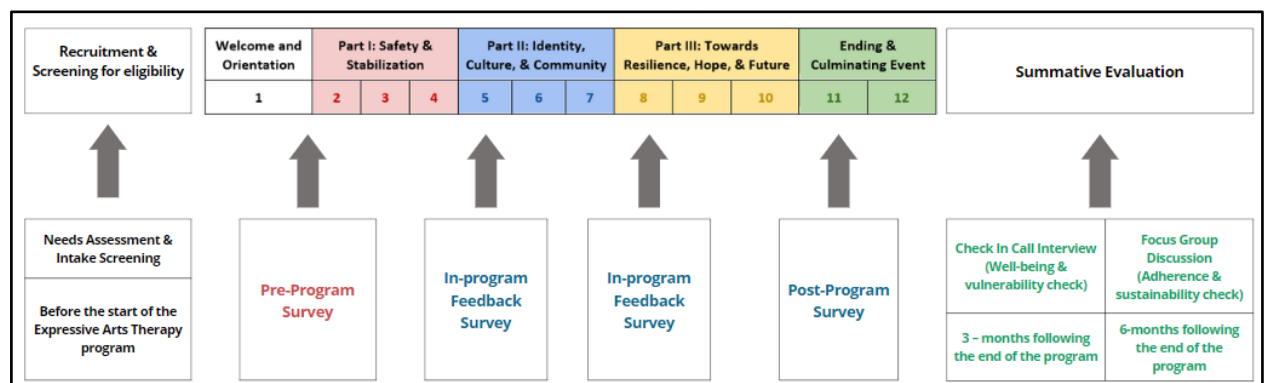


Figure 1: HEAL Program Diagram

4. Discussion

4.1 Community-Based Peer-Engaged Research Initiative

This study is designed as a peer-engaged community-based research initiative. The key criteria for community-based research are that the agenda originates in the community, is done by the trained members of the community (peer research model), and the benefit of the research is visibly implemented for making a change in the community. Therefore, the visible presence of the peers (with nested and vested interest in the population of interest) as engaged researchers is an important feature of this study. The community was present during the co-design process, the data collection process, the triangulation process of quantitative, qualitative, and arts-based evaluation findings, and the testing of the product by the community for accessibility, acceptability, appropriateness, effectiveness, and transferability.

4.2 Frameworks as the Scaffold of the Implementation Research

Access Alliance has adopted foundational frameworks that guide and ground the agency's excellence including trauma-informed practice, strength-based approach, client-centeredness, anti-violence and oppression, and

cultural humility. These parallel the principles the Gender-Based Violence Settlement Strategy Project (2024) set. Trauma and violence-informed approaches are policies and practices that acknowledge the connection between violence and trauma and aim to increase well-being, enhance the autonomy of choice, and collaborate with participants in their journey towards healing and resilience (Gender-based violence settlement strategy project, 2024). However, there were differences of opinion among studies for adopting a universal framework as the intervention design. Essentialism and Constructivism were the two constructs we considered as the basic scaffolds while working with newcomer women with low self-esteem and structural challenges in a new country. We adopted the strength-based approach that has its foundation in social work and builds upon the client's strengths, specifically seeing the client as resourceful and resilient when they are in adverse conditions (McCashen, Wayne, 2005). Similarly, client-centeredness enhances a client's self-efficacy by allowing them to be active participants in their journey to recovery, they become autonomous decision-makers (Mroz, T. M., Pitonyak, J. S., Fogelberg, D., & Leland, N. E, 2015). Anti-oppression refers to strategies and theories that inform our actions to challenge social and historic embedded inequalities and injustices that perpetuate vulnerable populations including newcomers (Gender-based Violence Settlement Strategy Project, 2024).

4.3 Intended Impact

As mentioned in the intervention section, this implementation study is assumed to have many intended and unintended outcomes at the individual level and also across all levels of society. The intended impacts include changes in engaged participants and facilitator teams, systematically for organizations, and broadly at a national and federal level. At its foundations, participants are central to the project, and the changes in participants' attitudes, behaviours, and knowledge are measures of the program's efficacy in enhancing the mental health and well-being of survivors. Interested participants are given opportunities to be connected to the mental health workshops at Access Alliance to further their knowledge and sustainability of healthy coping techniques for self and co-regulation. They are also equipped with an opportunity to lead in the area of domestic violence through a champion network of trained domestic violence peer facilitators as part of a partnership with the Ontario Council of Agencies Serving Immigrants (OCASI). There are multiple intersectionality's such as newcomer, language and culture barrier, navigation skills and availability, etc. For example, one study mentioned that music reduced anxiety including long-term PTSD in long-term IPV victims by symbolizing the survivor groups' positive affirmations and their plight (Hannigan & McBride, 2011)> But our participants have language and cultural barriers. Therefore, we had to select culturally (and linguistically) competent interventions.

Systemically, partner agencies are adopting art-based approaches for trauma recovery and healing as an unconventional practice for mental health programs and counselling. Organizations are expanding their knowledge on approaches of somatic resourcing, art for self-expression, and narrative meaning-making as power potentials to meet the mental health needs of their clients.

Overall, the intended impacts of the project are as mentioned, but the HEAL team foresees many additional benefits to emerge as the project findings are collated and analyzed. The project has the potential to have a ripple effect vertically and horizontally across all facets of society to inform practices and approaches to improve the mental well-being of newcomer survivors of domestic violence.

5. Limitation

The study occurs in an unprecedented pandemic and/or post-pandemic recovery period which may generate evidence in this unique context, a real challenge for generalizability. This empirical study paper describes the methodological framework of how we collated existing models to design an intervention research framework through a culturally sensitive lens. The program is still ongoing on three other subsets of population (we completed three already). Therefore, this paper may lack a holistic landscape. However, the richness of the composite intervention plan and the rigorous evaluation design may fulfill some aspects. This composite intervention plan is a blended co-designed model with a combination of existing EAT practices. Moreover, there are legal boundaries to ensure safety of the participants and nullify any further harm due to participation.

6. Conclusion

This synthesized approach comprises a composite intervention model which is scalable and culturally safe for the service providers and other end-users to support the vulnerable victims of gender-based domestic violence. These evidence-informed "best practices" can prevent or address family violence and support the health of survivors.

After screening, this study starts with a baseline needs assessment using quantitative, qualitative, and art-based tools (since the newcomer women have language barriers). An inclusive co-design approach was used to develop an effective and acceptable strength-based trauma-informed composite expressive-arts-based facilitation model incorporating psycho-education, self-regulation, and co-regulation attributes. The modules went through safety and stabilization, identity, culture, community, resilience, hopes, and future with a sense of belonging. These modules were reinforced by a separate guest speaker to speak on human rights (in Canada), women empowerment, and healthy relationships. The elements of process, outcome, and impact evaluation are woven as built-in components with the modules during sessions, after sessions, as well as after three and six months. These are the strengths of this composite model.

The next step is to prepare practice guidelines for newcomer survivors of GBDV, a resource navigation toolkit for the survivors, and a policy advocacy document for legislative amendment for system changes. The project validates evidence to attest to specific expressive arts activities that have increased mental well-being for the six distinct newcomer communities and contribute meaningfully to the growing knowledge of the Community of Practice (CoP). However, the findings from these pilot models will be extended to other populations to ensure the generalizability of the model effectiveness. This is accomplished by expanding the scope of expressive arts research to include its efficacy in preventing and intercepting family violence.

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Gender Diversity: An Empirical Study on 4.151 US Investment Funds

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Abstract: The aim of this paper is to explore the issue of gender diversity (GD) in relation to the world of investment funds. In recent times, in fact, savers' choice does not only converge on the mere pursuit of profit. Investment funds, in this scenario, are increasingly judged according to their environmental and ethical actions, and not just by the promised rewards. Individual and institutional investors, on this wake, are aligning their behavior with their values by taking responsibility for the investments they select. It is central, therefore, to understand and observe how issues such as GD are evaluated, managed and converted into rating values by funds. This paper is supported by a mixed research methodology involving, on the one hand, an in-depth literature review on the aforementioned topic and, on the other hand, a statistical study developed with the "R-Studio" program. Through the statistical derivation, this study proposes an analysis of histograms and scatter plots on a sample of 4.151 investment funds and the GD-related rating judgments compared with their net assets and longevity. Based on our findings, funds with higher net assets achieve high rating classes but not excellence. In fact, larger funds reside in lower rating classes. Similarly, it is also valid for the amount of capital managed by the funds. From the empirical evidence we provide, it can also be seen that, there is no evidence between GD rating category and youngest funds longevity. Filling a gap that exists in the literature on GD-related rating assessment in investment funds, the originality of this paper concerns the descriptive statistics proposed. In fact, the paper contributes to the literature on GD by enriching the analysis of the factors surveyed for its measurement and rating judgment. This study may have both theoretical and practical implications. From a practical perspective, the statistical evidence in this paper could be a guideline for practitioners oriented toward ethical and profitable investment choices. From a theoretical point of view, instead, GD evaluation and monitoring could be a tool to reduce problems related to transparency and legitimacy theory, mitigating information asymmetry between parties and aligning them on potential risks.

Keywords: Gender Diversity, Investment Funds, Corporate Social Responsibility (CSR, Environmental, Social, Governance (ESG).

Paper type: Academic Research Paper

1. Introduction

The link between GD and mutual funds is, internationally, constantly growing and expanding. In accordance with the literature reviewed, many factors intervene to foster this binomial.

Among the main ones we certainly find the new international normative momentum that is increasingly focused on sustainable and ethical solutions. Indeed, one of the clear goals of the UN Agenda 2030 is to achieve gender equality in support of women and girls who are victims of sex discrimination. To make this goal a reality, through the synergistic work of legislators, policies aimed at women's gender inclusion in business settings are evolving.

In parallel, the increasing focus on environmental and ethical aspects has fostered the development and implementation of benchmark metrics that can render numerical evidence to support all stakeholders. Indeed, ESG metrics, through their three pillars, aim to assess sustainability and ethics in all their components. Among the many, a certainly thick role is played by gender diversity.

In reference to the above, however, we found a gap in the literature that numerically links GD to investment funds. Specifically, we found a difficulty in finding information linking characteristics of investment funds (mainly: Net Asset and longevity) to the rating judgment linked to GD. Indeed, in our view, this type of empirical evidence is not marginal, but rather, can direct important reflections on the behavior of funds with respect to GD.

Our goal, which we make explicit in our research questions (RQs), is to help to fill this gap by going to explore the relationship between gender diversity-related ratings and some basic characteristics of investment funds.

The implications of the results we present are both theoretical and practical. On the theoretical side, we contribute to the development of the theme linking investment funds with GD-related rating, offering a statistical cue that could be implemented or used with new databases. On the other hand, from a practical point of view, this study can be a model for more informed choice for both investors and fund managers.

2. Literature Review

2.1 GD in Investment Funds

The academic literature, driven by the growing focus on sustainability and ethics, has analyzed the role of GD related to the investment funds (Aggarwal & Boyson, 2016). Investment funds, in fact, are a growing reality as a solution for investors, who are increasingly oriented toward sustainable and ethical solutions to support the pursuit of profit (Kaufmann, 2022). Trying to investigate the causes that, especially in recent times make this relationship so close, we identified two possible causes, in agreement with the international literature reviewed.

First, the regulatory level is certainly relevant. In fact, the international context is imposing laws and regulations aimed at encouraging good sustainable and ethical standards (Tettamanzi et al., 2022). Among the main aspects, the object of attention of legislators and standard setters, is also gender equality in corporate realities.

A clear example, at the international level, is certainly SDG 5 “Achieve gender equality and empower all women and girls”. Specifically, closely related to our research topic appears to be goal 5.5 enacted by the UN: “*Ensure women’s full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life*” (UN, the 2030 Agenda for Sustainable Development).

What has just been expressed finds application, not only in the goals made explicit by the UN, but also in the normative implication of quantitative ethics assessment.

We refer specifically to the Environmental, Social and Governance pillars where GD is placed in the last pillar (Strine et al., 2022). The “G” component often overlooked compared to its sisters “E” and “S”, is becoming more central than ever in the intervention logics of legislators and the main standard setters. This framework, in fact, presents numerous evidence with respect to the harmonization efforts between the European Financial Reporting Advisory Group (EFRAG) and the International Sustainability Standards Board (ISSB) on the issues of sustainability and ethics in their accounting and CSR-related expression (Hummel & Jobst, 2022).

Parallel to the regulatory framework, there is another aspect that links GD to investment funds. The close connection of this link, in fact, is also the result of the ever-increasing attention of investors not only to environmental issues, but at the same time, also to ethical issues in the choice of investment solutions. If before, in fact, the attention of the subjects who allocated their savings to professional subjects (investment funds) was directed to the mere pursuit of profit, we can say today that this trend has changed (Döttling & Kim, 2022; Sorrosal- Forradellas et al., 2023). In fact, more and more subjects, in addition to seeing the expected returns of the funds, inform themselves about the rating judgments issued by third parties in reference to sustainability and ethics (Abate et al., 2021). This, as will be evident, also simultaneously directs the managerial choices of the funds. These realities, in fact, are gradually understanding how these aspects are far from being marginal, but on the contrary, increasingly valued as critical success factors to stand out from the fierce competition (Babalos et al., 2015).

The international literature, in explaining the link between investor expectations together with disclosure linked to sustainability and ethics, seems to agree in using the theoretical framework constituted by legitimacy theory as a basis of scientific evidence. Based on these reflections, we summarize this theory in the following paragraph, where we also delve into the topic of CSR in its direct relationship with the topics covered. This logical thread directs our RQs, to which we subsequently respond using the evidence collected in the empirical analysis.

2.2 Legitimacy Theory

According with the most popular research stream, the legitimacy theory is defined as: “[...] *a mechanism that supports organizations in implementing and developing voluntary social and environmental disclosures in order to fulfil their social contract that enables the recognition of their objectives and the survival in a jumpy and turbulent environment [...]*” Archel et al. (2009, p. 4).

According to the legitimacy theory, in fact, organizations (both private and public ones) should not only focus on meeting investors’ expectations. Instead, they should consider the rights of the environment and social sphere (Suchman, 1995). In their study Joshi et al. (2011) also state that organizations should try to create a strong alignment between the social value they provide through their actions and the expected norms of behavior.

The theory of legitimacy, as stated, is a concept that connects organizations to the field of CSR in its link with sustainability and ethics. This principle suggests that organizations strive to maintain a positive image and gain

social acceptance by aligning their activities with socially valued norms and expectations. In other words, a company tries to satisfy the needs of the community through activities that the social context deems correct, therefore, moving away from the logic of practicing only what is legally required or considered profitable. Legitimacy theory is not limited to appearances; its ultimate objective is, in fact, to create an authentic link between the company and society, i.e., based on trust and sincere commitment to social responsibility.

Based on what has been stated, therefore, investing in an efficient and effective CSR is currently necessary both to align with the new regulatory parameters and to satisfy the new preferences of investors (Cheng et al., 2023). At the same time, in line with what is expressed by the legitimacy theory, it is necessary to aim to create value in order not to pursue the mere reputational and economic return, also with respect to the topic of GD.

2.3 CSR in Investment Funds

Over the last twenty years, a substantial number of academics have focused on defining CSR, in its connection with investment realities, as the voluntary integration of social and environmental issues in the operations carried out by fund managers for the direct benefit of the interaction with all stakeholders (Birindelli et al., 2019; Cheng et al., 2023).

According to Cheng et al. (2023), in fact, CSR would create a positive system by increasing transparency and reliability on the reporting of social and environmental impact in reference to disseminated data. This graft, in parallel, can modify the internal control system by improving regulatory compliance, reporting reliability and reducing information asymmetry between the company and investors. The benefit, therefore, would be connected to greater competitiveness due to a better reputation, as a direct consequence of a better corporate culture (Arduini et al., 2023). In investment funds, this translates into greater ease in raising capital from investors (El Ghoul et al., 2011).

CSR, however, presents considerable difficulties with respect to its determination and implementation. In fact, it appears to be a very complex and difficult system to integrate within the company as an expression of greater culture and transparency due to various activities such as: attention to the environment, equity, cultural heritage, education, health, energy saving, correct advertising information and human rights. These objectives, clearly, also find expression on the topic of GD.

Among the points analyzed, the representation of women in companies is a topical and reflective argument, and at the same time, it is considered as a gap to be filled to combat discrimination within companies. Specifically, in relation to the financial world, the role of women is even more important, especially to promote more prudent, ethical and sustainable management as a way to control some risks (such as reputational one) (Birindelli et al., 2019). Other scholars, with reference to the world of investments, state that gender equality (in managerial and top management roles) can ensure less aggressive and more conservative choices (Palvia et al., 2015). In addition, studies on corporate governance show that gender equality in positions such as CEO, BoD's president and non-executive directors are directly linked to better performance (Akomea-Frimpong et al., 2022; Aksoy & Yilmaz, 2023).

For all these reasons, an efficient and effective CSR cannot ignore care and attention to the letter "G", as well as certainly to all good practice policies in business conduct (Rau & Yu, 2023). This certainly applies to investment funds since they are a reality that responds very strongly to the needs of the market, as well as to the needs of the community that surrounds them. CSR and GD, in fact, are very closely linked in the productive world, constituting a commitment to creating a more inclusive and fair working environment (Wu et al., 2022).

According to Wu et al. (2022), companies that support gender diversity often naturally align with CSR initiatives. In fact, when a company values diversity, it tends to extend this commitment to broader social responsibilities. Furthermore, by promoting an inclusive environment, companies contribute to social progress, perfectly aligning with the essence of CSR (Campbell & Mínguez-Vera, 2008). When companies take a leadership role in promoting gender diversity, they set an example that goes beyond their walls, becoming a wave effect that leads to better performance (Bernile et al., 2018).

Many studies, among which we report that of Cheng et al. (2023), however, questioned the actual relationship between CSR actions and the financial performance linked to them. It is therefore our intention, in line with the objectives of our study, to investigate what kind of relationship exists between GD and the quantitative measurement of some key parameters in investment funds.

The link between GD and investment reality, in fact, is more than ever the subject of efforts in its development and implementation (Calder-Wang & Gompers, 2021). However, according to the academic literature analyzed, its economic return is often difficult to evaluate and, very often, this aspect is overlooked in studies (Babalos et al., 2015). These reflections guided our research questions, specifically:

- RQ1: How GD, as an expression of CSR, is valued within investment funds?
- RQ2: What is the relationship between Fund Net Asset and the rating associated with GD?
- RQ3: What is the relationship between fund longevity and GD rating?

3. Methodology

3.1 Database

The model database, the “Gender Equality Funds” made by “AS You Sow”, provides information on thousands of mutual funds most held in the U.S. To feed this database, two data sources are simultaneously combined: company gender equality data from Equileap and mutual fund holdings data from Morningstar.

As regards the first factor of analysis, it is appropriate to mention the Equileap Gender Equality Scorecard, inspired by the UN’s Women Empowerment Principles. Based on this indicator, provided by Equileap, each fund is evaluated based on 19 criteria (among the main ones: gender balance across the workforce, the gender pay gap, paid parental leave and anti-sexual harassment policies). The 19 classes are subsequently incorporated into four categories which, depending on the topic covered and the percentage relevance attributed, participate in generating a gender equality score from 0 to 100 for the target fund:

- Gender balance in leadership and workforce (40/100);
- Equal compensation and work life balance (30/100);
- Policies promoting gender equality (20/100);
- Commitment, transparency, and accountability (10/100).

In parallel with Equileap’s ratings, the financial information in the database is provided by Morningstar in relation to thousands of US open-end investment funds and ETFs. Also in this case the multiple classes of information are grouped into four main categories:

- Allocation Funds;
- International Equity Funds;
- Sector Equity Funds;
- U.S. Equity Funds.

Specifically, Morningstar provides quantitative data that allows the user to create a scoring mapping of funds. The score combines research into which companies are involved and which companies invest in the funds to assess how exposed they are to different types of environmental and social investment risks. Based on this, therefore, it is possible to label socially and ethically responsible funds from funds that are not through a simple index: A, B, C, D and F (where A is the highest class).

3.2 Composition of the Sample

The database, consisting of 12.736 funds, was reduced and “cleaned” in Excel according to the logic we present. In fact, not all the information was considered useful by us for the purposes of our research.

In reference to the information regarding the ownership of the fund, in fact, we reduced the sample from 12.736 to 4.151 funds analyzed. The funds eliminated from the study, as highlighted by the database, do not have their own fund net asset and, therefore, correspond in all respects to sub-categories belonging to the main funds. Duplicating, tripling or, sometimes, quadrupling the list of funds belonging to the same ownership, and which did not contribute their own fund net assets, was completely irrelevant for our statistical investigations.

In addition to this, to make the comparison of data in “R-Studio” easier, also using scatter plots and histograms, we decided to numerically convert the “Gender Equality grade” judgment expressed alphabetically. Below is the simple conversion table showing the rating judgment given by Equileap, where A and its corresponding 1 correspond to the highest rating values.

Table 1: “Gender Equality grade” conversion table

ORIGINAL RATING		NEW RATING	
A	B	1	
		2	
C		3	
D		4	
F		5	

Following these changes, the Excel sheet containing the processed database was exported to “R-Studio” to conduct the statistical analysis.

3.3 Analysis of the Sample

As the first element of study, expressed in the scatterplot in *Figure 1*, we decided to study the relationship between two variables offered by the database: “Gender Equality grade”, converted numerically as explained in the previous paragraph, and the “Fund Net Asset” expressed in \$Million. By linking these two variables on “R-Studio” and coding a specific string that returns a scatter plot, it is possible to observe how the 4.151 funds examined are distributed in space. Thanks to this type of scatter plot, in fact, it is possible to determine the intensity of a relationship between two numerical variables. The x-axis, specifically, represents the independent variable and the y-axis represents the dependent variable.

After studying the distribution calculated in reference to the “Gender Equality grade” and the “Fund Net Asset”, we decided to convert the coding string on “R-Studio” into a histogram. The intention, in line with the statistical tool used, is to observe the quantity of “Fund Net Asset” for each individual category of “Gender Equality grade” (*Figure 2*).

Finally, as the last aspect of our statistical analysis, we focused on studying the correlation between “Shareclass Inception Date” and “Gender Equality grade” (*Figure 3*). Our objective, in fact, is to observe what type of correlation exists between the youngest (or not-so-young) funds and the rating level on the issue of gender equality. Also in this case, to arrive at our statistical conclusions we used the scatter plot on “R-Studio”.

4. Empirical Analysis and Results

From what emerges from *Figure 1*, it is possible to note that the distribution of investment funds, classified by size, is very broad and poorly distributed in relation to the five rating levels. We can, however, find similarities between some classes.

The first analogy that is evident is that, with reference to classes 4 and 5, funds that are smaller in size are assessed with a lower rating level. In fact, in neither of these two classes do we find evidence of medium-large sized investment funds. Another interesting analogy can be seen between class 3 and class 1. These two classes, in fact, collect funds that are very similar in size. Their nature, as shown in *Figure 1*, is predominantly small and only for a small percentage of funds corresponds to an average size.

The data that is most relevant is certainly linked to class 2. This class, in fact, is the only one that collects medium funds and large funds uniformly distributed in the graph.

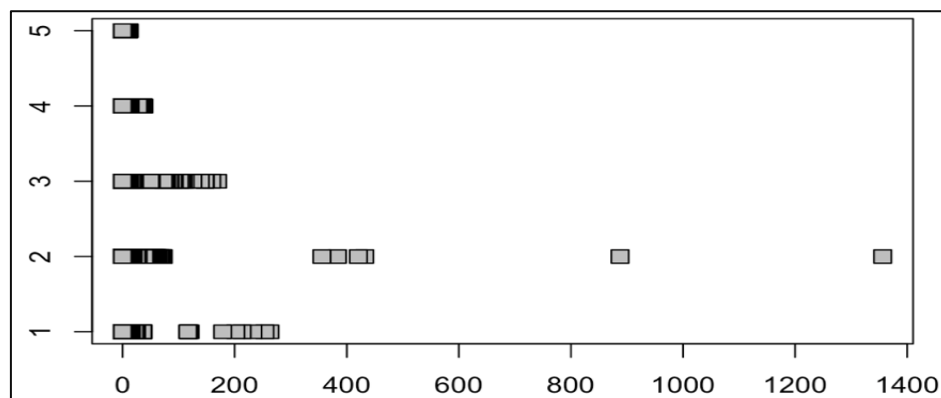


Figure 1: Correlation between Fund net assets and Gender Equality grade

(source: Authors)

In conclusion, once the graph in *Figure 1* has been analyzed, it is possible to arrive at the following conclusion: the 4.151 investment funds analyzed follow a linear trend when studied in reference to size and gender rating. It is clear, therefore, that smaller funds that are less attractive to investors have lower rating results. On the contrary, medium funds and the largest funds record a very high rating result (grade 2), although not the highest. Finally, small-medium funds ensure positive and fluctuating rating results. This is the case, in fact, of funds that are distributed between classes 1 and 3.

Moreover, the data portrayed in *Figure 2* serves as a crucial companion to *Figure 1*, offering a nuanced perspective on the interplay between fund size, gender rating, and financial magnitude. The histogram's delineation of rating categories against total Fund Net assets not only corroborates the trends identified earlier but also unveils intriguing nuances within specific asset brackets. For instance, a closer examination reveals that within the medium-sized fund category, there exists a divergence in rating outcomes, suggesting a dynamic landscape even within a seemingly homogeneous group.

Furthermore, the visual representation in *Figure 2* facilitates a more comprehensive evaluation of the funds that defy the expected linear trend. These outliers may hold the key to uncovering unique strategies or characteristics that contribute to their exceptional performance or, conversely, their deviation from the anticipated rating norms. The histogram that we present, as stated, shows the usual five rating categories on the y-axis, while on the total Fund Net assets expressed in billions (10^9).

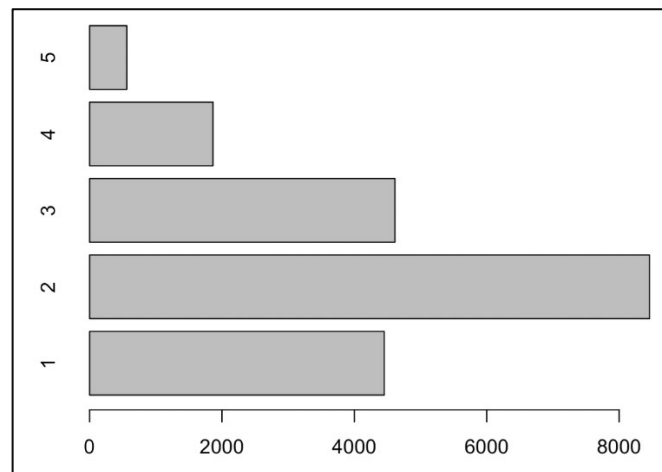


Figure 2: Fund net assets for each Gender Equality grade class

(source: Authors)

It's quite fascinating to observe how the dynamics of fund net assets align with the established trends within each rating class. Notably, the lower-rated classes (4 and 5), exhibit a propensity to attract comparatively less capital when compared to their higher-rated counterparts. This underscores the influence of ratings on investor confidence and capital allocation.

Delving deeper into the nuances revealed by *Figure 2*, it's intriguing that classes 1 and 3 emerge as nearly indistinguishable in terms of average capital accumulation. This parity suggests a certain equilibrium or commonality in the fundraising capabilities of these classes. Meanwhile, class 2 stands out prominently by securing the highest average capital among all classes. This not only positions it as a formidable contender in terms of size but also establishes it as the wealthiest class, a noteworthy insight gleaned from the juxtaposition of *Figures 1* and *2*.

The comprehensive analysis extends to the scatter plot in *Figure 3*, which serves as the culmination of our empirical investigation. The y-axis neatly accommodates the familiar five rating classes, while the x-axis charts the years of activity for the funds. This visual representation provides a holistic view of the temporal dimension, allowing us to discern potential patterns or trends that may influence the performance of funds over time. By integrating this temporal perspective into our analysis, we gain valuable insights into the longevity and sustainability of fund activities across different rating classes, enriching our understanding of the broader financial landscape.

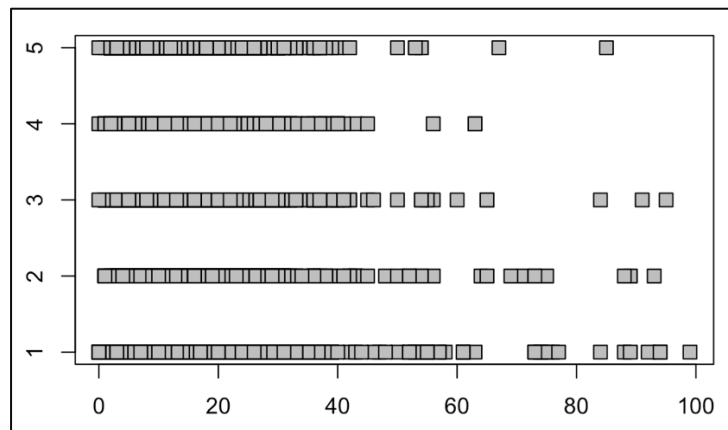


Figure 3: Correlation between Shareclass Inception date and Gender Equality grade

(source: Authors)

Visually examining the distribution of funds across the first three classes reveals a remarkably balanced spread. This implies that, within the analyzed sample, the age of funds doesn't significantly correlate with favorable rating judgments (classes 1-3). This challenges the conventional notion that older funds inherently boast a positive rating, adding a layer of complexity to our understanding of the interplay between fund age and performance.

Contrary to initial expectations, classes 4 and 5 present a cohort of relatively younger investment funds compared to their higher-rated counterparts. This unexpected discovery piqued our interest, prompting a closer inspection. In class 4, only two funds manage to reach 63 years of activity, with an average hovering around 15 years. Similarly, in class 5, albeit a slight uptick, only one fund attains 85 years of activity, resulting in an average settling at 17 years. These figures stand in stark contrast to the stalwart longevity observed in class 1.

In essence, this surprising revelation implies that older funds, owing to their maturity and perhaps a heightened market awareness concerning sustainability and ethics, exhibit a distinctive focus on gender diversity. This nuanced perspective challenges the conventional narrative that associates age with a singular trajectory of success. Instead, it suggests that the extended market presence of these older funds has fostered a unique sensitivity to issues such as gender diversity, providing a fresh lens through which we can interpret their sustained success and ethical considerations.

5. Conclusions

In conclusion, based on the literature analyzed and the empirical analysis conducted, it was possible for us to answer the research questions:

- *RQ1: How GD, as an expression of CSR, is valued within investment funds?*

Building on the insights gained from our empirical study, it aligns seamlessly with the wealth of literature that underscores the interconnectedness of GD and CSR practices. The symbiotic relationship between GD and CSR has transcended theoretical frameworks and found tangible application in the realm of fund-related investments. Notably, an increasing number of these entities incorporate this link into their comprehensive assessments of a company's sustainability and ethical practices.

Our findings reinforce the established notion that gender diversity is not only a significant factor in fostering good corporate governance but also a positive indicator of robust CSR initiatives. The correlation between gender diversity, CSR, and long-term corporate success underscores the pivotal role these factors play in ensuring stability and resilience in the business landscape. This echoes the sentiment prevalent in our empirical analysis, where certain rating classes serve as quantifiable indicators of an investment fund's commitment to CSR and ESG principles.

Investment funds prioritizing CSR practices, coupled with steadfast adherence to ESG commitments, are increasingly garnering favor among investors. This heightened investor attention to the impact of their investments reflects a growing awareness of the broader implications of their financial decisions. In concordance with these trends, our empirical study corroborates the positive reception of such funds in the market. The top-

rated classes, as delineated in *Figures 1* and *2*, not only amass the largest average funds in terms of size but also represent the pinnacle of wealth within the investment landscape. This convergence further reinforces the pivotal role played by CSR, ESG commitments, and gender diversity in shaping investor preferences and contributing to the sustained success of investment funds.

- *RQ2: What is the relationship between Fund Net Asset and the GD rating?*

Navigating the intricate relationship between an investment fund's assets under management and its GD rating reveals a complex interplay influenced by diverse factors. Consistent with existing literature, the consensus holds that when a fund prioritizes GD within its investment strategy, it tends to attract a cohort of investors who value socially responsible and sustainable investments. The logical outcome of this investor preference is an influx of capital, directly contributing to the augmentation of the fund's size.

However, the empirical analysis we conducted introduces a nuanced perspective, offering a more complex narrative. While our findings affirm that funds with higher net assets tend to achieve elevated rating classes, signaling a correlation between AUM and GD rating, the pinnacle of excellence remains elusive. Intriguingly, as depicted in *Figure 1*, the largest funds find their residence in "rating class 2", achieving high but not the highest rating classes.

This deviation from the expected pattern is further emphasized by the revelation that "rating class 2" not only hosts the largest funds but also accumulates the highest amount of capital among the funds, as illustrated in *Figure 2*. This discrepancy prompts a deeper exploration into the dynamics at play within this rating class, questioning whether there are specific attributes or strategies that differentiate it from the others.

In essence, our empirical analysis introduces a layer of complexity to the established theory, suggesting that while higher net assets contribute to elevated rating classes, the pursuit of excellence may be subject to additional factors within the nuanced landscape of investment fund dynamics. This opens insights for further research and exploration to uncover the intricacies that govern the relationship between AUM, GD rating, and the elusive pursuit of excellence within the investment aim.

- *RQ3: What is the relationship between fund longevity and GD rating?*

Our empirical evidence sheds light on a distinctive aspect as we delve into the relationship between GD rating categories and the longevity of investment funds within our selected sample. Contrary to prevalent notions in the literature, our findings reveal a lack of discernible evidence connecting GD rating categories with the temporal dimension of fund activity. The funds under scrutiny exhibit an almost perfect distribution in the graph presented in *Figure 3*, challenging the conventional wisdom that suggests a correlation between consolidated, long-standing funds and advantages in terms of credibility and investor trust.

This deviation from the expected pattern prompts a reevaluation of assumptions about the benefits derived from the longevity of funds. In our sample, the absence of a clear trend in fund distribution across the GD rating categories defies the notion that well-established funds automatically garner more favor from investors who prioritize GD in their investment decisions. The intricacies of building credibility and trust appear to be more nuanced than a simple linear relationship with the age of the funds.

Furthermore, our empirical study dispels the hypothesis that younger funds are inherently more attentive to sustainable and ethical practices. Contrary to expectations, the observed sample doesn't align with the anticipated trend, challenging the assumption that younger funds are predisposed to be more attuned to contemporary sustainability and ethical considerations.

In essence, our empirical evidence introduces a layer of complexity to the prevailing narratives in the literature, emphasizing the need for a more nuanced understanding of the multifaceted dynamics at play in the intersection of GD ratings, fund longevity, and ethical considerations. This calls for a reexamination of conventional wisdom and opens avenues for further exploration to unravel the intricate relationships within the diverse landscape of investment funds.

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Artificial Intelligence: Gender-Specific Differences in Perception, Understanding, and Training Interest

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Abstract: In light of the growing importance of Artificial Intelligence (AI) in science, business, and society, broad acceptance is crucial. However, recent studies indicate a significant underrepresentation of women in the emerging AI-driven professions of the future job market. This hampers the innovation potential of technologies due to the lack of diverse perspectives in development. Gender-specific differences also manifest in the perception of AI: Men tend to view AI applications more positively, rate their own AI competencies higher, and have more trust in the technology compared to women. However, both genders agree on the critical importance of the comprehensibility of AI decisions and are equally willing to pursue further education in the field of AI. This study aimed to investigate gender-relevant aspects in the perception and understanding of AI, as well as the need for further education and opportunities for communication and exchange on the topic of AI. To achieve this, focus groups with female students were conducted in May 2023. The analysis of the conversation data and materials used was carried out using an inductive coding method. Overall, women perceive knowledge as the key to generating more interest in AI. However, they also identify obstacles such as discrimination, gender stereotypes, and a lack of gender equality. Additionally, they desire more practical examples, improved communication regarding the advantages and disadvantages of AI, as well as more democratic and transparent decision-making processes. The paper emphasizes that an inclusive educational environment requires awareness and education for women, along with measures against discriminatory barriers and stereotypes. Furthermore, it suggests the early involvement of women in the development of AI applications and the establishment of clear rules to ensure gender equality in the workplace. These study findings provide valuable support to companies in the gender-specific planning of awareness and training processes for introducing AI.

Keywords: Artificial Intelligence, AI Gender Bias, Prevalent Stereotypes, Gender Discrimination, Need for Transparency, Knowledge Gaps, Socialisation Based Vicious Circle

1. Introduction

1.1 Problem Definition and Theoretical Background

Artificial intelligence (AI) has become a key topic in business and society. Even though there is no standardised understanding of AI in research, Baker et al. (2019, p. 10) have proposed a consensus-based, broad definition that forms the basis of this study: *"Computers which perform cognitive tasks, usually associated with human minds, particularly learning and problem-solving."* In this sense, AI is a generic term that encompasses a range of technologies and methods, such as machine learning, natural language processing, data mining, neural networks, and algorithms (Zawacki-Richter et al., 2019).

In today's world, AI already has a wide range of applications in companies, such as in robotics and the analysis of extensive data, as well as in the private sphere via for instance smart home systems and voice assistants. The ability of AI methods to handle increasingly complex computational tasks is leading to unprecedented levels of performance and making them the driving force behind the future development of our society (Crawford et al., 2018; Jobin et al., 2019).

The growing importance of AI has opened up debates about fundamental principles and values. Although AI increasingly impacts our everyday lives and economy, AI research and development is still overwhelmingly dominated by men. The "Global Gender Gap Report" indicates that women make up only about 25% of researchers in AI overall, which suggests that they are not sufficiently involved in the development of AI and the associated training datasets (World Economic Forum, 2020). This can lead to a biased and gender-unequal design of AI solutions, exacerbating social disadvantages and inequalities (Hall and Ellis, 2023).

In this context, women and men have different attitudes and perceptions of AI. Men perceive AI applications more positively than women: According to the annual "AI at Work" study, 32% of male participants rate AI in the workplace positively, compared to 23% of female participants (Oracle, 2019). The perception of AI is decisively characterised by the availability of information and knowledge about AI. People who have heard, read, or seen something about AI in the last 12 months tend to have a positive view of AI (European Union, 2017).

Among women, in particular, the less positive basic attitude toward AI is due to a lack of experience with AI and training (Appinio, 2019).

Furthermore, men rate their AI skills higher than women (Franken and Mauritz, 2021). Stereotypes continue to significantly influence the self-perception of one's own skills concerning the use of digital technologies and knowledge of technical terms. For example, women rate their understanding of the term AI and their level of knowledge lower than men (Kaspersky, 2020).

Previous research has focussed on the differences between genders regarding the perception of AI. However, it is recognisable that previous research efforts have focused on the manifestations of the differences while understanding the causes of gender-specific perspectives on the topic has been neglected. There is a lack of comprehensive findings on how women perceive and understand AI, their knowledge about it, and what causes their particular approach to this topic. However, in-depth insights into women's perspectives are crucial to ensure equality in AI development and to derive well-founded recommendations for the education system.

1.2 Research Question and Structure

This study addresses this research gap. The main objective is to analyse the attitudes and perceptions of women towards AI and to identify possible factors for a more critical and cautious attitude. On this basis, key points become clear that can be used to guide the design of training measures to contribute to strengthening equality with regard to AI technologies.

The research question is therefore: *"What perceptions do women have of the role and significance of AI, and how can women's confidence and interest in the topic of AI be strengthened?"*

The study can therefore be located in the field of tension between business management, HR policy, and business psychology approaches.

The target group consists of female students in higher semesters of various study programs at a university of applied sciences, as they have a basic understanding of the working world.

This article is structured as follows: Firstly, the method is explained in the following chapter 2. The subsequent chapter 3 is dedicated to the presentation of the results. Finally, the results are summarised in chapter 4 and discussed with regard to their practical implications.

2. Methods

In order to answer the research questions, two focus groups were conducted in May 2023, each lasting 90 minutes with 12 female students. Focus groups were used as a survey instrument because, as a social science method, they can provide deeper insights into people's opinions, attitudes, perceptions and behavior on a specific topic (Krueger and Casey, 2009). Mixed groups were avoided in order to rule out possible gender dynamics and stereotypes (Kitzinger, 1994). Apart from this, the focus groups shared comparable characteristics with regard to the participants, who were approached by posting notices and chosen based on a chronological application.

The guideline contained open questions on understanding AI, perception, interest, and participants' experiences. Each session began with an introduction by the moderator, consisting of a short presentation on AI, followed by a chaired discussion and a concluding section in which the participants summarised their impressions. A memory log then supplemented the notes taken during the implementation. In addition, the answers were collected using metaplan cards. The data was analysed using the Atlas.ti software for applying an inductive coding method. The transcripts were repeatedly coded until no new findings emerged from the data. The generated codes were then categorised into five superordinate groups to represent the main themes of the data and enable a structured analysis. These groups are:

- Knowledge and Education,
- Discrimination,
- Gender Differences (Socialization and Stereotypes),
- Communication and User-Friendliness,
- Transparency and Regulations.

3. Results on Gender-Specific AI use and Interpretation

Figure 1 shows the results of the focus groups in an aggregated way. The individual dimensions are presented in the following sections. Quotes have been translated into English by the authors.

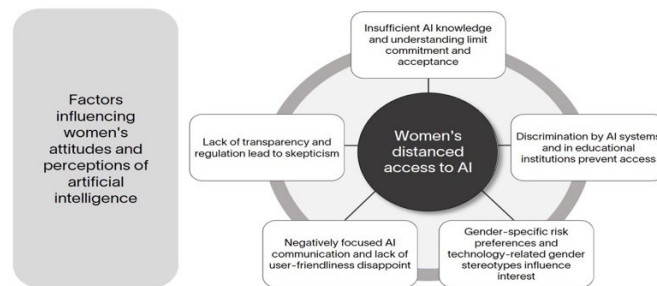


Figure 1: Categorical interconnected framework model

3.1 Knowledge and Education

In the focus groups, it became clear that knowledge about artificial intelligence, education, and information significantly influence perceptions and attitudes toward AI and are considered prerequisites for developing more interest in the topic.

3.1.1 Knowledge: Deficient AI Knowledge Goes Hand in Hand With the Perception of AI as a Male Domain and Causes Gender Inequalities in Terms of Interest and Knowledge Acquisition

The statement from one participant makes it clear that knowledge is a critical aspect in building interest: *"It's a cycle. There is not enough interest because there is not enough knowledge. There are too few women in the field, and it remains uninteresting, and then it goes round in circles."*

For example, previous research confirms that experience and knowledge in connection with technology can strengthen confidence in it (Eastin and LaRose, 2000). In addition to knowledge about the topic, it is also essential that more women are involved in development, as otherwise the area remains unattractive. It was also discussed in the focus groups that AI is dominated by men, and many female participants were discouraged from engaging further with the topic. However, education significantly influences women's attitudes toward AI, and they are more willing to use it (Brougham and Haar, 2018).

Similarly, interest plays a crucial role in expanding knowledge, as does the opposite course of action. This is because people tend to be interested in topics about which they already have a certain level of knowledge (Renninger and Hidi, 2019). Therefore, if AI systems are predominantly designed by men, these systems may reflect prejudices (Buolamwini and Gebru, 2018).

3.1.2 Understanding: Negatively Distorted Image and Understanding of AI Lead to AI Avoidance

The image of AI as a 'doomsday' technology prevalent among the participants was striking. A significant problem is that this perception represents a barrier to active participation in the design and use of AI (Franken and Mauritz, 2021). It further discourages women from engaging in these fields (Ceci and Williams, 2010). Furthermore, an overly negative perception of AI could lead to women avoiding potentially beneficial applications of AI in their daily lives and work. It also carries the risk that women withdraw from (co-)shaping AI development and that their needs and perspectives are less considered in the design and application of AI technologies. It also distracts from the need for regulation, the establishment of ethical guidelines, and discussions about standards and laws. These measures should ensure that the development and application of AI are always in line with the social good (Jobin et al., 2019).

3.1.3 Education: The Early Stages of the Educational System Lack Gender-Sensitive AI Instruction

The literature considers education to play a crucial role in shaping attitudes and broadening engagement in technological fields, particularly in the context of AI (Master et al., 2017). The results of the focus group workshops fit well into this debate, with one participant clarifying: *"AI is also interesting for women. You can see that in this group."*

This statement emphasises the potential of suitable educational measures. For example, a study showed that women have an increased interest and willingness to participate in the field of AI, provided that appropriate educational and awareness-raising measures are in place (Master et al., 2017).

Furthermore, the results clearly emphasise the relevance of early educational intervention. This finding reflects the growing consensus in the scientific literature that emphasises the need for early education in science and maths subjects to stimulate interest and increase diversity in these fields (Cheryan et al., 2017). Through early and ongoing education on AI, we can potentially positively influence women's perceptions and attitudes toward this critical technology. It is, therefore, crucial to promote knowledge about AI and education about its potential impacts and applications.

3.2 Discrimination: Gender-Based Unequal Treatment in Technology-Related Subjects in Educational Institutions Prevents the Development of Interest in AI

One participant describes a pronounced form of discrimination in the education system: *"In a project lesson at my school, which was about computer science, the teacher said that the girls could now go out and do something else."*

This type of discrimination in the education system clearly stands in the way of the goal of improving the attitudes and perceptions of women. However, in addition to the influences that prevent more women from engaging with the subject area, there are also examples of direct discrimination through AI.

The attitude of teachers also plays a decisive role in whether or not a student feels valued and supported in the respective discipline (Sabol and Pianta, 2012). Previous studies have reported that stereotypes and biases about gender roles in STEM subjects exist and are often implicitly reinforced by teachers and educational institutions (Hill et al., 2010). Such preconceptions can affect women's self-perception of their abilities and affiliation in technological and scientific disciplines (Stout et al., 2011). Therefore, it is essential to recognise and proactively address such barriers in order to create an inclusive educational environment and encourage women to succeed in technology-oriented subjects.

3.3 Gender Differences, Stereotypes, and Socialisation

It also became clear from the discussions in the focus group that men and women have different attitudes and interactions concerning AI.

3.3.1 Gender Differences: Gender-Specific Risk Preferences and Interests Cause AI Reservedness

The groups found that *"women tend to act more emotionally or socially and are more likely to seek contact with people. They, therefore, view AI more critically."* and that *"men tend to be more willing to take risks, while women are more cautious."*

These observations are consistent with various research findings that show differences in risk preferences and interests between the sexes. According to Ball et al. (2010), women generally show greater risk aversion in their decisions. In addition, women tend to have a stronger social focus and higher empathy scores (Archer, 2019). It must be questioned to what extent these differences represent the fundamental characteristics of men and women or to what extent they result from processes such as socialisation and our perceptions (Ellemers, 2018). However, knowledge of these differences can help to improve the view of AI, for example, by better tailoring AI programmes and technologies to the needs and interests of women. Furthermore, the findings could be used to change policies and practices in relation to the development and use of AI. This could lead to women perceiving AI more positively and having more confidence in AI technologies.

3.3.2 Stereotypes and Socialisation: Technology-Related Gender Stereotypes Influence Interest and Self-Assessment

One participant's statement suggests that socialisation and stereotyping play a part in these results: *"It is socially driven that there are more men in these areas; if there were more equality, people would talk about it differently."*

The quote points to the phenomenon of gender-specific socialisation, which means that men are more likely to be found in technical fields, and women are discouraged from these areas (Cheryan et al., 2013).

At the same time, women are often influenced by social norms and expectations that dictate what they should do and what they should be interested in: *"There is a certain image of women with norms of how they should be and what they are interested in that influences what they are interested in."*

Gender stereotypes not only influence how we perceive others and what opportunities we give them but also shape our self-image and behaviour (Ellemers, 2018). This stereotypical perception of gender roles can strongly influence women's interests and career paths and prevent them from entering specific fields, especially technical or scientific fields (Ceci and Williams, 2010). It is, therefore, important to raise awareness of gender stereotypes in relation to AI and to challenge stereotypes. This could help to reduce the sense of alienation that some women feel towards AI and positively influence their attitude towards AI.

3.4 Communication and User-Friendliness

The focus group discussions also revealed that the negative image of AI could be due to misguided communication and a lack of user-friendliness.

3.4.1 Communication: Negatively Focussed AI Communication Shapes Negative Perceptions of AI

How AI is discussed can significantly impact perception and acceptance: *"I have had many discussions with female friends, but they tend to be negative and more about the consequences than the function of AI. Perhaps it would be helpful to have examples in your own field."*

Participants in the focus groups would like to see more practical examples in their own field and different communication regarding the advantages and disadvantages of AI. Furthermore, this quote, in particular, shows the possibility of improving negative perceptions of AI by presenting suitable examples that correspond to women's interests. Highlighting AI potential in these areas can help to break down prejudices against AI and promote a broader understanding and engagement among women. For example, users with positive experiences with AI-driven systems tend to be more accepting of the technology and more trusting (Fast and Horvitz, 2017). Similarly, the perception of AI is improved when users see how AI can make their everyday tasks easier (Luger and Sellen, 2016). The statement of another participant also fits in with this: *"I am interested if it is helpful in solving specific tasks."*

Making successful working women more visible was the last component to ensure that additional women were inspired to enter the sector by their example.

3.4.2 User-Friendliness: Lack of Humanity and Disappointing Experiences Shape Acceptance of AI

The following quote indicates a lack of personal connection or empathy on the part of the AI, which leads to turning away from the technology: *"I didn't hear about ChatGPT and was quickly put off when it didn't work the way I hoped it would, or I can't use it the way I want to. It doesn't feel like a human, so I don't want to interact with it any longer."*

This observation is consistent with the findings of Karahasanović et al. (2021), who found that the lack of perceived humanity in AI applications can lead to mistrust and discomfort. Furthermore, the quote also illustrates the frustration caused by a failed interaction with AI. This is consistent with the findings of Luger and Sellen (2016), who emphasise that disappointing experiences with AI technologies can significantly reduce user acceptance. To address these problems, it could be helpful to include female perspectives more in the design process of AI systems to increase female usability.

3.5 Transparency and Regulations: Perceived Lack of Transparency and Insufficient Regulation Maintain AI Scepticism and Mistrust

The topic of transparency and regulations emerged most frequently within the focus groups. The following quote reveals the desire to make decision-making processes more transparent and democratic: *"You should consider whether there should be an authority that clarifies whether developments should be carried out in this way and what AI is allowed to do? Not individual [companies] should decide that."* Another issue was clearly labelling when and how to interact with AI: *"I would like to see mandatory labelling so that I know when I am interacting with AI."*

Therefore, two areas are important: first, the regulation of what AI is allowed to do and who decides on it, and second the transparency of AI systems.

Another point mentioned in the focus groups in this context was the concern about the protection of data and the improvement of data protection. All three topics correspond to the desire to *"make AI more trustworthy"*. Given the more negative attitude of women towards AI, this result is understandable. However, attempting to make AI more ethical and trustworthy is already playing an important role in the public debate (Bostrom and Yudkowsky, 2019). Trustworthy AI is a comprehensive concept that focuses on the development of AI systems that are both effective, ethical, and legally compliant. This includes considering fairness, transparency, privacy, and respect for human rights (Floridi et al., 2018). The European Union's AI Act is the latest and most comprehensive attempt to translate these ideals into law. It aims to ensure that AI technologies and applications are safe, respect fundamental rights, and do not discriminate (European Union, 2021).

4. Conclusion

4.1 Summary and Implications

This study aims to close an essential research gap by identifying factors that lead to a more critical and cautious attitude of women toward AI. On this basis, recommendations can be made to strengthen gender equality in the context of AI technologies.

Overall, the findings presented in the previous chapter with regard to the research question can be summarised as follows:

Knowledge is an essential prerequisite for trust in and a positive perception of AI. A sound understanding of AI promotes a more realistic picture of this technology, allowing opportunities and risks to be more precisely recognized. A reduction in mistrust, coupled with a sound knowledge of the topic, can increase interest in AI. This could result in a reciprocal effect in which increased interest leads to further knowledge. This additional knowledge could, in turn, help to reduce mistrust and further promote interest in the technology. In addition, a more differentiated understanding of AI helps to recognise specific problems and challenges.

Discrimination is another complex of issues. However, the focus groups were less concerned with discrimination through AI and bias in the data and more with discrimination in teaching skills and competences relating to the topic. Some participants reported experiences of discrimination in the education system. In this form, the transfer of knowledge hinders the development of interest. The education system should be one of the places to promote interest and enable a fair transfer of skills independent of personal characteristics such as gender. One of the causes of discrimination in the education system are gender stereotypes. Discrimination can reinforce or confirm these stereotypes (Ellemers, 2018). Stereotypes, in turn, lead to discrimination. Along with discouraging socialisation, they lead to less interest, resulting in a lower level of knowledge. Socialisation thus contributes to people internalising stereotypes and accepting them as valid truth (Ellemers, 2018). This can lead to a vicious circle.

The analysis is also linked to factors that can be assigned to the dimensions of communication and user-friendliness, as well as gender differences, socialisation, and stereotypes. The rather masculine connotation of STEM subjects is reinforced by the insufficient visibility of female role models. As a result, few women aspire to a career in STEM subjects and are therefore not sufficiently integrated into their development. Applications tailored to male interests can reduce interest in further engagement with the technology and worsen the general perception of AI. This can again lead to a lower level of knowledge, which in turn has a negative impact on interest and perception, which could confirm stereotypes. In addition, the identification of relevant application examples is made more difficult. More knowledge is therefore needed to recognise the benefits. However, this cannot be achieved if socialisation and discrimination contribute to the creation and continuation of limiting stereotypes. These stereotypes can only be broken if communication about AI and women in the field changes and there are equal opportunities in the education system. This example illustrates the strong interdependence of the individual factors and their mutual influence. Therefore, a successful strategy to combat these problems should aim for a holistic approach.

The focus group also raised aspects assigned to the transparency and regulations domain. The desire expressed by the study participants for more transparency regarding interaction with AI and clear guidelines on its authorisations and control mechanisms could result from the cautious attitudes. At the same time, clear regulations and their effective communication could help to minimise existing reticence. Furthermore, transparent regulations and communication could lay the foundation for a productive, society-wide discussion about AI and thus promote a more comprehensive and nuanced debate on the topic.

Overall, this study provides a deep insight into the multi-layered and interacting factors influencing women's perceptions and engagement in AI and offers practical steps to overcome these barriers. The findings emphasise the need for an inclusive, responsible, and transparent approach to AI that considers not only the interests but also the unique perspectives of women. There is a need to increase the proportion of women in AI research and development to actively address gender bias in AI systems. This requires the inclusive participation of women in technical professions and the promotion of a diverse and equitable culture in the AI community. Only through such efforts can AI technologies be made fairer and more effective in order to have a positive impact on society.

4.2 Limitations and Further Research

The following limitations can be identified in this study: The group of participants is limited to women, which means that the perspectives of other genders and gender identities were not considered. In addition, the participants volunteered to take part in the focus groups and were thus characterized by a particular thematic interest. Furthermore, the sample only included German participants and the size was limited, which restricts the generalizability of the results. Further research could compare different study programs to examine whether women on technical degree programs approach the topic differently than women in other faculties, for instance economics. It may also include quantitative research methods on the correlation and characteristics of the various dimensions to gain a deeper understanding of the problem. In addition, further research should address the effectiveness of possible measures to improve women's perceptions and attitudes towards AI.

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The Precarious Existence of Jane Austen's Charlotte Lucas Across Time and Text

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Abstract: Rewritings of Jane Austen's works are produced following particular literary conventions, philosophies, creative imaginations, and interpretations, which present new readers with fresh stories featuring distinct images. The journey of her works across centuries and continents, as well as their presence in such disparate cultures and historical periods, may well attest to the similarities as well as the important differences among various peoples across the world, despite the social, cultural, and ideological differences between countries. In the American author Seth Grahame-Smith's *Pride and Prejudice and Zombies* (2009), a mash-up of nineteenth-century author Jane Austen's still-popular novel, Charlotte Lucas is indisputably in a difficult situation not only because of the socio-economic realities of her precarious existence in the novel but also because of the zombie bite she receives. Although Charlotte's decision to marry Mr. Collins is justified, the mash-up version of the novel still turns her into a zombie as if indicating a punishment for her marriage to Mr. Collins. However, in his movie adaptation, *Pride and Prejudice + Zombies* (2016), the American director Burr Steers lets Charlotte survive and remain contentedly married to Mr. Collins although she is still presented as a vulnerable figure without combat skills who needs the protection of both her husband and Lady Catherine de Bourgh. By following Linda Hutcheon's adaptation theory, particularly the process of "appropriation and salvaging" (2006), this paper aims to explore the representation of Charlotte Lucas in *Pride and Prejudice and Zombies* and its film adaptation, *Pride and Prejudice + Zombies*, thereby contributing to the field of adaptation studies with a gender focus.

Keywords: Appropriation, Charlotte Lucas, Mash-up novel, Salvaging, Zombie Apocalypse

1. Introduction

Jane Austen's novels are arguably the most frequently adapted works in British literary history. Consequently, her reputation is supported as much by her writings as it is by the massive media industry, embracing stage and screen (Hayes, 2002). Some critics find that texts suffer greatly throughout the transition process since the quality of the adaptations falls short of the originals (Stam, 2005). However, in a Darwinian sense, adaptability enables organisms to withstand environmental changes since adaptations "help their source[s] ... 'survive' ... changing environments and changing tastes..." as Robert Stam put it (2005, p. 3). In *A Theory of Adaptation*, Linda Hutcheon suggests that adaptation is "how stories evolve and mutate to fit new times and different places" (2006, p. 176). According to Hutcheon's theory of adaptation, artists reinvent and innovate by repurposing elements of preexisting works to create new and creative works: reworking, recontextualizing, or otherwise changing the original material to produce something new is the process of "appropriation and salvaging" (2006, p.8). In this vein, she views slash fiction, fanzines, prequels, and sequels as belonging to this end of the evolution: the television series and movie *Buffy the Vampire Slayer* (1992–1997), for instance, is referred to by Hutcheon as a hybrid case of an adaptation and a spin-off because, although the show "is ostensibly a sequel to the 1992 film [...] its first season, in fact, adapts parts of the film, adding new characters but keeping the same story elements" (2006, p. 171). Julia Sanders also notes that "[...] adaptation and appropriation have on the whole tended to operate within the parameters of the established canon, serving at times to reinforce that canon by ensuring a continued interest in the original or source text, albeit under revised circumstances, but at the same time ensuring a dynamic revival or 'repair' of the same" (2016, p.124).

While adaptations are now considered a normal practice, 'mash-up' novels as adaptations and appropriations are a real cultural phenomenon of the last decade. Mash-up novels mix the original novel with a parallel version in a different genre; in other words, they are fictional works that weave together a pre-existing literary text, frequently a classic, with a different genre, most typically horror or science fiction (Riter, 2017). The phrase 'mash-up' first appeared in the music business to describe tracks that blended two or more pre-recorded songs. Seth Grahame-Smith's novel *Pride and Prejudice and Zombies* (2009) often regarded as the publication that popularized the genre, was followed by Steve Hockensmith's additions to the series: the prequel *Dawn of the Dreadfuls* (2010) about the Bennet sisters, and the sequel *Dreadfully Ever After* (2011), about the marriage of Mr. and Mrs. Darcy. Some critics now claim that the first mash-up novel by Seth Grahame-Smith "unleashed a whole new genre" (Sutton, 2010, p. 6). In these novels, the process of appropriation and salvaging Austen's themes and characters shows a light-hearted, imaginative interaction with literary tradition within the framework of the zombie subgenre, which nevertheless shows serious feminist intent. The Bennet sisters, for

instance, as warriors/zombie killers “not only break the bounds of traditional femininity, but actually reverse gender roles by protecting men from attack” (Mulvey-Roberts, 2014, p. 28). Accordingly, this alteration invites the reader to challenge societal expectations placed on women, encouraging them to define their identities beyond the restrictive norms.

In Seth Grahame-Smith’s novel, Charlotte Lucas - in contrast to the Bennet sisters - is presented as a young woman lacking the necessary combat skills to survive in this zombie-infested environment: when she receives a fatal zombie bite, she gradually turns into a zombie and perishes. Her tragic fate reinforces the idea of women being at a disadvantage without the necessary training and education, which can be related to Mary Wollstonecraft’s ideas on education, particularly as expressed in her work “A Vindication of the Rights of Woman” (1792). Wollstonecraft critiqued societal expectations that limited women to domestic roles and denied them access to physical and intellectual pursuits. Charlotte’s fate in this context reflects the potential consequences of such constraints, where women without necessary skills face a literal life-and-death disadvantage. On the other hand, in his adaptation of *Pride and Prejudice + Zombies* (2016), American director Burr Steers allows Charlotte to live and continue to be happily married to Mr. Collins, even though she is still portrayed as a helpless victim who requires the protection of Lady Catherine de Bourgh and her husband. This portrayal of Charlotte can be interpreted as a true representation not only of women at that time constrained wretchedly under the “Cult of True Womanhood”, (a phrase coined by Barbara Welter (1992), referring to the four ideal “womanly” virtues most cherished in the Regency era – purity, piety, submissiveness, and domesticity) but also the situation of women in contemporary times. By following Linda Hutcheon’s adaptation theory, particularly the process of appropriation and salvaging, this paper aims to explore the representation of *Pride and Prejudice*’s Charlotte Lucas in each text, the mash-up novel, *Pride and Prejudice and Zombies*, and its 2016 film adaptation, thereby contributing to the field of adaptation studies with a gender focus.

2. Zombification of Charlotte Lucas in Grahame-Smith’s Mash-up

Although Austen’s romance *Pride and Prejudice* (1813) follows the love stories of several characters centered around Elizabeth Bennet and Mr. Darcy, Elizabeth’s intimate friend Charlotte Lucas and her choice of spouses have generated a great deal of discussion and analysis throughout literary history. While she has received recognition from some critics for her practicality and ability to make the most out of challenging circumstances, she has drawn criticism from others for settling for a marriage devoid of love and for lacking romantic ideals. As is known to all Austen fans, Charlotte is a side character depicted as a “sensible, intelligent young woman, about twenty-seven” (Austen, 2006, p.19) who is conscious of the limited possibilities she has in front of her. When Elizabeth declines Mr. Collins’ proposal, Charlotte views him as her best option for getting married and having a place of her own, disregarding the disadvantages of such a union. Charlotte unambiguously announces to Elizabeth that she has good grounds for being married to Mr. Collins despite his shortcomings as a life partner: “I am not a romantic, you know; I never was. I ask only a comfortable home; and considering Mr. Collins’s character, connection, and situation in life, I am convinced that my chance of happiness with him is as fair as most people can boast on entering the marriage state” (Austen, 2006, p. 140). Charlotte recognizes that Mr. Collins represents her best opportunity to own a home and raise a family, despite his numerous flaws as a life partner, thereby she expresses a pragmatic view of marriage rather than a romantic one.

Seth Grahame-Smith’s 2009 *Pride and Prejudice and Zombies*, as the title suggests, reimagines Jane Austen’s Regency romance as a zombie-slaying tale of love, class conflict, and martial arts set in a zombie-infested Great Britain. People carry on with their lives as usual, simply adjusting to this apocalyptic world of zombies. Now violence and zombies are a part of their everyday reality; their routines remain unchanged, with social norms, class distinctions, and the need for husband-hunting. There has been a major shift in the worldview of the Regency period as portrayed in her novel, as evidenced by the zombie theme—which emphasizes the need for martial arts training for self-defense—inserted into the middle of a list of customs normally associated with women in her day. In the mash-up novel, Mr. Darcy tries to clarify what skills a young lady needs to have to be called truly accomplished when he says:

[...] a thorough knowledge of music, singing, drawing, dancing, and the modern languages; she must be well trained in the fighting styles of Kyoto masters and the modern tactics and weaponry of Europe. [...] All this she must possess, and to all this, she must yet add something more substantial, in the improvement of her mind by extensive reading (Grahame-Smith, 2009, p. 34).

Unquestionably, well-mannered women should be skilled seamstresses, embroiderers, musicians, and readers but they also need to be competent warriors. Charlotte Lucas, therefore, is in a precarious situation not only

because of the socio-economic realities of her existence in the novel but also because she lacks the necessary martial arts training to defend herself against any zombie attack, which often happens in this zombie-apocalyptic universe. According to this depiction, women are expected to be strong enough to fight against zombies and thus survive independently of men, inverting the stereotypical gender structures of the nineteenth century that created the image of women as weak, powerless, and in need of defense (Gilbert and Gubar, 2000).

In such precarious circumstances, Charlotte is twice as vulnerable and thus, desperately sets her sights on Mr. Collins as a suitable candidate to establish her own home and, in other words, to survive under the protection of her husband and his patron Lady Catherine de Bourgh. The fact that "Charlotte seemed to flatter Mr. Collins with an almost unnatural attentiveness," (Grahame-Smith, 2009, p. 94) while the Bennets are dining with the Lucases, is indeed an indication of her scheme to turn all his affections towards herself, by engaging him in every chance she gets. After Charlotte receives the proposal from Mr. Collins, as she has hoped, she expresses her practical and unromantic expectations from marriage, but at the same time, she confesses to Elizabeth that she has been "*stricken by the plague*" (Grahame-Smith, 2009, p.103, original emphasis). As Charlotte relates, she is caught alone and unarmed during her Wednesday walk to Longbourn when she encounters an upturned carriage under which a zombie grasps Charlotte's leg and sinks its teeth into it. As they both understand, the zombie bite she receives will soon seal her doom; yet, she wishes to spend her "final months [as] happy ones" (Grahame-Smith, 2009, p.103) as a married woman. Charlotte's preference for dying married rather than being remembered as a single girl, even on her deathbed, foregrounds the patriarchal expectations the Regency had of women: to pass their entire lives being dependent on a man, first as daughter and later as wife (Pool, 1993). Charlotte is salvaged from Austen's novel but undergoes a significant transformation in the mashup leading to her zombification and eventual demise.

In Grahame-Smith's mash-up, the central theme of the zombie and women who must marry to survive are analogous due to their shared status as the living dead. Modern Euro-American ideas about zombies and the living dead, popularized by the grotesque films of George A. Romero, have their roots in the religious and spiritual systems of various West African communities, as well as in African-American and Caribbean folk traditions. The idea that death is not an end but rather a change in form is one of the most basic principles of many African belief systems. In his work, John S. Mbiti explains that a person transitions gradually from the Sasa (life) period into the Zamani (death) period upon death. This individual will exist in a state Mbiti refers to as "the living-dead" for an extended period (1969, p. 25). As a literary representation of Mbiti's explanation, caught between a living and dead existence, Charlotte remains in between two states for a short period. Even though they are no longer physically alive, the living dead are still human beings because they can reunite with their loved ones and serve as a conduit for communication between the world of the living and the world of spirits and gods, since they speak both human and spirit languages (Mbiti, 1969, p. 83). However, Charlotte's situation precludes any such communication. According to Amanda V. Riter, Grahame-Smith further degrades Charlotte by "altering Charlotte's narrative to punish her for the decision to marry Mr. Collins with a level of grotesqueness that Collins could never dream of achieving" (2017, p. 89). Hence, Charlotte's zombification seems to be a penalty for her marriage to Mr. Collins, even though her choice to wed him might be reasonable in patriarchal societies, in which women are raised to operate more as domestic servants rather than as companions for men.

The parodic portrayal of Charlotte on the day of her wedding indicates that Charlotte is not regarded as an accomplished young woman in Regency England society, neither when she is alive nor when she is a zombie, due to her impoverished circumstances. In this scene, despite her best efforts to conceal them from anyone, Charlotte is already exhibiting the first indications of transformation. Elizabeth immediately notices that "Her skin had taken on a slight pallor, and her speech seemed a trifle laboured" (Grahame-Smith, 2009, p.114). Grahame-Smith does not hesitate to give details about some of the physical changes, such as the decomposition Charlotte experiences while turning into a zombie. To illustrate, in the dinner scene with Elizabeth, Charlotte is described as hovering "over her plate, using a spoon to shovel goose meat and gravy in the general direction of her mouth, with limited success" (Grahame-Smith, 2009, p. 125). Such details of Charlotte's transformation into one of the undead serve to create humor. In the same dinner scene, "one of the sores beneath her eye burst, sending a trickle of bloody pus down her cheek and into her mouth. Apparently, she found the added flavor agreeable, for it only increased the frequency of her spoonfuls" (Grahame-Smith, 2009, p. 125). The signs of her zombification are also evident when she is "stuffing handfuls of crisp autumn leaves in her mouth" (Grahame-Smith, 2009, p. 126) in the garden, and later at Lady Catherine's tea party, she is "drooling a third cup of tea onto her lap" (Grahame-Smith, 2009, p. 132). After Charlotte's zombification process begins, her speech deteriorates just as her body decays. Finally, the reader learns about Charlotte's tragic end through Mr. Collins'

letter – a narration which furthermore emphasizes, with its patriarchic provenance, Charlotte’s silence and marginalization as a zombie and woman in the narrative.

Mash-up novels are adaptations that heavily emphasize their relationship to their canonical source texts; one cannot avoid comparing the adaptation to the source and - because of their close relationship - the parodic elements of the mash-up novel are often highlighted. While parody is commonly associated with rewriting that seeks to ridicule its source, it can also be understood as “repetition with a critical distance which marks difference rather than similarity” (Hutcheon, 2006, p. 6). Charlotte’s gradual zombification, death, and the subsequent suicide of Collins in his last letter to Mr. Bennet is a clear example of the Hutcheonian process of appropriation and salvaging. Mr. Collins also ends his life by hanging from “a branch of Charlotte’s favorite tree” after Lady Catherine offers to carry out “the customary beheading and burning” (2009, p. 241): the novel never explains why Mr. Collins commits suicide. However, these kinds of appropriation should be seen as transformational processes that give rise to new meanings and narratives. To illustrate, it turns out that towards the end of the novel, in the scene where Lady Catherine confronts Elizabeth with rumors about Elizabeth’s engagement to Darcy, she confesses that she has been inviting Charlotte for tea over the previous few months so that she can add a special serum to her drink, “which would slow – or even reverse – the effects of the strange plague” (2009, p.129, 291). In Austen’s novel, Lady Catherine is portrayed as an inconsiderate, class-conscious character who looks down on others, while in Grahame-Smith’s mashup novel, she appears as a former zombie warrior trying to develop a treatment for individuals exposed to zombie bites. While Grahame-Smith appropriates the themes, characters, and structure of Jane Austen’s book by repurposing and modifying them to suit the zombie apocalypse, he subverts the fate of Charlotte Lucas and Mr. Collins, killing them both.

3. Charlotte Lucas’ Survival in Steers’ Film Adaptation

In his adaptation, *Pride and Prejudice + Zombies* (2016), Burr Steers follows the formula for a zombie horror story when writing the screenplay, bringing the post-apocalyptic world of Regency England to life on screen and incorporating an extra prologue and a final zombie attack into Grahame-Smith’s mash-up novel. Unlike the mash-up novel, moreover, Steers lets Charlotte survive and remain contentedly married to Mr. Collins even though she is still portrayed as a defenseless individual in need of Lady Catherine de Bourgh’s and her husband’s protection. In this sense, Steers’ movie adaptation is also an example of Hutcheon’s process of appropriation and salvaging, which is apparent in the director’s alterations from the original narrative of Grahame-Smith’s mash-up. As is clear in these words, the director Steers states unequivocally what he intended to achieve in his adaptation: “For me, it was reinterpreting Jane Austen” (Whittaker, 2016) instead of Grahame-Smith’s zombie-apocalyptic universe. This is an obvious attempt at “an appropriation of the story that results in a radically different work” (Hutcheon, 2006, p. 100). As Sanders also asserts, “No appropriation can be achieved without altering in some way the text which inspired that adaptation” (2015, p. 209). Since Steers’ creative interpretation of the source text intensifies the issue of class conflict and gender roles, it may be considered more complex than Grahame-Smith’s mash-up as shall be discussed soon. Nevertheless, despite significant deviations from the original text, Steers’ story of Charlotte Lucas blends in perfectly with Jane Austen’s romantic and social dramas since her story continues to resonate with readers today.

Steers’ additional prologue foregrounds the importance of combat skills—particularly martial arts knowledge—for survival in this post-apocalyptic world of zombies. As opposed to the Bennet family get-together in the original text, the movie opens with a long shot of Colonel Darcy (Sam Riley) crossing the Hingham bridge on horseback while in voice-over Elizabeth Bennet (Lily James) informs the audience about the recent growing zombie threat in the neighborhood. After the zombie attack in Mrs. Featherstone’s house, Mr. Bennet (Charles Dance) narrates, also in voice-over, the saga of zombies and their attacks in England, aided by the cardboard illustrations of a tunnel book called “An Illustrated History of England: 1700-1800” (PP+Z, 2016). According to this narration, those bitten by zombies—also known as unmentionables—gradually transform into zombies themselves. So, in stark contrast to the customary sewing and knitting expected of women at that time, (Welter, 1966, p. 165), the five Misses Bennet are presented alongside the father cleaning their weapons. The motif of the Bennet girls as warriors proficient in combat is unequivocal from the outset. As Stephanie Merritt (2009) also asserts, in “the Austen adaptations, it is the women who are bold and quick-witted enough to take on the monsters, a nice reversal of the passive victim role traditionally handed to young women, in horror as in history.” Charlotte Lucas (Aisling Loftus), however, is presented in the adaptation as plain, unremarkable, and getting close to the age of 27, which in the prejudices of the time was old for a woman (Pool, 1993). In line with the patriarchal lifestyle of Austen’s Regency era, she is already a burden to her family and friends due to her lack of marriage prospects as much as her combat skills.

Sandra Gilbert and Susan Gubar contended that readers who interpreted Austen as consenting to the constraints placed upon her by her society were unable to recognize a consistent subversive element in her writing: “It is shocking how persistently Austen demonstrates her discomfort with her cultural inheritance, specifically her dissatisfaction with the tight place assigned women in patriarchy” (2000, p. 112). Gilbert and Gubar (2000) perceive the love story in Jane Austen’s novels as a calculated satire that covers up deeper, more socially critical meanings, much as Austen herself covered up her writings with blotting paper when she wrote about subjects other than her family. As Sanders also notes, “It has become abundantly clear in the discussion of adaptation and appropriation that these processes are frequently, if not inevitably political acts” (2016, p. 123). In Steers’ film adaptation, reinterpreting Austen’s text, during the first zombie attack after the prologue, Charlotte reminds the audience thus of the precarious position of all women subjugated by patriarchy: “Zombies or no zombies all woman must think of marriage, Lizzy” (PP+Z, 2016). In the same scene, while the Bennet sisters fight back with their death-dealing katanas, Charlotte has made herself scarce, no doubt in fear of being bitten. This sharp contrast between Charlotte Lucas and the Bennet girls offers a subtle critique of gender norms. While the combat skills of the Bennet sisters challenge conventional gender roles, the portrayal of Charlotte highlights the persistence of patriarchal expectations even in this post-apocalyptic vision of Regency England. This situation is reminiscent of the fact that still today some unprivileged young girls are deprived of the right to access the necessary education, thereby facing vulnerabilities that impede their survival, protection, and participation in public life (Adichie, 2014).

The scene where Charlotte informs Elizabeth about her decision to wed Mr. Collins leads to a development not in the source text: she requests Elizabeth be her chaperone overnight at Mr. Collins’ rectory before she is “presented to Lady Catherine”, (PP+Z, 2016), a noted zombie warrior. To persuade her friend, Charlotte speaks of her dread at the idea of such a meeting: “She is said to be quite imposing and the thought of facing her without you makes me deathly nervous so” (PP+Z, 2016). Charlotte’s reluctance might not simply be due to her Ladyship’s high social status, representing power and authority but also to Charlotte’s lack of possible cultural defense that combat skills might provide. As Camilla Nelson (2013) also notes, because of her poor circumstances, Charlotte is continuously disparaged by Mrs. Bennet and other side characters throughout the mashup, making her seem worthless to the outside world. The already cruel attitude of the people of Meryton seems to undermine her self-confidence, thereby leading her to conform to the patriarchal expectations of her society. Grahame-Smith portrays Charlotte as a zombie with a singular focus, devoid of reason and emotions; in contrast, Steers exhibits empathy towards this character by allowing her to survive. By doing so, Steers is appropriating and salvaging Grahame-Smith’s mashup as the source text, but at the same time, he remains loyal to *Pride and Prejudice* in which the narrow range of possibilities for women is at the heart of Austen’s criticism.

Many readers find the mashup genre appealing because of its functional ambiguity, which is the basis for some irony and humor in these works. Like Grahame-Smith, the director Steers takes up Austen’s satirical character Mr. Collins, a man destined to inherit Mr. Bennet’s estate but who, in Austen’s world, cannot help but make himself look foolish. Yet, in this zombie-infested apocalyptic environment, Charlotte Lucas does not hesitate to marry him – believing “marriage is the only way to negotiate some limited form of freedom across the repressive discourses of her time” (Nelson, 2013, p. 346). Just as it is difficult to explain Grahame-Smith’s transformation of Charlotte Lucas into a zombie and the subsequent loss of her life and Mr. Collins’ suicide, we cannot explain why Steers prefers to give Charlotte a chance to live. In Steers’ adaptation, George Wickham (Jack Huston) receives the zombie bite instead of Charlotte and becomes the zombie king seeking to rule over both the living and the dead, which represents a patriarchal yearning for control and power. This narrative shift highlights how the patriarchal desire for supremacy transcends traditional societal boundaries, even extending into fictional worlds like that of zombies. On the other hand, being “the angel in the house,” (2000, p. 23) in Gilbert and Gubar’s terminology, Charlotte remains alive and content but at the same time silent and invisible until the end of the film. This major alteration in the plotline of Grahame-Smith’s novel, while being another example of the process of appropriation and salvaging, thus foregrounds the continued existence of gendered norms and traditional power dynamics in our contemporary times.

4. Conclusion

The success of Grahame-Smith’s mash-up novel, *Pride and Prejudice, and Zombies*, augmented by Burr Steers’ 2016 movie adaptation of the same name, demonstrates Austen’s contemporary adaptability. Modern readers and audiences can both enjoy its gothic reimagining while appreciating the potential for various interpretations, especially those relating to politics, gender, class, and war. Conventional scholarly readings of Austen typically focus on several distinguishing characteristics, such as her lack of political realism, or her narrow focus on specific

social castes – specifically the rural middle classes and the landed gentry (Voigts-Virchow, 2012). However, in addition to their value in modernizing literature, adaptations address a variety of political, social, and cultural issues by rewriting literary works and demonstrating a part of cultural negotiation (Sanders, 2016). As Amanda V. Riter argues, “No matter the media, the goal of mashups is usually always to make commentary on the source through the additions” (2017, p. 88). Likewise, André Lefevere asserts that “all rewritings, whatever their intention, reflect a certain ideology and a poetics and as such manipulate literature to function in a given society in a given way” (2003, p. xi). This means that rewritings are produced for the ideological demands and needs of a specific time, which manifests itself in the literary system. Therefore, when applying Hutcheon’s process of appropriation and salvaging on Austen’s *Pride and Prejudice*, the Regency period novel transforms into a zombie mashup, which subsequently evolves into a film adaptation, which opens up opportunities for deeper explorations of gender roles, agency, and societal critiques in literary and cinematic adaptations.

By reimagining Charlotte’s fate and role within the zombie genre, both the mashup and its film adaptation underscore the pervasive notion, embracing various ages, periods, and societies, that for women, marriage is often seen as a salvation. Charlotte’s transformations in each text serve as poignant examples not only of this enduring theme but also for the continued societal pressure on women to conform to traditional gender roles, even amid extreme circumstances. Katherine Sugg argues that “contemporary apocalyptic fictions narrativize the conjunction of two central ‘crises’: late liberal capitalism and twenty-first-century masculinity” (2015, p. 793). Megan A. Armstrong also notes how the zombie genre has a significant tendency to “...stabilize gender roles in a time when “traditional” gender roles have been increasingly destabilized” (2023, p. 811). In the context of the zombie-apocalyptic universe in *Pride and Prejudice, and Zombies*, Charlotte’s vulnerability is further compounded by her lack of martial arts training. Unlike characters such as Elizabeth Bennet and her sisters, who are depicted as skilled warriors capable of defending themselves against zombie attacks, Charlotte lacks the necessary combat skills to protect herself and lead an independent existence. Although significant progress has been made toward gender equality in modern times, women continue to feel compelled to adhere to gender norms for survival, highlighting the enduring influence of patriarchal structures. Hence, Charlotte Lucas remains an important and complex character not only for any evaluation of zombie literature but also for subsequent cinematic adaptation, since her story continues to resonate with readers today.

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How Much Does Gender Affect the Behaviour of Using Renewable Energy Resources?

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Abstract: The transition to renewable energy resources is a challenge for Romania, as well as for the whole world. The goal of the European Commission is to accelerate the use of renewable resources to reduce net greenhouse gas emissions by at least 55% by 2030. Romania had in 2022, 40,171 prosumers with the forecast that they will reach 100,000 in 2023. The previous research carried out showed a positive attitude of the household population in Romania towards these energy resources, but also important barriers that considerably slow down the process, Romania being behind the target set by the European Commission. Through this research, we seek to identify how gender differences are reflected in the approach to renewable energy resources to facilitate this transition. The present research covers a gap in the specialized literature by investigating, differentiated by gender, the perception of Romanian residents regarding renewable energy resources. The case study was carried out in 2023 on residents of two cities out of the 266 in Romania, Oradea and Timișoara. The reasons for choosing the two cities are related to their similar economic development, positioning in the same part of the country, and, in particular, their performance in increasing the number of green energy prosumers. A questionnaire survey was carried out with a result of 1098 valid questionnaires with a gender structure that allows a differentiated analysis (42.53 men, 53.18 women, 4.28 unspecified). The internal consistency of the answers was carried out with α Cronbach. The data processing methods used are Importance-Performance Analysis, RStudio202207.1+554, and qualitative processing with Atlas.ti22. A hypothesis we tested is whether women are more sensitive to environmental issues and the type of energy produced and consumed or the cost factor is the one that dictates. The results suggest gender-differentiated solutions for raising public awareness and encouraging action. Limits of the paper are found only in the two Romanian cities, the geographical extension of the sample being a possible future research direction.

Keywords: Renewable Energy, Romania, Importance-Performance Analysis, Barriers

JEL classification: Q2, K32, D1, J1.

1. Introduction

At the level of the European Union, to meet the objectives set for 2030 in the field of energy and climate, members must establish an integrated national plan on energy and climate, for the period 2021-2030. The national plans outline how EU countries should address and develop energy efficiency, renewable energy sources, reducing greenhouse gas emissions, interconnection, research, and innovation. Romania's energy targets are closely related to the general objectives of the EU's energy and climate policy. Romania also aligns itself with EU directives and regulations included in the "Clean energy for all Europeans" package¹. These directives and regulations set out steps to be taken to achieve the transition to a cleaner and more sustainable energy system. Romania developed its National Integrated Plan in the field of Energy and Climate Change according to the requirements of EU regulations. The strategy in the field of Energy and Climate Change developed and included in this National Integrated Plan aligns the national energy and climate priorities with the EU objectives, confirming Romania's firm contribution to achieving community objectives and targets². The green strategy is outlined along five guidelines, the development of energy from renewable resources, the

¹https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_ro

² https://energie.gov.ro/wp-content/uploads/2023/12/NECP_Romania_first-draft-version-21.12.2023_RO.pdf

promotion of energy efficiency, the reduction of emissions, the fair transition, and the development of infrastructure.

Most of the studies in the literature have focused on identifying and measuring the impact of energy consumption, CO₂ emissions, energy conservation, and the use of renewable energies (Wang and Ye, 2017; Ding et al., 2017; Antonakis et. al, 2017; Prokop et al. 2023) but relatively few studies aim to analyse individuals' energy behaviour by analysing gender differences in household energy conservation practices. Although, in general, women are known to be more caring, and protective and have a more environmentally friendly attitude compared to men, the latter have more technical knowledge about the environment and energy and a greater inclination to risk-taking in investment decisions. Thus, in carrying out the study we started from the premise issued by Arachchi and Managi (2021) that women and men have different knowledge and behaviour regarding energy sustainability and its importance. Thus, to capture gender differences in the use of renewable energies, the subjects selected from two representative cities for the western area of Romania were investigated through a questionnaire and responses were statistically processed to facilitate discussion of results. This paper is organized as follows: after a brief introduction, the current state of the art is presented in key trends, the data and methodology is described and results, discussion, and conclusion are outlined in the second part of the work.

2. Theoretical Background

In combating climate change and ensuring energy security, renewable energy has become a particularly important objective. Adopting a gender perspective for renewable energy development is essential to ensure that women's contributions are an integral part of the green transition (Arias et al. 2023). The research of the last decade has proven that a greater number of women on the board of directors and the management of entities determines the growth of performance indicators but at the same time influences the organizational climate by instilling a greater openness to conciliation, collaboration, and empathy. Thus, achieving greater gender equity becomes a topic of interest in the field of renewable energy research as well. As shown by Atahau et al. (2021) renewable energy development in rural areas positively affects women. However, energy scarcity in some rural regions has a negative influence on their household tasks, therefore it is important to promote women's ability to maximize both sustainable development goals and women's well-being (Barrios et al., 2020). Access to energy increases household productivity and in rural areas energy allows women to perform household tasks also at night Atahau et al. (2021). The study conducted by Baruk and Goliszek (2023) showed that young Polish beneficiaries as respondents saw both positive and negative aspects of green energy. In the identified hierarchy of how this type of energy is interpreted, the top positions were occupied by aspects related to its sources and its positive impact on the environment. Most of the women and men surveyed identified green energy as coming from renewable sources. Hermawati's et al. (2023) results showed that micro hydropower as a renewable energy technology not only provides green electricity but also benefits many households. It has a significant impact on Indonesian women's empowerment, gender relations, and their relationship with rural development, including improving their living conditions. The biggest challenges for future implementations of this renewable energy technology in Indonesia are local ownership, networking to connect and motivate practitioners from various institutions and organisations and developing sustainable and successful long-term energy programs.

From the analysis of the socio-demographic characteristics of the investigated Slovenian consumers, Hojnik et al. (2021) noted that female consumers have higher levels of environmental concern and responsibility, while male consumers have a higher level of knowledge about green energy. The authors also showed that younger consumers have a lower level of concern and responsibility, however, they also have the lowest level of risk regarding the use of green energy and are more likely to pay for such energy resources than the rest of the population. The results of the study by Hojnik et al. (2021) revealed that education does not appear to be the deciding factor in that environmental responsibility and behaviour, but knowledge about green energy and willingness to pay for it appears to increase with consumer income. Dogan and Muhammad (2019) but also Lin and Syrgabayeva (2016) showed that environmental concern and responsibility, knowledge, and attitude towards green energy significantly and positively affect the willingness to pay for green energy and thus fuel the trend to choose green energy. Striteska et al. (2024) examined the effects of boards' gender diversity and family ownership on SMEs' green behavior expressed by the monitoring of energy consumption and proactive green strategies implementation. The authors' results highlighted that the presence of environmental managers is beneficial for the implementation of environmental strategies in family firms. They also observed that energy consumption monitoring of family firms is significantly triggered by energy taxes, but also by the gender diversity

of owners. In family firms, especially among owners, gender diversity can have positive effects on green behaviors. In other SMEs in CEE countries, the subject of gender diversity is more of a challenge for the future (Striteska et al., 2024). Environmental managers are important stakeholders, thus Prokop, et al., (2023), and Straub et al. (2023), recommend not only hiring them but also promoting gender diversity and increasing the skills of existing employees.

Aspects of gender diversity discussed in connection with environmental issues as observed by Li et al (2019), are significant not only at the individual level but also at the regional and national level signalling the level of education and culture. For countries like China, as Jayachandran (2015) pointed out, with a specific tradition and long history, solving the problems generated by gender inequality is an even greater challenge in the context of the development and implementation of environmental policies. The empirical results obtained by Li et al. (2019) showed that households in counties with greater gender inequality use less energy-efficient electrical products and are less willing to save energy. Findings are relevant to policymakers as they indicate that promoting gender equality can have a positive impact on ecological development.

In light of the above-reviewed studies, we aimed to find out if the perception of Romanian residents regarding renewable energy resources is biased by gender diversity and how this perception influences individuals' behaviour toward implementing green energy.

3. Data and Methodology

The study was carried out in two important cities in western Romania, Oradea and Timișoara. Both cities and counties to which they belong have an economic development above the Romanian average. In terms of transition to green energy, both counties (Bihor and Timiș) that host these cities are below the national average in terms of the number of prosumers, with approximately 2,000 in Bihor and 4,000 in Timiș, at the level of 2023 (Profit.ro). In June 2023, according to Profit.ro, the number of prosumers in Romania was 63,162 to reach the objective of 100,000. This is why we wanted to find out what are the main barriers to the adoption of renewable energy sources, from the perspective of residents, and if there are notable gender differences in acting on the barriers. The pursued objectives of the study are found in identifying the general attitude, separately of women and men, towards renewable energy sources; the main barriers to the adoption of renewable energy sources, separately for women and men; the influencing factors of the adoption of renewable sources with a good performance, in the opinion of the two categories of potential consumers; the influencing factors of the adoption of renewable energy sources on which the government must act; the influencing factors of the adoption of renewable energy sources that are less priority or even unimportant in the adoption of renewable sources, for the two categories of consumers; and assessing the level of direct and indirect personal experience of residents, women, and men, with the types of renewable energy sources.

The data used in this material are from Ban et al. (2023) which were processed to separately assess the perception of women and men related to the issue of the transition to green energy. In Ban et al. (2023) the data collection was carried out through a survey based on a questionnaire among the residents of the two cities, Oradea and Timișoara, in March-June 2023, according to Regulation no. 679/2016 on personal data protection. The questionnaire had three sections: a section with socio-demographic data (gender, education, age), a section where a 5-point Likert scale was used to record the importance and performance of 22 factors influencing the adoption of renewable energy resources, and a section with questions probing experience with such resources and an open-ended question about identified barriers to adopting these resources. Of the 1098 valid survey questionnaires, we used 1047 (581 female respondents, 466 male respondents). Table 1 presents the description of the total sample. The internal consistency of the questionnaire data is very good, checked with α Cronbach and obtained for importance 0.92 and performance 0.95.

Table 1: Statistics about respondents

Gender	Absolute frequency	Relative frequency (%)
men	466	42.53
woman	581	53.18
I prefer not to say	47	4.28
Education		
secondary, or under	15	1.36

Gender	Absolute frequency	Relative frequency (%)
high school, including professional, complementary, apprentice, and post-high school	241	21.94
university degree	627	57.1
postgraduate, including master's, doctorate	215	19.58
Age		
20-24	424	38.61
25-34	242	22.04
35-44	196	17.85
45-65	206	18.76
above 65	32	2.91
Total respondents		
Oradea	920	83.78
Timișoara	178	16.21

(Source: created after Ban et al, 2023)

The evaluation of the respondents' position towards the influencing factors of the adoption of renewable resources and the present performance of Romania, was done by using the Importance-Performance Analysis (IPA) proposed by Martilla and James in 1977. This presupposes the creation of a matrix with four quadrants and each quadrant has certain strategic recommendations for the factors that are positioned there, according to the respondents' answers. The quadrants are: I. Concentrate here-which means focusing on those factors because they need improvement to increase respondent satisfaction, II. Keep up the good work it is required to maintain the quality level because the rejects are satisfied with the performance of these factors, III. Low priority is the factors that require little interest and IV. Possible overkill factors in this quadrant can even be eliminated because they are of no interest. Importance-Performance analysis is used in many fields, including the field of renewable energy (Agyekum et al., 2023; Agarwal et al., 2023; Chen et al., 2019; Lee, 2019; Lee et al. 2013). The graphical representation of the Importance-Performance Analysis matrices was made with RStudio202207.1+554.

4. Results and Discussion

The answer to the first two fixed objectives of the study is deduced directly from two items of the questionnaire. Thus, identifying the general attitude, separately of women and men, towards renewable energy sources, was achieved through a question with a Likert scale related to the global opinion towards renewable energy resources. Surprisingly, the average of the answers for the two genders is very similar, respectively for men 4.332618026 and women 4.339070568. This average reflects a good attitude, given the size of the 5-point scale. As a distribution of the answers, we can see Figure 1.

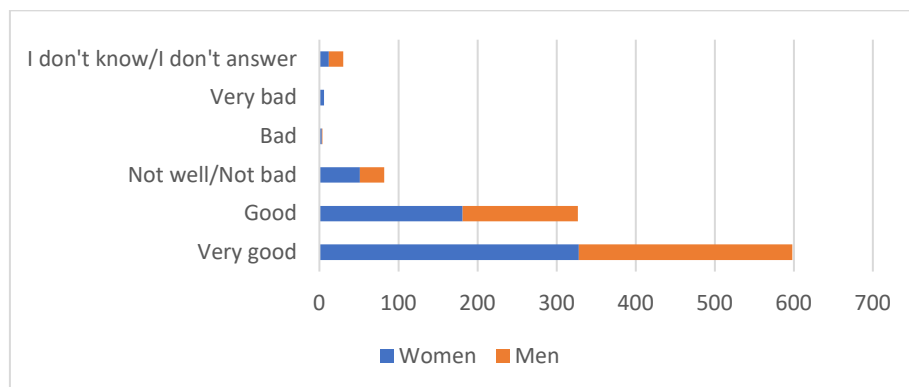


Figure 1: Global attitude towards renewable energy sources

(Source: created by authors)

The question regarding the experience already had with renewable energy sources has limited relevance in the context of gender because we did not include in the research an item related to marital status. In total, a small percentage of respondents (35.43%) used such a resource, most using solar energy (22.85%), a situation also

found at the national level. The distribution of responses by type of renewable energy and gender can be seen in Figure 2. The most used renewable energy resource is solar, as seen in Figure 2, being probably the most accessible in terms of costs and information.

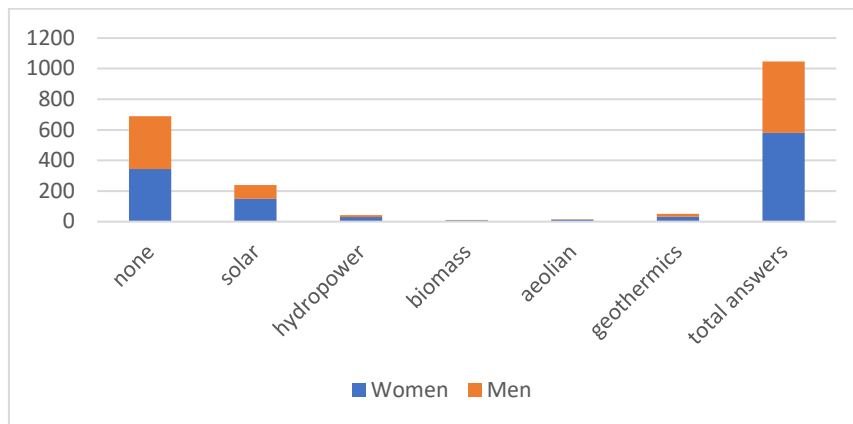


Figure 2: Previous experience with renewable energy sources

(Source: created by authors)

To achieve the objective of the study "Identifying the main barriers to the adoption of renewable energy sources, separately for women and men" we used the open question related to the main barriers and carried out the Importance-Performance Analysis separately by gender. The analysis with Atlas.ti22 of the answers to the open question showed that the main barrier to the adoption of renewable energy resources for both genders is the related budget, understood both as costs and the cost-income ratio (Figure 3, Figure 4, Figure 5). However, upon a closer analysis by gender, we notice that in the case of men, apart from the budget, the other barriers are relatively at the same level as the frequency of mentions and at a great distance from the budget. In the case of women, beyond the budget which is still the most frequently mentioned, the second and third places are the lack of support given by the state and the lack of appropriate information.

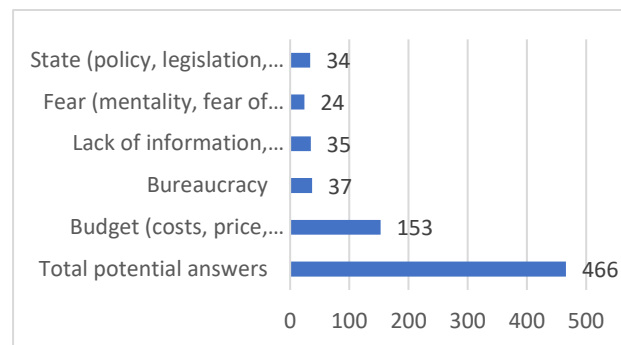


Figure 3: The main barriers to the adoption of renewable energy sources by the men

(Source: created by authors)

An interesting aspect is the fact that in the case of women, 8.26% do not have information about renewable energy resources and do not know what barriers would be in the way of their adoption. In the case of men, this percentage is much lower, below 1%.

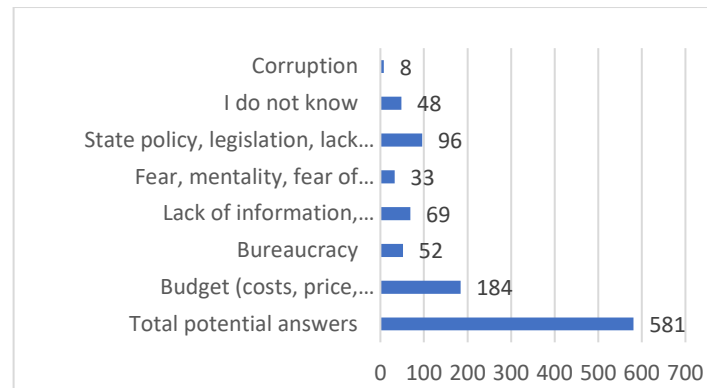


Figure 4: The main barriers to the adoption of renewable energy sources by the women

(Source: created by authors)

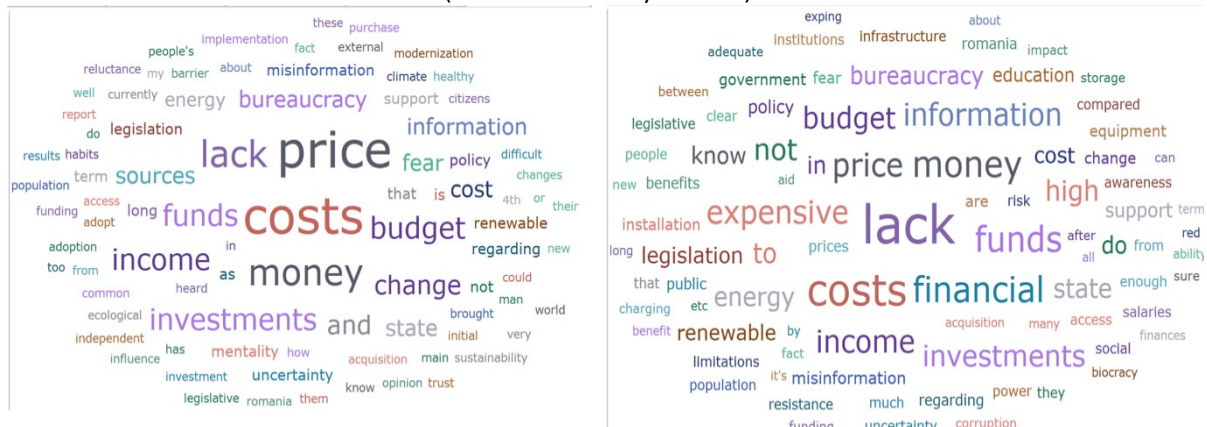


Figure 5: The main barriers to the adoption of renewable energy sources by men (left) and women (right)

(Source: created by authors)

Answers cleaning, homogenization and coding were done to process the data with Atlas.ti22 (Figure 5). To complete the answer regarding the barriers, we also created the Importance-Performance matrix starting from the data collected by Ban et al. (2023) for the influencing factors of the adoption of renewable resources. In the Appendix, can be see the 22 selected factors and the associated codes. In Table 2 we recorded the average of the responses, by women and men, for the 22 factors as the importance assigned by the respondents and as an evaluation of Romania's performance on these factors. We observe that women attribute less importance than men to the proposed factors that could increase the adoption of renewable energy sources but attribute a higher performance to Romania to these factors. The reason could be a lack of information.

Table 2: The values assigned by the respondents (men and women) to the influencing factors of the adoption of renewable energy sources

Factor Code	Performance men	Importance men	Performance women	Importance women
A	3.051	3.978	3.192	3.872
B	2.924	3.266	3.199	3.461
C	2.678	4.012	2.865	3.888
D	2.673	3.927	2.912	3.888
E	2.622	4	2.836	3.838
F	2.744	4.045	2.912	3.857
G	2.701	4.051	2.857	3.924

Factor Code	Performance men	Importance men	Performance women	Importance women
H	2.515	4.218	2.745	4.144
I	2.51	4.669	2.671	4.249
J	2.598	4.751	2.824	4.666
K	2.56	4.16	2.722	3.97
L	2.515	4.302	2.8	4.12
M	2.439	4.139	2.717	3.991
N	2.304	4.783	2.664	4.745
O	2.482	4.229	2.726	4.18
P	2.658	3.793	2.822	3.796
Q	2.826	3.695	2.87	3.352
R	2.684	4.06	2.826	3.901
S	2.888	4.075	2.967	3.931
T	2.669	4.027	2.81	3.896
U	2.628	3.733	2.819	3.767
V	2.427	3.924	2.776	3.777
MEAN	2.640	4.083	2.842	3.964

(Source: created by authors)

In Figure 6 the 22 factors are distributed in the Importance-Performance matrix. on the four quadrants with the related strategic recommendations. As can be seen in both Figure 6 and Table 3, the factors on which action is recommended to favor the transition to renewable energy sources are those in the "Concentrate here" quadrant. Action on these factors could help facilitate access to green energy. There are 8 factors in this category and they coincide for women and men. These factors are: "Reducing the bureaucracy of related procedures", "The government's provision of a subsidy for the installation of renewable energy equipment", "Informing and educating the population about renewable energy. Awareness of environmental issues", "Equipment acquisition costs", "Coordination between institutions to support the production and consumption of renewable energy", "The government's provision of incentives for those who produce energy from renewable sources", "Government provision of tax exemptions", "The government's provision of a reasonable buy-in rate for electricity produced by renewable energy equipment". The information obtained through the Importance-Performance Analysis is corroborated with that from the open question.

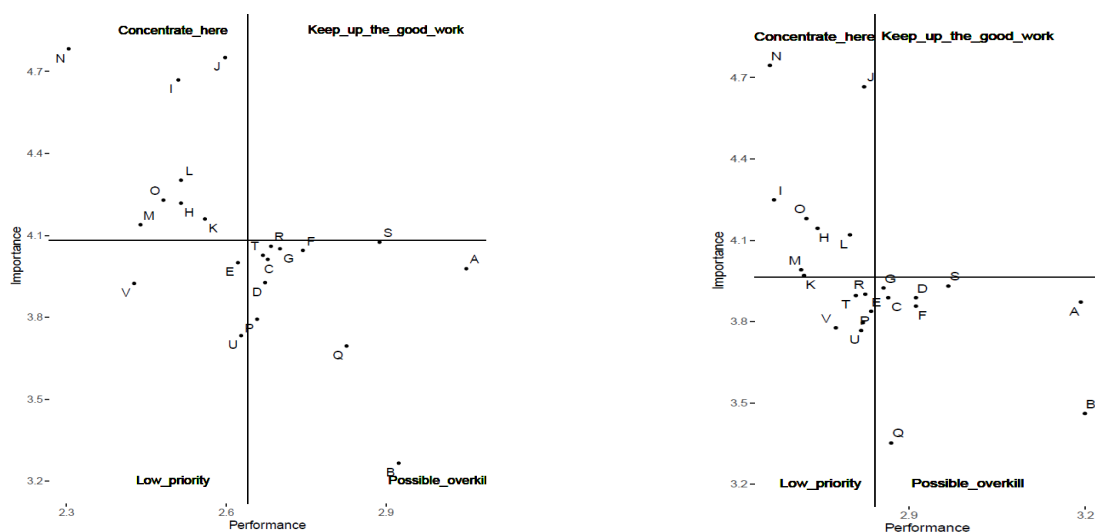


Figure 6: IPA original for men (left) and women (right)

(Source: created by authors)

Table 3: Distribution of factors in quadrants according to respondents

Quadrant	Men	Women
Concentrate here	N, J, I, O, H, L, M K	N, J, I, O, H, L, M, K
Keep up the good work	-	-
Low priority	V, E, U	V, E, U, R, T, P
Possible overkill	Q, A, B, F, S, D, C, G, T, R, P	Q, A, B, F, S, D, C, G

(Source: created by authors)

To answer the objective of identifying the influencing factors of the adoption of renewable sources with good performance, in the opinion of the two categories of potential consumers, the Importance-Performance matrix is very useful, namely the "Keep up the good work" quadrant. Surprisingly, for both women and men, neither factor is found in this quadrant. This result reflects a high degree of dissatisfaction with the Romanian village's performance in supporting the population in this process. For identifying the influencing factors of the adoption of renewable energy sources on which the government must act, in the Importance-Performance matrix, the factors from the "Concentrate here" quadrant will be identified, as can be seen in Figure 6 and Table 3. The 8 factors are identical for women and men and were presented above. The Importance-Performance matrix also allows us to identify the influencing factors of the adoption of renewable energy sources that are less priority or even unnecessary in the adoption of renewable sources, for the two categories of consumers. They are the factors in the "Low priority" and "Possible overkill" quadrants. We observe slight differences for women and men. 14 factors, more than half of those proposed are considered of little interest or can even be eliminated in the sense that they do not contribute to encouraging the transition to renewable energy sources.

5. In Conclusion

The study on the transition to renewable energy resources revealed a rather categorical positive positioning in favor of them, but also multiple barriers to their adoption. The most unexpected result is the one related to the fact that the Romanian state does not perform in any of the factors mentioned. Among the 22 factors discussed, 8 proved relevant for encouraging the transition to renewable energy resources. This result is highlighted both by the Importance-Performance Analysis and by gathering information with an open question. As for the differences between men and women, they are insignificant in the quantitative evaluation, but certain nuances can be revealed through a more in-depth in-layer analysis. Findings are in line with those of Baruk and Goliszek (2023), Hojnik et al. (2021), and Li et al (2019). This study has as the key contribution collecting and analyzing data about the attitude of potential Romanian proposers, women, and men, as far as we know these issues have not been sufficiently investigated yet. The solutions identified are directly related to the resulting barriers and mainly concern aspects regarding costs, state intervention, informing the population, reducing bureaucracy, etc. The limits of the paper are found in choosing only Romanian cities for the empirical study and with a different sample of the two selected cities.

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Appendix

The values assigned by the total respondents to the influencing factors of the adoption of renewable energy sources

	Code
Solving the problem of grid-connected energy production of renewable energy systems and the electricity company	A
Overcoming legislative regulation issues	B
Extending the scale of the renewable energy market/offer	C
Construction of public facilities in the place where renewable energy is installed	D
Increasing the effectiveness of the government administrative process (time and cost)	E
The existence of a professional authority for the correct certification of the design of renewable energy equipment	F
Resolving relevant requirements for renewable energy installation (e.g. environmental assessment)	G
Coordination between institutions to support the production and consumption of renewable energy	H
Informing and educating the population about renewable energy. Awareness of environmental issues	I
The government's provision of a subsidy for the installation of renewable energy equipment	J
The government's provision of a reasonable buy-in rate for electricity produced by renewable energy equipment	K
The government's provision of incentives for those who produce energy from renewable sources	L
Government provision of tax exemptions	M
Reducing the bureaucracy of related procedures, The Government's provision of a subsidy for the installation of renewable energy equipment, Informing and educating the population about renewable energy. Awareness of environmental issues, Equipment acquisition costs, Coordination between institutions to support the production and consumption of renewable energy, The Government's provision of incentives for those who produce energy from renewable sources, Government provision of tax exemptions, The government's provision of a reasonable buy-in rate for electricity produced by renewable energy equipment	N
Equipment acquisition costs	O
The existence of standards for installation and design	P
The existence of reliable energy equipment installation companies	Q
Existence of energy equipment monitoring services after installation	R
The desire for independence of household consumers to produce their energy	S
Independence from the energy sources of other countries (Russia) but even from other states	T
Have other home producers of renewable energy nearby	U
People's ability to change habits	V

(Source: Ban et al., 2023)

Feminism and Entrepreneurship in Prestigious Management Journals: A Critical Analysis

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Abstract: This study explores the intersection of feminism and entrepreneurship within prominent management studies, emphasizing the vital role women entrepreneurs play in economic growth. Despite feminism's societal impact, a significant gap exists in leading management studies, potentially reinforcing a male-centric perspective. To investigate this gap, we conducted a systematic literature review focusing on the top 50 journals in "Business Management and Accounting" and "Strategy and Management." Our review, utilizing the SPAR-4-SLR method, revealed only 11 documents on feminism and entrepreneurship, highlighting limited coverage in top academic journals. We propose addressing this gap through special journal issues and global data collection efforts to advance gender equality in entrepreneurship.

Keywords: Feminist, Women, Awareness, Entrepreneurship, Management.

1. Introduction

Various strains of feminism have been recognized in previous research (Donelson, 1999; Matlin, 2012). Within feminist discourse, there has been ongoing deliberation regarding the question of whether women possess inherent, fundamental, and intrinsic distinctions from men on a biological level (Ogletree et al., 2019). While liberal feminism stresses equal rights and the parity between men and women, cultural feminism has been characterized as an essentialist viewpoint. Cultural feminism asserts that there exist fundamental disparities between women and men, where qualities traditionally associated with women, such as nurturing, empathy, and a commitment to caring for others, have been marginalized within our societal framework (Ferraro, 2009). Entrepreneurship has firmly established itself as a recognized and respected academic field, being increasingly acknowledged as a source of both economic growth and social development (Markman et al., 2016; Thiel and Masters, 2014; Zhang and Li, 2010). In order for entrepreneurship to have an impact on how management is practiced and on the development of public policies (Zahra and Wright, 2011). Women entrepreneurs play a significant role as drivers of economic growth and development in business, serving as both visible and behind-the-scenes leaders within their communities, especially in emerging economies (Bullough et al., 2015). Do to this research into the variances in entrepreneurial characteristics and performance based on sex and gender has garnered significant attention and continues to do so (Belcourt et al., 1991; Becker-Blease and Sohl, 2007; Jennings and Brush, 2013).

Most of the studies in management journals thus involve generalizations of studies done on men that are mistakenly assumed to be applicable to women as well. What emerges is that the new waves of feminism seem to have limited impact on the literature found in the most prestigious management studies (Wilson, 2003; Bell et al., 2019). Over time, studies concerning feminism and entrepreneurship have evolved from the more common quantitative methods to qualitative or mixed methodologies. Databases focused on women entrepreneurs have been created for documenting the evolution of their experiences (Moore, 1990). At the same time, authors adopt theoretical frameworks related more with feminist theory (Bird and Brush, 2002).

Feminist theories underlying entrepreneurship studies are typically divided into: Liberal Feminist Theory and social feminist theory.

In Liberal feminist theory women and men advocate equality of opportunity because they are similar (Calás and Smircich, 1999). Limited access to finance, exclusion from male networks, and the concept of the "glass ceiling" are the structural barriers that affect the growth of women's businesses and contrary to successful male entrepreneurs. According to these studies if a woman has the same opportunities, she behaves similarly to men. These studies do not investigate the impact of social structure on discrimination and stereotypical images (Calás et al., 2009).

The second strand of study is represented by Social Feminist Theory. It assumes that biological differences determine roles in society, including those related to the economy (Elizabeth and Baines, 1998). The success of women entrepreneurs is related to the different management style compared with men, and these differences

are celebrated. The scope of these studies is circumscribed, as the female component continues to be underestimated in entrepreneurship (Calás et al., 2009).

The deficiency in the treatment of the topic of feminism and entrepreneurship in the articles published in the most prestigious management and organization studies leads to a prevalence of the male perspective and experience. To understand the reasons concerning the low publication on the topic of feminism and entrepreneurship, raise awareness and propose new research insights, we used "Scimago Journal & Country Rank" to identify the top 50 journals in the fields of "Business Management and Accounting" and "Strategy and Management" to conduct a systematic literature review.

The journals included in these rankings serve as a foundation for comprehending the accepted and valued theories, methodologies, and empirical contexts within the field. Rankings such as this offer time-bound indicators of socio-historical and geo-political power dynamics that influence assessments regarding what qualifies as 'outstanding' knowledge and its level of theoretical and practical utility (Mañana-Rodríguez, 2015; Murugan and Ravi, 2016). They, therefore, assume a significant role in shaping conventional standards of knowledge creation in the most prestigious management studies, while labeling efforts that diverge from these usual procedures as unconventional, exceptional or marginal-in fact, the topic of feminism and entrepreneurship is not very common in these journals. During our research, we came across three distinct reviews, including one systematic review and two non-systematic ones. In the review conducted by Calás et al. (2009), the primary focus revolves around the necessity for the development of new theoretical frameworks to better understand the various avenues through which entrepreneurship can instigate social change. In Morgan and Pritchard (2019) study, the principal objective is to formulate hypotheses concerning the future of gender-related research within the hospitality industry. Their study delves into the employment prospects for women working within this particular sector. The sole systematic review, conducted by Dean et al. (2019), brings to light the concept of the "underperformance hypothesis." This hypothesis suggests that female entrepreneurs, when assessed using conventional economic metrics, tend to achieve lower levels of success. Importantly, this belief in women's underperformance is deeply ingrained within the industry and is rarely questioned. The study argues that this narrative surrounding women's underperformance is intricately linked with the broader narrative of economic growth. It's worth noting that these reviews did not primarily focus on leading journals in the fields of "Business Management and Accounting" and "Strategy and Management." Consequently, the scope of their reviews and the outcomes they obtained differ from those of our study.

2. Methodology and Data

In the ever-expanding world of research, where millions of articles are published annually, the synthesis and systematic organization of previous research findings emerge as a pivotal task for advancing the field (Zupic and Čater, 2015). Review papers serve as comprehensive assessments of previously published studies (Bem, 1995). They encompass various types, including systematic reviews and meta-analytical reviews that delve into quantitative effects (Paul and Criado, 2020). Bibliometric techniques have found application in charting the landscapes of various academic domains, including entrepreneurship (e.g., Bhupatiraju et al., 2012; Landström et al., 2012; Schildt et al., 2006; Sreenivasan and Suresh, 2023), no one has addressed the topic of entrepreneurship and feminism analysing the top 50 journals in "Business Management and Accounting" and "Strategy and Management."

The data utilized in this research were obtained from the Scopus database, which contains a vast repository of scholarly articles and bibliographic details encompassing authors, affiliations, and citations. Prior studies have demonstrated that simultaneously using additional relevant databases does not yield an increase in the number of pertinent documents due to database duplication (Harzing and Alakangas, 2016). Consequently, for the purpose of conducting the literature review in this study, we exclusively relied on the Scopus database.

Articles were searched on September 11, 2023 and in total, 11 documents were found for this literature review. To extract these articles, we employed the following search criteria: TITLE-ABS-KEY (feminis*) AND TITLE-ABS-KEY (entrepren*). We used "Scimago Journal & Country Rank" to identify the top 50 journals in the fields of "Business management, and accounting" and "Strategy and management" and limit our study to these journals.

Here is the list of journals with the number of articles relevant to the review:

- Academy of Management Review: 1 article.
- Organization Studies: 1 article.
- Human Relations: 3 articles.

- International Journal of Hospitality Management: 1 article.
- International Journal of Management Reviews: 1 article.
- Organization: 4 articles.

The final dataset spans from 2009 to 2022 and draws from six different sources, resulting in a total of 11 documents. Notably, the dataset exhibits a stable growth rate with no annual change. In terms of document characteristics, the average age of the documents is relatively recent, standing at 5.27 years. What's particularly impressive is the average number of citations per document, which amounts to a substantial 107.8 citations. This indicates the significance and influence of the research contained within these documents. Moreover, the dataset includes a substantial number of references, 1081. Delving into the content of the documents, we find that there are 17 Keywords Plus identifiers and 51 author-provided keywords, reflecting the diversity and richness of the topics covered. Examining authorship, we have contributions from 24 different authors, with one document being single authored. Collaboration among authors is evident, with an average of 2.36 co-authors per document. What's interesting is that a significant portion of these collaborations involve international co-authorships, accounting for 27.27% of the total. Lastly, when considering document types, the majority (8 out of 11) fall into the category of articles, while 3 are review. This distribution provides insight into the composition of the dataset and the types of research contributions it contains.

2.1 SPAR-4-SLR

It is essential to establish a structured approach for conducting a comprehensive review of existing literature. Such an approach not only encourages careful planning and consistent execution but also fosters transparency, allowing for the replication of the research. In simpler terms, having a predefined procedure helps researchers anticipate challenges, reduce ambiguity, emphasize accountability, and maintain the integrity of their study. We opted for the SPAR-4-SLR review method over the PRISMA protocol, typically used in pure scientific research, due to its rigorous nature. The SPAR-4-SLR process comprises three main stages (Raman et al., 2022; Sreenivasan and Suresh, 2023; Paul et al., 2021) (Figure 1):

- 1- assembly (involving "identification" and "acquisition");
- 2- organization (involving "arrangement" and "purification");
- 3- evaluation (involving "assessment" and "reporting").

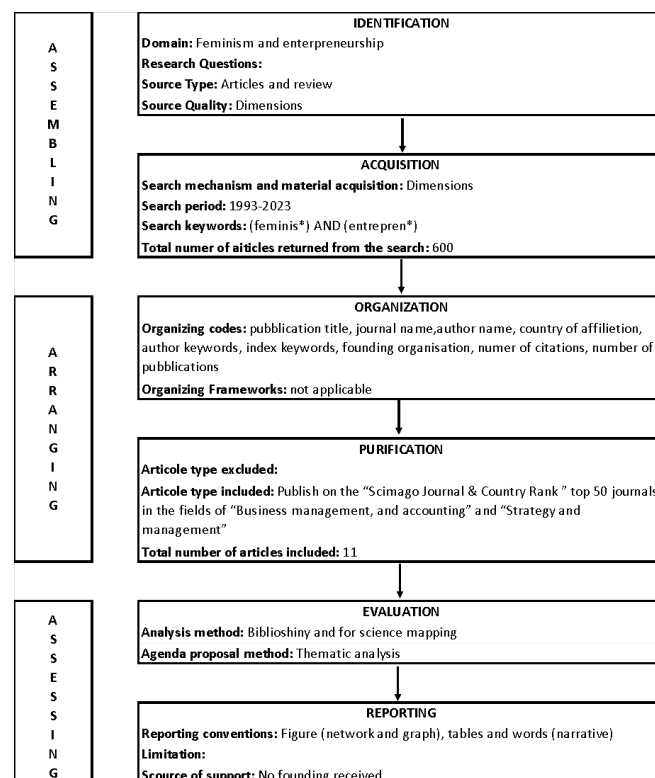


Figure 1: SPAR-4-SLR review method. Source: personal elaboration.

3. Results

3.1 Evolution on Publication and Citation

The Graph 1 represent the number of citations per publications and the number of publications published in different years. In 2009, there was one publication that received a significant number of citations, 488. However, it's important to note that it was the only publication released that year. In 2012, we find another single publication with a high number of citations, amounting to 432. In the subsequent years from 2017 to 2022, we observe a diversification in both the number of publications and the number of citations per publication. In 2017, two publications were released, but the number of citations per publication is significantly lower at 22.5. In 2018, there is a single publication with 74 citations, while in 2019, there are two publications with an average of 53.5 citations per publication. In 2020, a single publication with 11 citations, and in 2021, two publications with an average of 11.5 citations per publication. Finally, in 2022, one publication was released with 6 citations.

These data indicate fluctuations in research productivity and impact during those specific years.

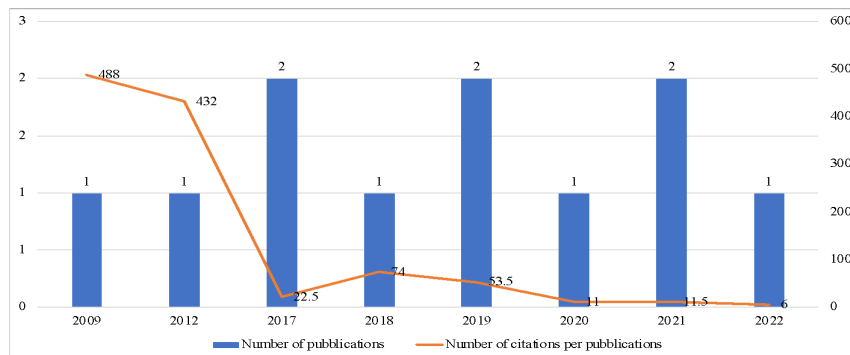


Figure 2: Number of publication and number of citations per publications over the years. Source: personal elaboration.

3.2 Top Contributing Countries

The United Kingdom (UK) has the highest frequency with 13 publications, indicating a substantial contribution to the research represented in the dataset. The United States (USA) follows with 6 publications, highlighting a notable research presence as well. Israel and Sweden both have 3 publications each, signifying significant research contributions from these countries. New Zealand is represented with 1 publication in the dataset.

These data showcase the geographical distribution of publications, indicating that the UK and the USA have the most extensive research representation, while Israel and Sweden also make significant contributions. It's important to note that the dataset's composition may reflect specific research interests or collaborations among these countries in the field under study.

3.3 Authors and Affiliation

Table 1 gives the number of articles for each author and how much he or she made of each article.

Table 1: number of articles for each author and how much he or she made of each article. Source: personal elaboration.

Authors	Articles	Articles Fractionalized
MARLOW S.	3	1.33333333
AHL H.	1	0.5
AKRAM M.	1	0.25
BAIKOVICH A.	1	0.33333333
BERGLUND K.	1	0.5
BOURNE K.A.	1	0.33333333
BRYSON A.	1	0.5
CALÁS M.B.	1	0.33333333
CHATTERJEE S.	1	1
DEAN H.	1	0.25
DELANEY H.	1	0.5
DEMPSEY S.E.	1	0.5

Authors	Articles	Articles Fractionalized
FORD J.	1	0.25
LARSEN G.	1	0.25
MARTIN L.	1	0.333333333
MARTINEZ D.Y A.	1	0.333333333
MORGAN N.	1	0.5
PECIS L.	1	0.5
PFEFFERMAN T.	1	0.333333333
PRITCHARD A.	1	0.5
SMIRCICH L.	1	0.333333333
SULLIVAN K.R.	1	0.5
TREANOR L.	1	0.5
WASSERMAN V.	1	0.333333333

These data offer a glimpse into the publishing activity of different authors within the dataset, shedding light on both the number of articles they've contributed to and the extent to which their work has been distributed across multiple publications.

The data in Graph 2 provides a comprehensive view of the number of authors by gender and career stage.

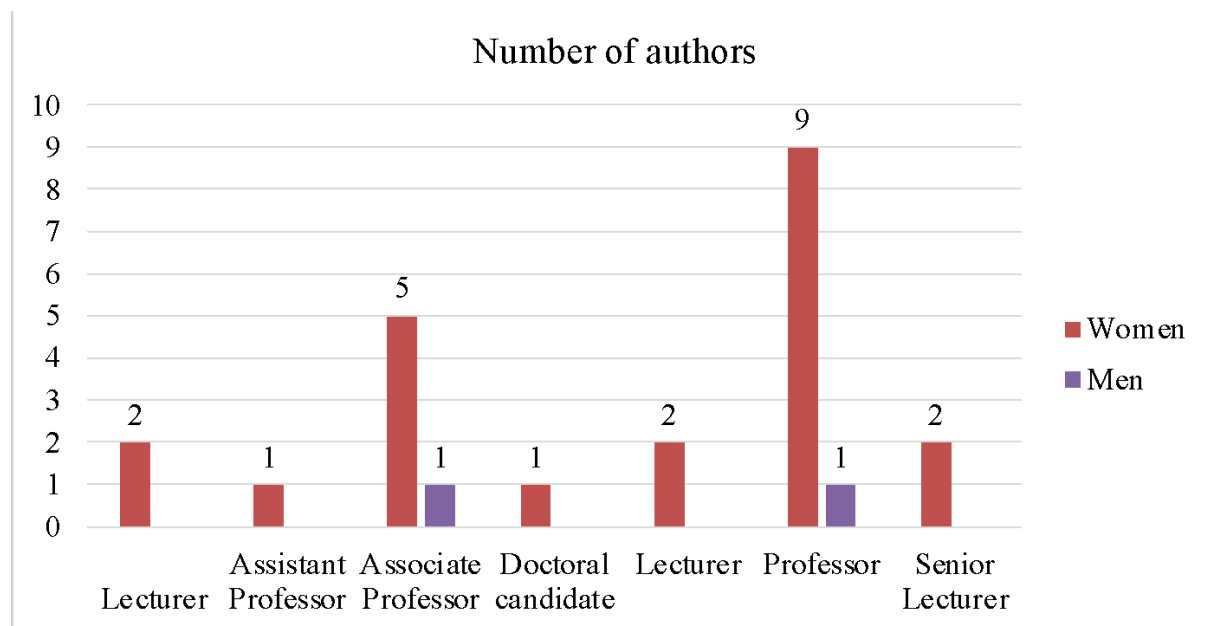


Figure 3: number of authors by gender and career stage. Source: personal elaboration.

The Graph 2 provides a breakdown of academic roles based on gender. It highlights the distribution of these roles among women and men, offering insights into gender representation in the author who is doing research on feminism and entrepreneurship. In the comprehensive assessment, there are a total of 22 women and 2 men among the roles specified in the table, resulting in a grand total of 24 individuals. Within the category of "Lecturer," we observe that there are 2 women occupying this academic role, while there are no men in this category. In the role of "Assistant Professor", we find 1 woman, with no men in this category. The category of "Associate Professor" exhibits a more diverse distribution, with 5 women and 1 man. A "Doctoral candidate", serving as a student in an academic context, is represented by 1 woman. Among "Lecturers", we see 2 women, and no men in this category. The category of "Professor", representing the highest academic rank, includes 9 women and 1 man, reflecting a total of 10 individuals. Finally, "Senior Lecturers", similar to Lecturers, have 2 women, and no men in this category, totaling 2 individuals.

The data in Graph 3 provides a comprehensive view of authors' production over time.

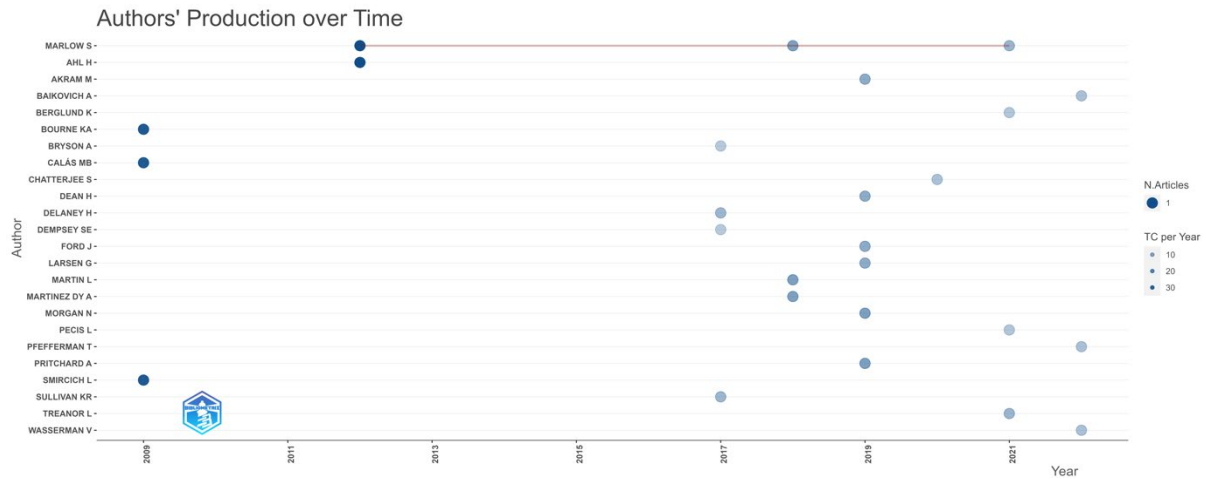


Figure 4: authors' production over time. Source: personal elaboration.

Firstly, let's highlight Marlow S., whose work spans across multiple years. In 2021, they received a noteworthy 19 citations, followed by 74 citations in 2018 and an impressive 432 citations in 2012. This suggests a consistent impact and recognition of their contributions.

Moving to 2022, authors like Baikovich A., Wasserman V., and Pfefferman T. each made contributions, receiving 6 citations for their respective works. The year 2021 saw contributions from authors like Treanor L., Pecis L., and Berglund K., with 19, 4, and 4 citations, respectively, signifying their active engagement in research. In 2020, Chatterjee S. published a paper that received 11 citations, showcasing the impact of their work. Authors Morgan N., Pritchard A., Dean H., Larsen G., Ford J., and Akram M. all published in 2019, with their contributions collectively receiving significant citations ranging from 45 to 62. In 2018, Martinez Dy A. and Martin L. made noteworthy contributions, each accumulating 74 citations, underscoring the significance of their work. Authors Sullivan K.R. and Delaney H., who published in 2017, received 42 citations each, demonstrating their research influence. Furthermore, Bryson A. and Dempsey S.E. also published in 2017, with their papers receiving 3 citations each. Finally, Ahl H., who published in 2012, received a substantial 432 citations, reflecting the lasting impact of their work. In 2009, authors like Calás M.B., Smircich L., and Bourne K.A. contributed publications that each received an impressive 488 citations, indicating the enduring relevance of their research. In summary, these data offer insights into the diverse contributions of authors and the varying levels of impact they've had over different years. Some authors have consistently garnered high citation counts, while others have made notable contributions in specific years.

The data show an interesting glimpse into the affiliations of authors who have made contributions to the dataset, along with the corresponding number of articles associated with each affiliation.

Durham University Business School emerges as a significant presence, with authors affiliated to this institution contributing to a total of three articles. This indicates a robust research activity and engagement from Durham University Business School. Following closely are several institutions, including Tel Aviv University, The University of North Carolina, University of Birmingham, and University of Massachusetts, each with authors who have contributed to two articles. This suggests active research participation from these universities as well.

The dataset also encompasses a wide range of diverse affiliations. These include affiliations like Independent Scholar and Consultant, Jönköping University, Lancaster University Management School, Loughborough University London, Lund University, Northumbria University, Stockholm University, Swansea University, The Open University of Israel, University of Auckland, University of Nottingham, University of Nottingham Business School, University of Warwick, University of Wisconsin, and Xavier University, each associated with a single article. In essence, these data underscore the varied affiliations of authors who have contributed to the dataset. While some institutions have made multiple contributions, others represent a diverse spectrum of academic and research backgrounds. This diversity of affiliations enriches the dataset, reflecting collaborative research efforts and contributions from a global array of institutions.

3.4 Documents

The Graph 4 reveals the prevalence of certain keywords and sheds light on their temporal distribution, offering valuable insights into research trends and themes.

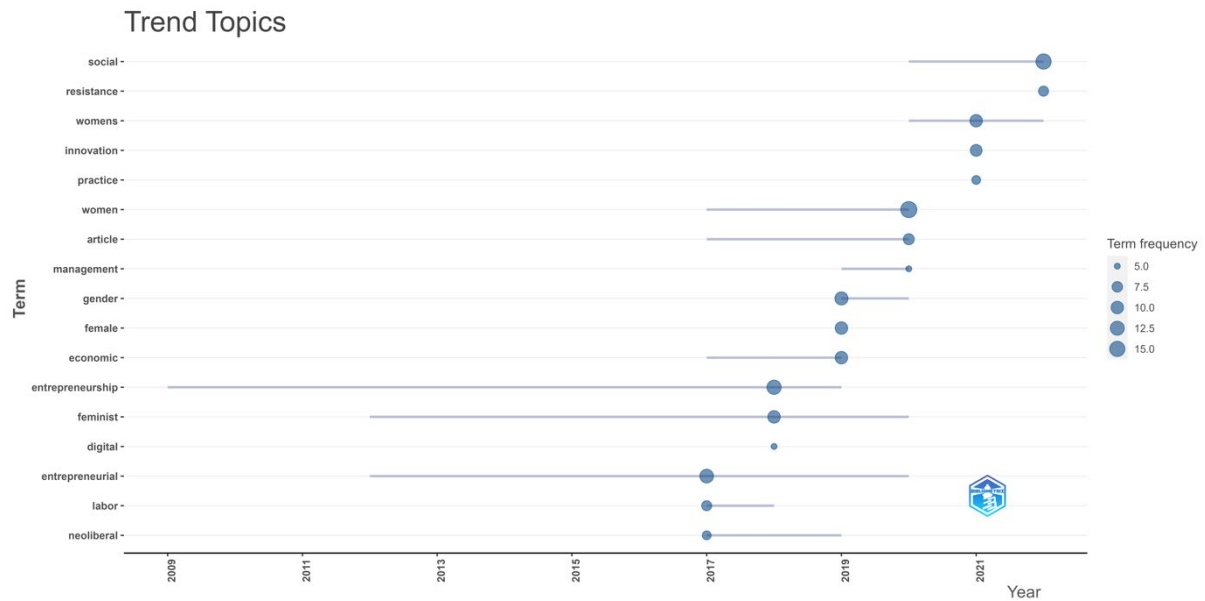


Figure 5: trend topic by keywords. Source: personal elaboration.

Firstly, the term "Entrepreneurial" stands out with 12 mentions, indicating its enduring relevance over time. This keyword has been consistently utilized in various contexts from 2012 to 2020, showcasing its enduring significance in research discussions. Similarly, "Entrepreneurship" appears 13 times and has maintained a presence since 2009. It reached its peak in 2018 and 2019, underscoring its continued importance as a research focus. "Gender" is another keyword that has garnered attention, with 11 mentions primarily concentrated from 2019 to 2020. This suggests sustained interest and research in gender-related discussions during this period. "Women" emerges prominently with 17 mentions, most notably in 2020. This indicates a substantial focus on topics related to women, possibly reflecting a surge in research on gender equality and women's issues during that year. The term "Social" is featured 15 times, with significant usage in 2020 and 2022. This implies ongoing discussions related to social aspects within the field, reflecting its importance in contemporary research. "Neoliberal" is mentioned 6 times, primarily in 2017 and 2019. This term reflects discussions related to neoliberalism, which gained attention and generated research interest during these years. Furthermore, "Innovation" appears 9 times, predominantly in 2021, suggesting a concentrated exploration of innovation-related topics during that year. "Resistance" is featured 7 times, mainly in 2022, indicating a specific focus on resistance-related themes during that particular year. These findings collectively demonstrate the ebb and flow of research themes within the dataset. Some keywords maintain their relevance throughout the years, while others experience peaks in specific periods, reflecting evolving research interests and priorities within the field.

A network analysis (Graph 5) using VOSVIEWER was conducted on the authors' keyword usage, revealing the emergence of seven primary topics. These include one related to neoliberalism, one focused on feminism, another on gender and careers, a topic concerning inclusion conditions, another centered around feminist theories and epistemology, one on entrepreneurship and barriers, and a topic related to women and artificial intelligence. A total of 51 keywords were examined.

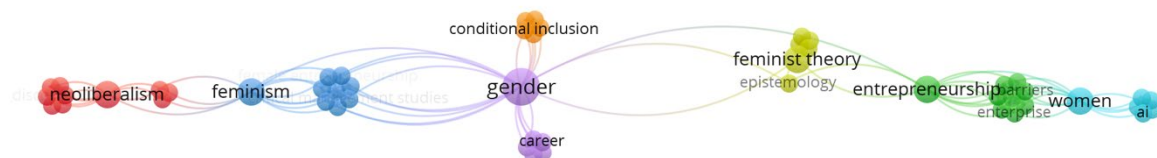


Figure 6: keywords network. Source: personal elaboration.

3.5 Topic Modelling

Table 2 provides a structured and informative overview of the main topics derived from the paper. The results were obtained through topic modelling specifically in the Latent Dirichlet Allocation method (Blei et al., 2003). It offers titles and associated keywords for each topic, facilitating a deeper understanding of the core themes explored. The inclusion of the "Number of Publications" column also provides insights into the extent to which each topic is represented.

Table 2: results of topic modelling

N°	Title of Topic	Keywords	Number of publications
1	Economic Disparities in the Developing World	poverty, world, third, poor, BOP, article, labor, management, pyramid	1
2	Critical Social Change and Feminist Theory	reframe, social, change, theoretical, feminist, research, theory, entrepreneur, management, critical	1
3	Gender and Hospitality Industry Challenges	gender, hospitality, paper, research, female, future, employment, women, harassment, sexual	1
4	Social Practice and Resistance	social, woman, practice, change, corporate, power, resistance, discourse, traditional, digital	3
5	Innovation and Feminist Frameworks	innovation, margin, woman, race, framework, contribute, change, study, work, feminist	1
6	Female Entrepreneurship and Economic Growth	female, economic, hypothesis, entrepreneur, metanarrative, growth, research, thus, review, male	1
7	Entrepreneurial Discourse and Gender	woman, entrepreneurial, feminist, discourse, assumption, gender, research, context, article, author	2
8	Labor and Economic Practices	labor, alternative, sale, seasonal, consignment, entrepreneurial, reproductive, practice, neoliberal, economic	1

We gain valuable insights into eight distinct topics extracted from a text corpus: we now offer in-depth insights on the thematic content of each topic:

1. **Economic Disparities in the Developing World:** This topic delves into economic disparities and challenges faced by developing countries. It encompasses keywords such as poverty, third world, labour, and management. It is associated with 1 publication.
2. **Critical Social Change and Feminist Theory:** The second topic revolves around critical social change and feminist theory. It explores concepts related to social change, feminism, theory, and critical analysis. It is associated with 1 publication.
3. **Gender and Hospitality Industry Challenges:** In the third topic, the focus is on gender-related issues within the hospitality industry. Keywords include gender, harassment, employment, and women. It is associated with 1 publication.
4. **Social Practice and Resistance:** The fourth topic examines social practices and forms of resistance. It encompasses keywords such as resistance, corporate, power, and digital. It is associated with 3 publications.
5. **Innovation and Feminist Frameworks:** Topic five explores innovation within the context of feminist frameworks. Keywords like innovation, feminist, and framework highlight its central themes. It is associated with 1 publication.
6. **Female Entrepreneurship and Economic Growth:** The sixth topic investigates female entrepreneurship and its impact on economic growth. Keywords include female, economic, growth, and entrepreneurship. It is associated with 1 publication.
7. **Entrepreneurial Discourse and Gender:** Topic seven focuses on entrepreneurial discourse with a particular emphasis on gender-related aspects. It includes keywords such as discourse, gender, and entrepreneurial. It is associated with 2 publications.
8. **Labor and Economic Practices:** Lastly, the eighth topic centres on labour practices and economic methodologies. Keywords such as labour, economic, and neoliberal play a central role in this topic. It is associated with 1 publication.

4. Conclusion

The systematic review highlights a notable gap in the discourse surrounding feminism and entrepreneurship within the realm of esteemed journals in the "Business Management and Accounting" and "Strategy and Management" fields as per the "Scimago Journal & Country Rank" top 50 journals. Our analysis underscores the

limited attention given to feminism within the mainstream research of our field, revealing its presence as a partial and peripheral consideration. Particularly striking is the near-total absence of discussions related to feminism and entrepreneurship in the most prestigious journals, where this critical intersection of themes remains conspicuously overlooked.

The limited representation and noticeable scarcity of research explicitly focused on feminism within the entrepreneurship domain in these journals are a matter of considerable concern. This situation implies a deliberate effort to side line feminism as a valid research approach.

It is crucial that the topics addressed, including feminism and intersectional theories, are also recognized and integrated into mainstream management journals, dispelling the perception that these topics are exclusive to the social sciences. This inclusion could enrich and diversify the academic debate in the field of management

Given that the current system rewards researchers based on the relevance of the journals in which their articles are published, the limited presence of feminist theory related to entrepreneurship in prestigious journals raises significant concerns. As the current system tends to disregard feminism as a valid approach, there is a pressing need to take steps forward in recognizing its potential.

Efforts should be made to integrate these themes into prestigious journals to underscore their significance, encourage further studies on the subject, and raise awareness within the community about these issues.

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Participatory Strategies to Integrate Gender+ Into Teaching and Research

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Abstract: This article explores the use of participatory approaches to promote gender equality in academia, focusing on initiatives implemented in two universities. First, we look at the experience of the University of Deusto (Spain) in developing a handbook to integrate a gender perspective into teaching and research practises through an equality, diversity and inclusion lens (EDI). This initiative, carried out as part of the university's Gender Equality Plan, featured active involvement from scholars representing the faculties of Law, Psychology, Social Sciences and Humanities, Engineering, Business, and Theology, as well as the university's Social Responsibility Unit. It serves as a valuable example of how participatory strategies can effectively engage a wide array of institutional stakeholders in change-oriented actions. Promoting increased participation fosters a sense of ownership of the process and outcomes among stakeholders and strengthens institutional recognition. Second, we analyse the introduction of a "gender+-responsive curriculum" developed at the University of Genoa (Italy), as part of the university's Gender Equality Plan. This initiative seeks to promote inclusion across all disciplinary subjects by incorporating current research that examines subject matters through the lens EDI, where relevant. The pilot implementation was undertaken in an undergraduate course focused on hydraulic engineering and hydrology, drawing guidance from various resources, including academic publications and EU-funded project reports. This initiative highlights the practical implications and challenges associated with interventions aiming to challenge conventional teaching and research norms from an EDI perspective, particularly in STEM fields. By exploring the experiences, obstacles and solutions associated with a gender+-responsive curriculum, we broaden our understanding of academia's potential to advance gender equality, diversity, and inclusion. In examining the two experiences, we emphasise the theoretical underpinnings that underscore the importance of participatory approaches for promoting meaningful and enduring changes in academic institutions. Additionally, we highlight the ongoing challenges associated with implementing such changes and offer initial insights into potential strategies for overcoming these obstacles. Our goal is to ensure that gender and other intersecting diversity factors are not relegated to the edges of institutional priorities, but are instead mainstreamed into wider institutional practices.

Keywords: Gender Equality Plan, Gender+, Equality Diversity and Inclusion, Gender+ Curriculum

1. Introduction

Fostering gender equality and gender mainstreaming constitutes one of the six priorities of the European Research Area, with the incorporation of the gender dimension into Research and Innovation (R&I) content being one of the related objectives. The European Commission has consistently reinforced this commitment since the 2012 communication for "A Reinforced European Research Area Partnership for Excellence and Growth". Currently, Horizon Europe (2021-2027) pursues this objective through two central avenues: the inclusion of the gender dimension in project proposals by default, and the requirement for institutions seeking funding under the programme to establish a Gender Equality Plan (GEP). Among other areas, GEPs are recommended to address the introduction of the gender dimension into teaching and research. Notably, the emphasis extends beyond gender to encompass the consideration of other intersecting socio-economic factors such as race, social class, sexual orientation, and functional diversity (gender+).

Despite the continuous efforts, progress in addressing gender inequalities in teaching and research remains slow across all academic fields. The She Figures 2021 publication shows that, in 2018, women represented only 26.2% of full professors and 33.8% of researchers (EU-28 proportion). Less than 2% of academic publications incorporated a gender dimension, with Engineering and Technology field exhibiting the lowest inclusion rate

(European Commission, 2021). While the publication does not provide specific data on the inclusion of a gender and diversity perspective into teaching methods and curricula, it underscores the significance of interventions that pursue such an objective as a crucial aspect in promoting EDI principles within the overall scientific spectrum, aligning with international goals long established by the United Nations (2011) concerning the need for a gender-sensitive, diverse and inclusive education.

Over the past years, endeavours to drive change in academic organisations have employed a range of strategies to close the gap between planned interventions and actual implementation (Engeli and Mazur 2018), with participatory approaches emerging as valuable mechanisms for enhancing engagement, inclusivity, and collaboration throughout change processes (see Barbieri, Cois and DeSimoni, 2021; Dahmen-Adkins, Karner and Thaler, 2019; Pajares, 2020). Such a strategy aligns with European guidelines to engage a wide range of relevant stakeholders in transformative efforts (EIGE, 2016) and has proven advantageous at all stages of change processes (i.e., gender audit, design, implementation, monitoring, and evaluation). In this paper, we look at two university initiatives to analyse the potential of using participatory approaches to enact initiatives aimed at introducing the gender, diversity, and inclusion dimensions into teaching and research at European universities.

2. Engendering Participatory Approaches

A participatory approach “involves stakeholders in the problem definition and analysis of gender inequality and supports them to identify possible interventions” (Bleijenbergh and van Engen, 2015, p. 431). In the context of gender reform interventions in academia, participatory approaches emphasise active engagement and collaboration among faculty, students, administrators, and other community members, in the formulation and implementation of actions. While techniques may vary according to specific contexts and objectives, participatory strategies often aim to achieve a balance among the interests, privileges, and responsibilities of the involved stakeholders. As Thomson and Rabsch (2021) explain, “the aim of co-creation is to collaborate, ‘create together’, cooperate and share ideas, knowledge, practice, and build on the existing stocks to develop them further” (p. 5). Within this framework, institutional actors are not passive recipients of the outcomes of change initiatives, but rather active agents in the change process, meaning that decisions related to problem identification and intervention strategies emerge from a collective, bottom-up perspective, rather than from the conventionally expected top-down direction.

Previous studies revealed that participatory and co-creation methodologies facilitate the implementation of change-oriented interventions both when applied internally within an institutional team (Bleijenbergh and van Engen 2015) and when employed by transnational and multi-institutional communities of practices (Thomson et al, 2022). Kalpazidou Schmidt and Cacace (2019) assert that cooperation among different stakeholders and the development of transformative actions based on the results of participatory procedures represent “not only the conditions for change, but also a crucial part of the change process itself” (p. 323), as they challenge conventional norms rooted in a centralised logic of power exercise.

Scholars who have explored concrete interventions utilising participatory and feminist approaches within change processes in academic institutions have identified several associated advantages. Notably, studies have noted that these approaches trigger discussions and enable stakeholders to take decisions through negotiation processes, ultimately facilitating a shared understanding of the issues to be addressed and a collective identification of potential interventions. Such a collective view creates ownership of the project’s goals, increases stakeholders’ commitment to the process, and facilitates implementation of actions (Bleijenbergh and van Engen, 2015; Dahmen-Adkins, Karner and Thaler, 2019; Sangiuliano, Canali and Madesi, 2019). In addition, the active engagement of stakeholders located at different institutional positions in the decision-making, planning, and actual implementation of change initiatives has shown to foster collaboration and synergies between the teams leading these initiatives and broader institutional bodies and actors (Kalpazidou Schmidt and Cacace, 2019).

Studies have also highlighted the potential of participatory practices to foster knowledge generation among stakeholders, serving the dual purpose of raising awareness about gender and diversity issues and equipping institutional actors with new competences related to institutional change. When diverse stakeholders work together through co-production methodologies, diverse types of knowledge become more accessible to the broader academic community and more responsive to each other (Dahmen-Adkins, Karner and Thaler, 2019). For instance, Bleijenbergh and van Engen (2015) noted in their research that stakeholders involved in the process of developing a participatory modelling to support gender equality in career development in two Dutch universities were able to “reconcile the contradiction between addressing individuals or addressing

organisational structures” (p. 434). In a distinct context, Espinosa-Fajardo, Bustelo and Velasco (2022) elaborated on this in their examination of an evaluation process of a European-funded project designed to drive institutional change in partner organisations. They found that the adoption of a collaborative and feminist approach in the evaluation facilitated the co-construction of knowledge regarding the change processes between evaluators and the teams in the evaluated organisations, which not only heightened stakeholders’ sense of ownership of the evaluation process but also improved their comprehension of how to enact structural change in practice.

Furthermore, as a result of engaging a wide range of stakeholders and listening to different voices, more inclusive and innovative processes may emerge. Gorbacheva, Moumtzi and Stein (2019) offer an interesting illustration of how an IT-supported participatory GEP design enhanced internal awareness about gender equality, triggered creativity in GEP development, and provided insights to create GEPs that actually consider the needs and perceptions of interested community members. In connection with these creative and more inclusive processes, participatory approaches can assist teams responsible for driving change interventions in addressing the challenges and resistance that may arise when enacting change processes (Gorbacheva, Moumtzi and Stein 2019; Palmén and Caprile 2022).

Ultimately, the engagement and commitment of multiple stakeholders, their increased awareness on EDI issues and enhanced knowledge of institutional change practice have not only demonstrated to increase individual stakeholders’ validation and of interventions, but also trigger organisational commitment and accountability (Bleijenbergh and van Engen 2015). Together, these advantages would enhance the institutionalisation of change-oriented actions over the long haul and contribute to the sustainability of their outcomes (Kalpazidou Schmidt and Cacace 2019). This positions participatory approaches as a point of interest for those seeking to bridge the gap between theory and practice of gender-sensitive, diverse and inclusive institutional change in academia.

3. University of Deusto: Developing Guidelines for Introducing the Gender Perspective Into Teaching and Research

The University of Deusto is a private, medium-sized and teaching-oriented university located in the Autonomous Community of the Basque Country in Northern Spain. Deusto sits in a context where both national and regional law provides for gender equality as a fundamental principle for public action (including universities and research centers) and mandates GEPs for entities with over 50 employees (Organic Law 2/2007 and Real Decree 6/2019) and the creation of gender Equality Structures for Higher Education Institutions (HEIs) (law 4/2007). In this direction, Law 14/2012 on Science, Technology and Innovation establishes the implementation of the gender perspective as a crosscutting category.

While EDI principles have for long guided the university’s mission, with the first GEP being enacted in 2008, it was in 2019 that Deusto assumed the external commitment of implementing a more robust and complex GEP, under the framework of the Horizon 2020 project GEARING-Roles (“Gender Equality Actions in Research Institutions to traNsform Gender ROLES”).¹ With the guidance of an expert support partner overseeing a dedicated work package for capacity building, training and support, GEARING-Roles defined a co-creation and participatory approach for the design and implementation of GEPs in the different implementing partner organisations. At Deusto, the document was orchestrated, designed, and executed with the support of a diverse set of institutional stakeholders, who collaboratively created and implemented a GEP containing eight intervention areas and 63 actions.

One specific action provided for the elaboration of self-tailored guidelines for incorporating the gender perspective into teaching and research. Since its inception, the initiative was approached as a space for reflection and collective building. To ensure representation of all faculties (Law, Psychology, Social Sciences and Humanities, Engineering and Business), internal calls were launched for academic staff to integrate the pilot initiative, finally forming three groups with 60 participants in total. The first group, dedicated to the area of teaching and consisting of 17 faculty members, was framed within a call from the Quality and Teaching Innovation Unit for projects that encourage teaching innovation. The participation in such project provided institutional legitimacy to the process and materialised the commitment of the institution, resulting in the participants of the group dedicated to the teaching area having the time invested in the project recognised as

¹ <https://gearingroles.eu/project/>

part of their workload. The second group, focused on the area of research, was formed by 20 researchers, whose participation was driven by their personal interest and commitment, as the group was not under the scope of an official institutional programme and therefore the hours invested were not officially recognised. The third group, composed of 23 members, acted as a control group to provide feedback to the final document.

The process was structured into phases, with the aim of progressively increasing the engagement and competencies of participants. Initially, all participants underwent external training facilitated by experienced institutions, with a focus on integrating the gender dimension into both teaching and research. The teaching sessions encompassed discussions regarding day-to-day classroom practices and dynamics, encouraging participants to analyse their practices through a gender-sensitive lens. During the research sessions, participants could collaboratively review their own research projects, with the group providing insights into how the inclusion of a gender perspective in all research stages would have increased the quality and reach of their findings. Given the involvement of staff from different departments, the training generated a huge interest within the broader academic community, and sessions were replicated in a shorter version to members of the university in the following period. The second stage included monthly meetings of the two groups dedicated to teaching and research. The groups collectively decided the structure of the document, identified indicators and adapted them to the specific context of Deusto, and developed useful examples of how to mainstream gender into teaching and research in different disciplines based on their own professional experiences. Throughout the process, groups were also subdivided into groups by discipline to review and consolidate work out of the common sessions. This work has achieved the common ground for the final draft of the guidelines, which were further reviewed by the Control Group.

The collective effort produced a handbook that serves as a practical guide based on examples of real experience for integrating a gender and diversity perspective into teaching and research activities in various disciplines (for the complete handbook, refer to Pérez, Pando Canteli and García Muñoz, 2021). Notably, the process was as important as the result, as it involved a diversity of stakeholders with varying levels of knowledge and engagement on the issue. This approach fostered active engagement of all the participants and increased their sense of ownership of the outcome, instigating individual and collective reflection processes replicable across the broader university community. Nevertheless, it is essential to note that the creation of the handbook was a first step that continues with the dissemination of the document and the ambition of a systematic implementation at the institutional level. While the creation process was highly successful and constitutes an example of engagement and institutional collaboration, university-wide implementation poses challenges due to the limited current resources for dissemination and training actions.

4. University of Genoa: Introducing a Gender+ Responsive Curriculum

The University of Genoa (UniGE) is a public research university. Founded in 1481, it is among the largest universities in Italy and it is located in the city of Genoa, on the Italian Riviera in the Liguria region of northwestern Italy.

The path that has led Italian universities to promote EDI related policies, including the promotion of gender equality, has gone through the following main stages: the establishment of Equal Opportunities Committees (CPO) in 1991 (Law 125/1991) to propose to university governing bodies and general administration measures and actions aimed at preventing and combating any form of discrimination based on gender, race, ethnic origin, age, disability, religion, personal beliefs, sexual identity and any other condition that may lead to discrimination. In 2010, the “Single Guarantee Committees for Equal Opportunities, the Improvement of Well-being and against Discrimination” (CUG) were made mandatory in all public administrations (Law 183/2010) in order to ensure the realisation of both formal and substantive equality by combating all forms of direct and/or indirect discrimination, including discrimination based on gender. The CUG carries out a Positive Actions Plan (PAP) every three years. Later on, with the guidelines for universities published by both the National Conference of CUGs and the Coordination Group of the Conference of Rectors of Italian Universities (CRUI), the Gender Balance (GB) Report began to spread throughout Italian universities in 2015.

UniGE has set up all these committees and adheres to these documented guidelines. It is worth mentioning that UniGE has not only the Rector’s Delegate for Disability (mandatory by law in Italian Universities) but also a Rector’s delegate for Equal Opportunities. In 2022, UniGE implemented the Gender Equality Plan 2022-2025 in response to the requirements of the Horizon Europe funding programme. PAPs and GBs, that refer also to Sustainable Development Goals, facilitate the transition towards inclusive GEPs as they address several potential grounds for discrimination.

Incorporating a gender perspective into a curriculum involves integrating an EDI dimension into existing curricula and research, which is a common approach in gender equality initiatives. In our case, the unique aspect is the introduction of a gender dimension into a STEM (science, technology, engineering, and mathematics) curriculum. This initiative is one of the actions planned for the second year of the UniGE GEP, Area 4, “the integration of the gender dimension in research and teaching content”, and reinforces its inclusiveness, as recommended by Horizon Europe, which encourages the addition of an EDI perspective rather than focussing solely on gender. The actions include three transversal pilot actions: at department/faculty level (macro), project level (meso) and curriculum level (micro), specifically targeting STEM subjects — areas where the involvement of teaching and research staff is more challenging. The micro action, the gender+ curriculum, was launched after the feasibility of the two previous actions had been demonstrated.

The idea of the gender+ curriculum stems from the belief that in today's educational landscape, it is essential for teachers to be aware of the current state of research in the areas of gender, diversity, and inclusion in the area they teach. Even if educators are not actively engaged in EDI related research, they should provide their students with relevant information to understand this increasingly important aspect across all disciplines. In addition, it is crucial to provide teachers with effective strategies to explore these aspects in the future, e.g., by referring to European Union documents or EU-funded research projects, in particular those at the edge of research, such as those financed by the ERC and the Pathfinder actions and programmes.

The pilot project for this curriculum took place in the second semester of the 2022/2023 academic year and was aimed at the course: Hydraulic Engineering and Hydrology (undergraduate programme: Mechanical Engineering - Energy and Production). The integrative curriculum takes the gender+ dimension into account when formulating educational objectives for the curriculum, defining learning outcomes for teaching and structuring the curriculum. It uses the European Qualifications Framework and the Dublin descriptors. It refers to EDI-friendly EU proposals, research articles, EU reports and recommendations related to the course topics. It will be further tested in other courses (starting with “Impacts of Disasters on Coastal Environments, Risk in Natural Environments” (Master's programme: Engineering for Natural Risk Management) and other disciplines in the coming semester.

A professor, actively involved in the previous activities and convinced of the potential of approaches closely aligned with research and teaching, worked for several months with an EDI expert and a design expert. Together, they identified materials to be integrated into the course, selected content that could be directly linked, created description sheets and ran the pilot course. The EDI expert also took part in the pilot project. This participatory approach allowed for a bottom-up creation that not only convinced the students — who in many cases chose to focus their final project on the integrated EDI topics — but also had a positive impact on other STEM professors. They are now interested in following a similar path.

5. Discussion

Despite contextual disparities, the two observed initiatives underscore the pivotal role of participatory strategies in facilitating successful change initiatives. Actively engaging different stakeholders through participatory approaches instilled a sense of ownership among them, fostering a sustained commitment to both initiatives in subsequent phases. This active and collaborative engagement not only garnered stakeholder endorsement but also internalized and championed the initiatives, leading to more comprehensive processes that embraced diverse insights and experiences, ultimately resulting in more inclusive outcomes.

Notably, at the University of Deusto, the significant representation of the different faculties in the process of creating the handbook facilitated the attainment of institutional recognition for those actively involved. This marks a pivotal shift towards transitioning from gender equality initiatives driven mainly by the personal commitment of certain individuals to institutional responsibility for gender equality matters. By fostering engagement among institutional actors across varied institutional areas and roles, including those in management and decision-making positions, participatory approaches bolster a broader understanding and endorsement of gender equality initiatives throughout diverse hierarchical levels within the institution, thus setting the stage for a more comprehensive and sustainable framework for institutional change. At the University of Genoa, the pioneering Gender+ curriculum has strengthened the agency of those involved in developing and trialling it. The experience created a link in their perception of the GEP between what Horizon Europe calls for, which is often seen as just a tick box exercise, and a concrete action that combines their power to choose the learning path they offer with a new, inclusive meaning added to the subjects they teach.

Both initiatives are geared towards change and challenge traditional teaching and research methods. In both cases, the application of a participatory approach stimulated discussions on content, format and implementation strategies and encouraged individual and collective reflection on teaching and research practises. The resultant documents show a variety of examples of practise in different areas of knowledge. This initial step paves the way for disseminating the two initiatives and their systematic integration into the university's teaching and research landscape.

Their success depends on a number of factors that cannot be taken for granted, such as, for the handbook, institutional support and resources, representation and commitment from different departments and capacity building and, for the curriculum, the availability of a multidisciplinary working group and the interest of academics to change the traditional approach and embark on a learning journey in new directions. In both cases, it was a successful strategy to rely on the gender+ and equality agenda at European and national level and on internal negotiations (utilising formal and informal spaces) to overcome an initial period of apparent inertia, as this was seen as a predictable part of change processes to achieve the planned objectives. Participatory strategies facilitated the creation of new negotiation spaces, deviating from the traditional approach of EDI initiatives being driven by a select group of dedicated actors (colloquially the 'equality and diversity people'). This shift redistributed responsibility and ownership of change processes across wider groups of the academic community, including managers and decision-makers.

Certainly, resistance is a major obstacle that is still difficult to overcome. Resistance is often related to refusal to change, but also to self-preservation and self-referentiality of those who have been sitting in the so-called ivory tower for many years and tend to repeat or defend. Initial insights for overcoming implementation challenges suggest the need for targeted dissemination campaigns, highlighting the benefits and potential impact of gender-sensitive institutional changes both as a social justice matter and a form of complying with national and European norms. Moreover, the challenges can be overcome with constant action and strategies leveraging internal networks, seeking external funding, and establishing strategic alliances with advocacy groups.

Last but not least, both the handbook and the gender-specific curriculum were developed at university level as part of the GEP. Consequently, the negotiations and strategies took place at institutional level, offering a replicable model for implementation in other universities.

6. Conclusions

We acknowledge that the main limitation in this study is that both initiatives are still at an early implementation stage. At the University of Deusto, the participatory process led comprehensive guidelines for integrating gender into teaching and research across various disciplinary areas, yet their practical application remains in an initial phase, contingent upon factors beyond the commitment of those who engaged in the creation of the document. The case at UniGE, in turn, emerged as an initiative embedded in the GEP and driven by a smaller group of committed professors and experts in the context of a specific course in the STEM field, and is currently being tested in other university courses. Although both initiatives produced satisfactory results, their reproducibility has yet to be demonstrated, especially in what regards the implementation of final outcomes at wider institutional level.

Nonetheless, these initiatives produce promising opportunities for future research. The participatory nature that underpinned the creation of the handbook and the inclusive curriculum opens up the possibility of exploring the effectiveness of such collaborative approaches in academic settings. Investigating the lasting impact of these initiatives on teaching practises, learning outcomes and institutional dynamics is an interesting approach for research. Moreover, investigating the scalability and adaptability of these models in different educational contexts could provide valuable insights into their wider applicability.

Furthermore, exploring the long-term impact on student engagement, academic achievement and inclusivity within the learning environment would make an important contribution to educational research. Assessing the development of practises resulting from the integration of the handbook and the implementation of the inclusive curriculum could provide valuable data on their transformative potential in higher education over time.

Additionally, comparative studies between institutions implementing similar participatory frameworks versus traditional top-down approaches could shed light on the comparative benefits and challenges associated with collaborative curriculum development. Finally, exploring the role of technological advances in enhancing participatory approaches and facilitating widespread adoption is an interesting area for future investigation.

These avenues hold immense potential to expand knowledge and provide information on best practises in educational innovation and inclusive curriculum development.

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Barriers to Women Professionals' Career Growth during Covid-19 in India

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Abstract: The slow advancement of women in their workplaces remains a social concern for corporates and industry experts across the globe (International Labour Organisation Report, 2018). During the covid-19 pandemic, the advancement of women got significantly impacted owing to the increased burden of domestic responsibilities and other personal challenges. According to the Centre for Monitoring Indian Economy Report (2021), women in India were seven times more likely to lose their jobs during the pandemic and eleven times more likely to not return to work after the job loss. With the Covid-19 pandemic on the rise and spreading, companies were forced to redesign their work systems, initiate and adopt a remote-work setup option. While, a majority of companies continue with the hybrid model, some companies are slowly eliminating it and returning to the regular office norms as before. This change is likely to impact women, especially the working mothers, owing to the uneven distribution of child-care responsibilities, domestic work, etc. Additionally, conventional barriers such as discriminatory practices, mentoring, networking challenges and role conflicts are expected to persist or rather increase in the changed-working models – be it the hybrid, remote, or completely offline system. The present study focuses on identifying the constraints faced by the Indian women striving against the current for their career advancements, both during the Covid-19 pandemic disruption phase and post-pandemic scenario. The insights from the study will be helpful to gain a cumulative understanding about the challenges faced by women owing to the emerging work system and in addressing the future concerns more systematically.

Keywords: Barriers, Career Growth, Covid-19, Women

1. Introduction

The covid-19 pandemic which hit most parts of the world causing country-wide panic in the early 2020 led to severe health crisis across nations. The World Health Organisation (WHO) in March 2020 declared covid-19 as a global pandemic (McKinsey Report 2022). India, one of the most populated countries in the world, reported the first coronavirus case in January 2020, which further increased to 107 cases by March 2020 (Ghosh, Nundy, & Mallick, 2020). The Government of India imposed the first phase of lockdown for 21 days on March 24, 2020, which was later extended in phases to prevent the spread of the virus.

The World Economic Forum Report (2021) suggests that the female employment fell by 4.2% in 2020 i.e., during the pandemic as compared to a 3% decline in male employment. The report further states that women employment has been hit harder by the pandemic and they are at a greater risk of job-loss, reduced working hours than men giving a major setback to the efforts of past two decades for a better gender equality. While developed nations like USA, the UK, Europe reported a sudden downshift in female employment during the pandemic, it is the developing economies which suffered the most wherein the percentage of female employment is already at a lower level.

India, with a wide demographic dividend, holding a population of 1.4 billion and being one of the emerging economies of the world, scores one of the lowest in terms of female labour participation. As per Centre for Monitoring Indian Economy report of 2022, only 10% of working age Indian women were either employed or looking for jobs i.e., only 39 million women were employed in the workforce compared to 361 million men. As per the Gender Gap Report by the World Economic Forum (2021), India slipped 28 notches downward and was placed at 140th position out of 156 countries in terms of gender gap in the workforce. During the covid-19 pandemic, India reported an increased female attrition and forced layoffs (Bansal & Mahajan, 2023). The female labour participation rate in India slipped from 24.8% to 22.3% which is one of the highest in the world. Gender studies conducted in India suggest that the burden of domestic responsibilities is clearly tilted towards women in India which slows down their progression path (Barua et al., 2016). During Covid-19 pandemic, this uneven distribution of domestic responsibilities increased manifold due to the changed work norms and policies along with increased household work (i.e., remote working, closure of schools, creches etc).

After two years of the pandemic run, the chief of the World Health Organization has finally declared an end to the Covid-19 menace as a global health emergency (WHO Report, 2023). However, with slow transition from

hybrid mode to physical work, the post-pandemic era continues to face its enduring consequences, impacting the humanity, and presenting some unique challenges which are never experienced before. A study of this nature would be very useful in the Indian context which offers a unique and diverse social, cultural setting as compared to the other geographic regions and where the progression of women in India has remained sluggish than progressive.

2. Prospects for Career Advancement of Women Professionals in India

Organisations across the globe have reported serious concerns over the slower advancement of women in the workplace (Barhate *et al.* 2021). Women constitute half of the world's population; however, they continue to remain under-represented in the corporate hierarchy. As per the International Labour Organization (ILO) Report (2019), while four in five men are involved in paid work, less than half of the women are part of the labour force.

India, being counted as one of the fastest growing economies of the world, has one of the lowest female labour participation rates – 24% (World Bank Report 2019). The percentage of women at the leadership and senior managerial levels is disproportionately low at 14.6% and 8.9% respectively. An ILO report (2018) suggests that the gender- pay gap in India varies between 22 to 39 percent across various sectors. The same situation continues in the services sector which witnesses the highest female participation rate with 30% women in Information Technology, 22.4% in financial services sector followed by other sectors which employ a meagre 4-5% of females (CFA Report, 2022). However, the report suggests that the progression for women is not steady and less than 5% reach the leadership level across all the sectors. The covid-19 pandemic has further threatened to reverse the progression of women in terms of participation and progression in the management hierarchy. It is thus imperative to understand and analyse the barriers experienced by women in their career path both during the pandemic as well as the post-pandemic era wherein the nature of work dynamics has completely changed creating new challenges for working females.

3. Covid-19 in India: The Local Context

The flare up of covid-19 virus impacted lives and livelihoods, adversely affected communities, and disrupted businesses and industries across the world. India, with a population of almost 1.4 billion and a mosaic of social and economic diversity, distinctive cultural values, faced some unique challenges owing to the flare-up of covid-19 pandemic. In order to curb the spread of virus, the government imposed some stringent measures in the form of lock-down restrictions, closing of international as well as inter-state borders, trade restrictions, etc., thus bringing the economic activities to a grinding halt. The outbreak of covid-19 pandemic and its flare-up caused a havoc in the labour market creating unemployment and some significant challenges, especially for the women (World Economic Forum report (2021). The pandemic situation pushed companies to offer options, like 'remote-working', 'work- from-home'. While these measures were taken to adhere to the government norms, it changed the work dynamics drastically, creating some unique challenges such as increased role conflict, child, elder care with no support owing to absence of maids, nanny, closure of schools, day care etc.

4. The Post-Pandemic Period

Research studies conducted during the unsettled period of pandemic had predicted that the work practices adopted during covid-19 would usher in permanent changes in the work patterns and linger even for the years – post covid (Kane *et al.*, 2021). This has proved prophetic to some extent with organizations now offering a hybrid-work model to the majority of their employees. However, many have also declared a "stop" to the permanent work-from-home option, due to concerns over productivity, performance, team integration, etc. A topical study, conducted by the prestigious Massachusetts Institute of Technology (MIT) and the University of California (UCLA) in 2023, revealed that remote working practice reduces the productivity, engagement and inclusion of employees up to 18% due to the various distractions involved while being at home.

The exclusion of the remote-working option and/or imposing stringent practices providing limited flexibility is bound to pose severe challenges for women who, besides office work, also carry the primary onus of domestic duties. Further, with the changes in the work-place norms, existing barriers in the form of discriminatory practices, challenges in mentoring, networking, role conflict, etc., are expected to persist or increase, thus limiting career advancements of the 'working' women. Every new measure adopted or change in the policies is expected to bring some unique challenges especially for the women who owe the primary burden of personal responsibilities along with work. Therefore, it is imperative to explore and understand the difficulties or the barriers experienced by women in each phase of these uncertain times.

5. Data Collection and Research Methodology

The study was conceived and undertaken to derive insights into the various barriers encountered by women professionals in India both during and post-covid-19 pandemic scenario by collecting qualitative data. The data for the study was collected through semi-structured interviews to understand the real-life challenges of women (Rubin & Rubin 2011). All the respondents were asked about the various barriers they usually encounter in their career progression path.

The primary data was collected in two stages, i.e., (i) during the pandemic between October 2021 to March 2022, and (ii) after the pandemic i. e., from April to October 2023. For the study, convenience sampling method was used. A total of 30 women professionals working in the city of Bengaluru (India) including various sectors, such as Information Technology, Banking and Financial Services, Auditing and Consulting Firms were considered in the study. The interview data was collected virtually, i. e., through telephonic-interview conversation – virtual meetings – using Microsoft Teams, skype, etc., owing to the requirements of social distancing norms and lockdown restrictions in place. In the second phase, the same set of respondents were approached to obtain their views about the differences in the challenges they are experiencing in the post-pandemic phase. All the interviews were subsequently transcribed *verbatim*, preserving the anonymity of the participants. Each interview lasted between 30 to 45 minutes.

6. Methodology

After the data collection, the analysis was done using the NVivo 12 plus software. It helped to arrange and organise the data in a more systematic and meaningful manner. The researchers read, re-read, and examined the data for any themes, patterns. The barriers that emerged were gender discrimination, lack of workplace flexibility, lack of mentoring restricted networking opportunities, role conflict, lack of family support

6.1 Participant Details

A total of 30 women respondents were included in the study. Table 1 mentions about the demographic details of the participants.

Table 1: Demographic Profile of Participants

Details	No. of Participants
Marital Status	
Married	24
Single	6
Children	
Yes	18
No	12
Industry	
Information Technology	14
Banks and Financial Services	7
Audit and Consultancy Firms	9

Designation	No. of Participants
Executive	9
Senior Executive	6
Middle Manager	8
Senior Manager	6
Any other higher position	1

Figure 1 represents the work arrangement of women employees especially in the post-pandemic period. During the covid-19 pandemic, all the women respondents who participated in the study were working remotely. However, today the statistics suggest that most of the employees (i.e., 33%) are either regularly going to office or working in a hybrid model (50%).

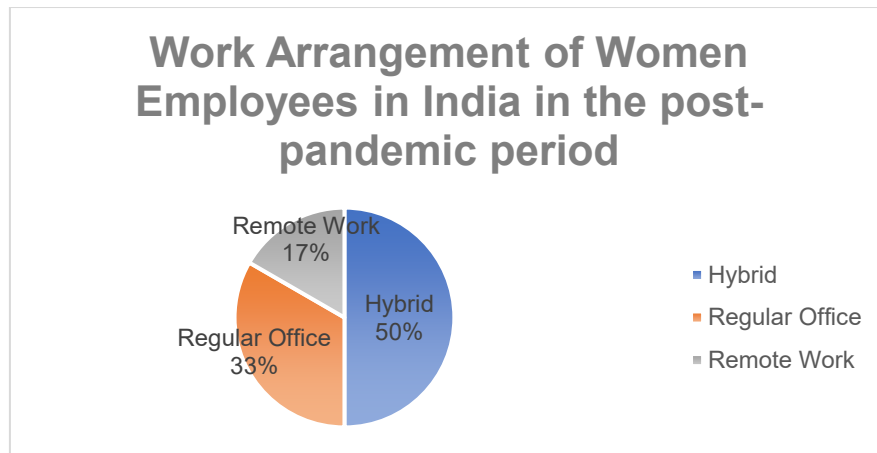


Figure 1: Work Arrangement of Women Employees in India in the post-pandemic period

7. Results

The barriers experienced by women professionals for career advancement during the pandemic and post-pandemic in India are mentioned below.

7.1 Gender Discrimination

Gender Discrimination is defined as a deferential treatment experienced by an individual primarily due to his or her gender (Heilman & Caleo 2018). Women respondents reported experiencing gender discrimination at the various stages of their career including hiring, compensation and promotions, especially after they were married or had children. During the covid-19 pandemic, the already vulnerable and marginalized women employees further experienced inequalities.

A woman working as a senior executive in a bank shared her experience:

"I started looking for work after a gap of few years post maternity. People were not ready to recruit me especially during the pandemic as they thought I have a small kid so it would be difficult for me to manage. I was offered a much lower salary, position than before."

The conventional barrier was experienced by women even in the post- pandemic era.

A manager working for a consultancy firm stated:

"I recently applied for an interview for a job change. They offered a lower position as the company is mandating regular work from office norm. I have a small baby and aged in-laws at home hence it would be difficult for me to go to office on a regular basis. Such incidents are experienced more by women than men".

7.2 Lack of Workplace Flexibility

Workplace flexibility refers to freedom of choice over how, when, and where to do the work (Jones *et al.*, 2020). During the period of the pandemic, organizations were compelled to offer the option of working from home. While it provided the desirable flexibility, women reported experiencing time pressure, stress in multi-tasking and a constant guilt of being unable to fulfil multiple (domestic and office) responsibilities.

A senior manager working with an IT company stated:

"My work has increased so much due to work from home. I have to login early morning, make breakfast, help kids with online classes, do laundry, utensils and so much more. Employers have also become stricter about working hours, login and logout time, duration of lunch, coffee breaks."

In the post-pandemic situation, majority of the organizations across various sectors in India are encouraging or rather mandating the trend of "RTO" (Return to Office) i.e., 5-day work- from-office policy, or hybrid work model (Business Insider 2023). This is causing a rather difficult situation for women who need a more flexible work environment than their male counterparts.

An Executive working with an IT company voiced this point:

"As a mother of two, I was happy to continue my work while being at home. But now my employers are asking me to come to office at least twice a week which might increase to 3 days a week by month end. With limited flexibility, it will get difficult for working mothers like me who need to look after childcare responsibilities apart from work."

These narrations are eye-openers in a way which showcase that women face significant challenges, in case the limited flexibility offered by the organisations are curtailed. If the trend of withdrawing flexible norms continues further, organizations might once again have to bear the onus of losing the potential female-talent workforce.

7.3 Lack of Mentoring

Mentoring is considered as one of the significant factors for fast career advancement, especially for women professionals. However, women experience several barriers to having a good mentor especially due to the issues of cross-gender mentoring, lack of informal opportunities to meet the mentor, and limited availability of trained and dedicated female mentors (Coleman 2020).

Women respondents to the study mentioned that the need for a good mentor became even more crucial during the covid-19 pandemic due to the unconventional virtual mentoring. A woman respondent who had recently delivered a child and working as a manager with a consultancy firm shared:

"Mentoring sessions did not happen at all. I was going through a personal crisis and had no one to talk. I requested my mentor for online sessions, tried to setup calls, meeting requests but it never worked out."

Post-pandemic, the situation is slowly returning to normal with more physical office days. A senior executive of a bank said:

"I get to meet my mentor at least once a month. Our working days in the office are different. But we mutually decide a day when both of us can come to the workplace and discuss the issues. A one-to-one discussion is much more fruitful than the online sessions."

The pandemic and its after-effects have left long-term impact on the working norms, policies and practices. In these uncertain days, efficient mentoring- support can help women employees to sustain growth in the corporate hierarchy.

7.4 Restricted Networking Opportunities

The popular saying, "It's not what you know, it's whom you know" that rightly explains the need to do networking in the organization for professional development (De Klerk & Verreynne 2017). Virtual networking during covid time period became especially challenging, if not impossible. Networking, which is solely based on personal connect, was limited merely to a computer-mediated conversation link. Organizations moved from the physical set-up of board meetings, conferences to online workshops, video conferencing, virtual gatherings, etc., to comply and cope with the pandemic norms thus limiting the networking skills of employees to a great extent. A respondent working in the IT industry stated:

"I miss going to work, meeting people, networking with colleagues, which is actually challenging when you are working remotely. My company regularly conducts virtual events. But it is no fun. Moreover, I am already burdened with child-care duties owing to the pandemic; so, I have no time left to attend virtual networking sessions."

In the post-pandemic era, the situation is believed to improve as employees are gradually tracking back to the workplaces. Physical-team meetings, lunch hours, informal conversations are back in place. These breaks are useful especially for networking. An executive said:

"I get to meet my team members occasionally. We have a hybrid-work model; so when I go to office, I make sure to meet my team members for lunch, coffee breaks. This way I get to know more people which is important and necessary."

With the regular norm of going to office being introduced once again, the networking issues experienced due to covid will gradually fade away. However, the persistent problem of exclusion from old boys' network, boys club,

men's locker room conversations, or after-office hours parties etc., may resurface which might hamper the career growth of women.

7.5 Role Conflict

Role conflict is one of the widely researched areas with respect to the challenges hindering the career advancement of women. The social-role theory explains that the gender-role division flows from the societal expectations originating from the past eras (Eagly and Wood 1999). In the lockdown situation, availability of domestic help nearly vanished, childcare crisis, closure of schools, no crèche facility, limited family support, etc., exerted additional pressure on women which lead to domestic conflicts and unhappy family situation. An executive of an audit firm said:

"Since there were no schools, day-care or domestic help, we had to do everything on our own, which was extremely difficult and led to occasional conflicts. There was a constant juggling between house and office work which left me exhausted every day."

In the post-pandemic period, employers are putting pressure on employees to report to office at least few days a week. With limited flexibility, pressure of numerous responsibilities, the conflicts between multiple and diverse roles seem to be unavoidable. A senior executive working with a consulting firm shared:

"Conflict in duties arise almost every day. If I have to go to office, I need to plan – who will look after children, provide food, supervise studies, school drops and picking. There is constant conflict between multiple roles."

The gender-imbalance in the household duties often push women to a lower pay and position, hindering or limiting their potential advancement. It leads to the perennial question: can women really "have it all", or do they need to "give up on one" of the domains to focus on another (Sandberg 2015).

7.6 Lack of Family/Spousal Support

Family support plays a key role when it comes to the career growth of women. In India, where family reinforces social and cultural expectations, it is one of the key factors which decides the career trajectory of women to a great extent. Before marriage, support from parents and after marriage support from spouse and in-laws is extremely important (Sandberg 2015). During the prowling-period of the pandemic, family support became a crucial factor. An executive of an IT company said:

"I have 2 kids and I must sit with them for their online classes; look after the domestic work. While my husband is supportive and looks after kids, I do the primary work of looking after household matters."

Post-pandemic, most of the companies are now regulating the norm of reporting to the workplace. A manager of a consultancy firm said:

"My husband and I have adjusted our office days in a way that one of us stays at home to look after children. However, in times of crisis it is usually me who takes a back seat while there is no change in routine for my husband."

The narrations clearly indicate the need for a strong family support for the working women while they are in their professional journey.

7.7 Difference in the Barriers Experienced by Women Professionals During and Post Covid-19 Pandemic

Table 2 suggests the changes in the percentage of a particular barrier i.e., whether it increased, decreased, or remained the same both during and after the covid-19 pandemic.

The results in Table 2 indicate a slight increase (i.e., from 70%) during the pandemic to (73.33%) post-pandemic period in discriminatory practices. This indicates that discriminatory behaviour is embedded more prominently at the office-work setup than in the remote scenario. Lack of workplace flexibility significantly increased from 46.67% during the covid to 70% post-covid. This is primarily due to the employers mandating employees to return to the workplace post-pandemic. Both the barriers, i.e., lack of mentoring and networking mitigated from 58.6% to 50% and 68.9% to 53.3% respectively. During the pandemic, women employees experienced severe challenges due to limited virtual connectivity with supervisors, peers and subordinates. Post-pandemic, connect with

mentors and colleagues has regained and thus the existence of the barriers has reduced marginally but not vanished absolutely. Role conflict also showed an increase from 80% to 86.67% due to offices being re-opened leading to an increased struggle for multitasking. Lastly, in terms of family support, the parity of sharing domestic and family responsibilities seems to be fading again, from 63.33% to 73.33%, with regular office norms being implemented. The results reveal that post-pandemic period, most of the barriers are back in space and are being experienced increasingly by women employees.

Table 2: Change in the percentage of barriers mentioned by women professionals during covid-19 and post pandemic

Barriers	During Covid 19 (Total =30 respondents)	Percentage	Post Covid 19 (Total= 30 respondents)	Percentage	Change in Percentage
Gender Discrimination	21	70%	22	73.33%	↑ (Increase)
Lack of Workplace Flexibility	14	46.67%	21	70%	↑ (Increase)
Lack of Mentoring	17	58.60%	15	50%	↓ (Decrease)
Restricted Networking Opportunities	20	68.90%	16	53.33%	↓ (Decrease)
Role Conflict	24	80%	26	86.67%	↑ (Increase)
Lack of Family/Spousal Support	19	63.33%	22	73.33%	↑ (Increase)

8. Discussion and Conclusion

The present study is unique and relevant as it focuses on the different barriers experienced by women employees in their career advancement path both during and post-covid-19 pandemic. The theoretical narrations included in the study give a clear and in-depth understanding of the challenges faced by women in both the phases. The change in the nature of barriers from pandemic to the post-pandemic era suggests that the impact of barriers significantly changes as per the work norms and settings. Hence, organisations by taking effective measures can control the challenges experienced by women to a great extent.

Awareness about such impact is relevant and necessary both from an academic as well as industrial/management perspective. The study provides insights about the real-life challenges experienced by women in both the pandemic and post-pandemic era. It is important to understand the barriers which women are facing today as it will have a long-term impact on the gender equity ratio in years to come. It will also help organisations to better understand the concerns of women by re-installing the policies, systems, being active listeners, and offering proactive flexibility. Organizations can understand the needs and aspirations and address the necessity of holistic talent-utilization of the female employees who are bound to experience greater hurdles in their career path progression. The findings of this study would help business leaders, HR professionals, policymakers and researchers in developing a hybrid workplace as they chart the path towards the post-pandemic future.

The study is also enriching for researchers and academicians as it opens an opportunity to explore the real-life challenges, difficulties of women wherein they are experiencing a significant transition of moving from the comfort of working from home to a mandatory work from office norms. While, it is a challenging period for women, corporates are also experiencing some unprecedented challenges in terms of renegotiating with the changing work norms and timely adjusting their policies, practices to address the concern of their employees. Studies in the future have a wide scope to address the concerns both from an employer as well employee perspective in different demographic, geographical or industrial setting.

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Situation Analysis of Female Academics' Career Advancement in Higher Education in Syria

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Abstract This research examines factors which may be influencing female academics career advancement at Higher Education Institutions (HEIs) in Syria. The paper conducts situation analysis on academic environment at HEI in Syria, exploring factors which may be impacting female academics experience and career progression and lack of academic representation at senior management levels. The paper examines a private HEIs investigating the environment in Syria highlighting the situation after 2011. The methodology applied in diagnosing the situation, is based on data collected from a capacity building in higher education project (CBHE), funded by Erasmus+. The methodology employs the design of questionnaire survey administered at the research target group. A one-way translation from English to Arabic is performed by expert academics and verified by linguistic experts. The sample design employs nonprobability sampling techniques. The size of the sample is 47 observations for academics. The findings of the analysis are reported across individual, and institutional levels. The research results signify that interest in research is a strong motivator; while career satisfaction still reveals an area of future development. There is still little awareness on gender issues topics, as well as little research works being performed in the scope gender research issues. The concept of gender equality has a high potential for evolution and expansion on the intermediate and long term at the institutional and socio cultural contexts in Syria. The future direction of this research emphasizes developing a conceptual framework on the factors which may be affecting female academics experience and career advancement in HEIs in Syria. Furthermore, future research recommends the development of institutional and national policies in the scope of gender equality, which could be reflected at human resources practices, environment of the workplace, infusion of gender at university mission and planning, curriculum, research, and university governance.

Keywords: Gender Equality, Career Advancement, Female Academic Empowerment, Higher Education, Syria

1. Introduction

To succeed in today's new paradigm of academic learning and research environment, HEIs need sustainable practices in academic environment that can transcend time, place, geography, race, and above all gender (Dalati et al 2020, Dalati 2021). The imperative to empower female academics is accelerating, as international global universities rely more and more on the significant roles played by female academics and professionals. Prior academic research indicates that there is requirement for a greater number of female academics in the Middle East. The need for developing effective female academics with technical, interpersonal, conceptual and decision-making skills which enhances robust and sustainable academic environment, has become an increasingly important discipline in HEIs. Challenges associated with social, cultural, economic and gender issues are evident factors that could impair female academics from taking leadership roles in academic environment. On the other hand, information overload, technological advancement and connectivity, battle for analytical and research competencies and increasing ethical dilemmas have been among important factors stimulating the need for female leaders, who acquire effective competencies and that could transcend cultural, geographical, political, racial and national aspects. Female academics can contribute to building and creating crucial impact in their countries at different aspects economically, politically, socially and most importantly as academic leaders initiating change in the academic arena. In recent times in Arabic societies, female education is acceptable and supported; however, education is not helping these women to capitalize on full potential in terms of employment. Therefore, the level of education of women in Middle Eastern societies is not a useful indicator of the economic status of women. Research studies indicate that women are controlled in patriarchal societies because of the association to the nature of the structure of this culture which is male dominated (Littrell and Bertsch 2013, Mouhamad 2003, Dalati et al 2020). The prior research supports that patriarchy is strongest in rural areas and in peasant and tribal communities (Littrell and Bertsch 2013, Dalati et al 2020). The Purpose of this research paper is to examine factors which may be affecting female academics experience and career advancement at top levels of management at HEIs in Syria.

2. Higher Education Environment in Syria

Universities at Syria definitely need the knowledge and expertise of social and technical innovation to create a sustainable future for Syria. Before 2011 HEIs in Syria were expanding as the introduction of private universities was applied in 2001. That was accomplished through a legislation which allowed the operation of Syrian private HEIs. Before the devastating war in Syria and between 2001 and 2010 Syrian private universities were expanding and competing to win and recruit students primarily undergraduates. At 2011 a long-term crisis has torn Syria over the past 13 years, which has created a devastating situation on a social, economic, environmental and political levels including both private and public sectors. HEIs are still operating now; although it has faced challenges and worsening through the past 13 years of struggle and devastation. Before 2011 Syrian Higher Education was going through a development phase, characterized by modernizing teaching and research environments and knowledge transfer, accreditation with international and mainly EU partners. After 2011 and during the past 13 years Syrian Higher Education is still facing different challenges associated with its infrastructure, operational, human, technical, intellectual and social levels (Dalati & Alchach, 2018. Dalati et al 2020). Currently, the economic environment in Syria has become more complicated particularly after the global pandemic and its effect on Syria in different aspects including the higher education infrastructure (Rouh, Dalati, and Al Bich 2021).

The prevalent organizational environment of Higher Education industry in Syria is generally characterized by (1) deficiency in the development of a sustainable development training programs for its human academic resources particularly in the scope of female executive leadership, (2) lack of career support and counselling centers for female academics subject to different forms of discrimination at Higher Education institutions; (3) lack of integration of gender issues and sustainability at courses and curricula levels; (4) and lack of strategic emphasis and investment in development of scientific research centers in the scope of gender equality, sustainability issues and female empowerment (Dalati et al 2020, Dalati 2021). The effects of this problem have led to a generation of female academics characterized by incompetence as executive managers at senior levels, as well as low power dead-end jobs (Dalati et al 2020).

3. Literature Review

The preceding literature examines diverse characteristics which could be classified as motivators, and barriers influencing female academics career progression and advancement. These factors include individual, demographic, institutional and socio-cultural factors, which may be inhibiting women from following a successful and effective academic career (Cole & Zuckerman, 1987; Hensel, 1991; Davis & Astin, 1987; Menges & Exum, 1983; Sax et al., 2002; Blättel-Mink, 2008; Ramsay, 2001, Dalati et al 2020). Previous studies on female career advancement highpoints the importance of individual factors, as personality characteristics and attitudes, marital status, and family responsibility (Lobel & Clair, 1992; Greenhaus & Parasuraman, 1993; Aycan, 2004). Furthermore, the research examined female academics and professional ability to create balance between work and family and household responsibility, making significant influence to the community and social surrounding (Reynolds et al 2018). Furthermore, Adler (1993) made an interesting argument based on her research performed in the US that although in societies women are expected to work and contribute to public and professional life, they are still also expected to perform their household duties as mothers and wives, therefore, they encounter a double burden of being professionals and house managers.

Institutional factors are investigated in prior studies on female career advancement and academic representation at university board of directors (Gardiner, 2005; Reynolds et al., 2018; Kaw & Ahmad, 2014). These factors include lack of networking skills, lack of training, absence of modelling for effective career and lack of research development as compared to male counterpart. There exists gender inequality at higher education based on prior US and EU studies (Hensel, 1991; Blättel-mink, 2008).

Socio-Cultural factors are examined taking into consideration the Middle Eastern region and its social culture. Aycan (2004) investigated the causes for women underrepresentation at senior management in Turkey, where the study emphasized the effect of socio-cultural factors, highlighting gender role stereotypes and perceptions towards women career advancement. At Middle Eastern Culture, there exist societal practices institutionalizing negative discrimination concerning women, often codified in laws that impair women from contributing in public life or fully competing in the labor market. This zone is characterized by the low status of women in general, high fertility rates coupled with low age at first marriage, high maternal and infant mortality rates, higher rates of female illiteracy, lower levels of female educational enrolment, low female labor force participation, and the lack of women's political participation and political rights (Moghadam, 2003; Caldwell, 2004, Littrell & Bertsch,

2013; Afiouni et al., 2019). In summary, prior literature examined a set of factors inspected at individual, organisational and socio-cultural factors.

The prior studies enable the researchers to build a theoretical and conceptual frameworks of the factors which may be affecting female academic experience and career advancement in Higher Education Sector in Syria. The factors examined focus on individual, institutional and socio cultural factors.

4. Methodology

The following sections clarify the main methodology factors related to sampling design, strategy and size, and to data collection design (Cooper and Schindler 2014). The sample unit of analysis comprises of academic staff. The sample strategy at the target institution employed a non-probability sampling approach. A quota sampling was applied to improve representativeness. a proposed quota sampling strategy, has divided the sample into different subgroups indicating 9 faculties operating at a leading private university in Syria. The size of the sample in this current study is 47 academics. Data was collected between June - July 2019. The questionnaire is designed to examine potential factors which may be influencing Syrian female academics' experience and career advancement. The questionnaire focuses on individual, professional, group, and institutional characteristics. The questionnaire is designed taking into consideration the appropriate type of scale required to perform the analysis, type of response strategy required, type of communication approach required, and questionnaire layout. The questionnaire design examined classification questions (demographic), administrative questions, and topic questions. The measurement scale applied comprise nominal, interval and ratio levels.

5. Analysis and Findings

Academics are teaching and research staff of the target HEI in Syria. Academic staff analysis is examined on different levels, including demographical, individual and institutional levels. At faculty level, 31.9% of respondents are from the business administration, 12.8% from pharmacy, 17% from information technology, 12.8 % from architecture, 6.4 % from languages' department, 10.6% from the Fine Arts, and finally 8.5 % from the University Requirements. Female academics account for 53.2 %, compared to 44.7% males, and 2.1 % who prefer not to say. 97.7 % of respondents are Syrians, whereas 2.3% have other nationalities. 59.6% of academic staff are PhD holders, 31.9% are holders of Master's degree, while 8.5% are Bachelor holders. 27.7% of respondents are part time staff, whereas 72.3 % are fulltime staff. Respondents' academic levels range between lecturer and professor. Most of them are instructors (42.6%), while 8.5% are professors. 19.1 % of respondents are lecturers, whereas 21.3 % are assistant professor compared to 2.1 % only associate professor. Table 1 illustrate demographical data analysis for academics.

Table 1: Demographical data – academics (n =47)

Faculty	Frequency	Percent %
Business Administration	15	31.9
Pharmacy	6	12.8
Information Technology	8	17.0
Architecture	6	12.8
Languages	3	6.4
University requirement	4	8.5
Fine Arts	5	10.6
Total	47	100.0
Age Categories	Frequency	Percent %
less than 30	8	17.0
30 years– under 40 years	8	17.0
40 – under 50	16	34.0
50 – under 60	9	19.1
60- under 70	2	4.3
70 and above	4	8.5

Total	47	100.0
Gender	Frequency	Percent%
Male	21	44.7
Female	25	53.2
prefer not to answer	1	2.1
Total	47	100.0
Education Level	Frequency	Percent %
Bachelor	4	8.5
Master	15	31.9
PhD	28	59.6
Total	47	100.0
Academic Level	Frequency	Percent %
Lecturer	9	19.1
Instructor	20	42.6
Assistant Professor	10	21.3
Associate professor	1	2.1
Professor	4	8.5
Other Academic level	3	6.4
Total	47	100.0

5.1 Motivation and work-life Balance

Examining motivation for academics for entering academia, the results show that 14.9% are driven by intellectual challenge, 29.8% are motivated by autonomy, 34%, self-esteem, and 36.2% by the salary level. Social prestige of the job takes 46.8% compared to 48.9% motivated by interest in research. While motivation is a significant factor for selecting a career in academia, satisfaction plays an important role on the sustainability of both individuals and HEIs. The survey shows that 57.4% are satisfied with their career, 10.6% are unsatisfied with their choice of career, and 21.3% are neutral. Respondents were asked if they have achieved their career ambitions. 60.9% have not yet achieved their ambitions, whereas 39.1% have. A question on satisfaction with work-life balance reflected that 55.3% are satisfied, compared to only 8.5% dissatisfied. 14.9% are very satisfied, 17% are neutral and only 4.3 % are very dissatisfied. Achieving balance between work and family can be challenging, as surveyed 40.4% were prevented by family responsibility, while only 6.4% issued marriage and 21.3% were restrained by child care, and 10.6% didn't specify. Figure 1 illustrates analysis for balance between work and family life.

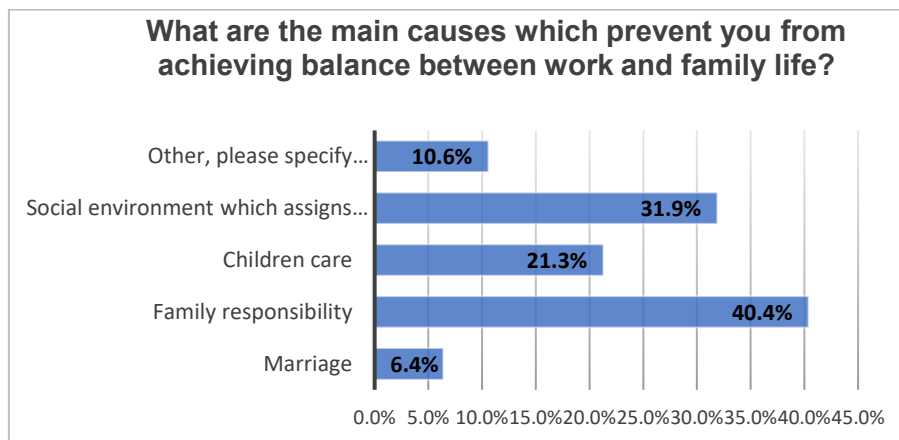


Figure 1: balance between work and family life

Respondents were asked to suggest ideas that help them achieve work-life balance. 68.1% suggested time management, while 53.2% proposed spousal support. 29.8% goes to supportive institutional policies, and the same percentage goes to flexible distribution of roles between men and women. Only 4.3% suggested reducing social life and activities. Figure 2 presents analysis on work – life balance.

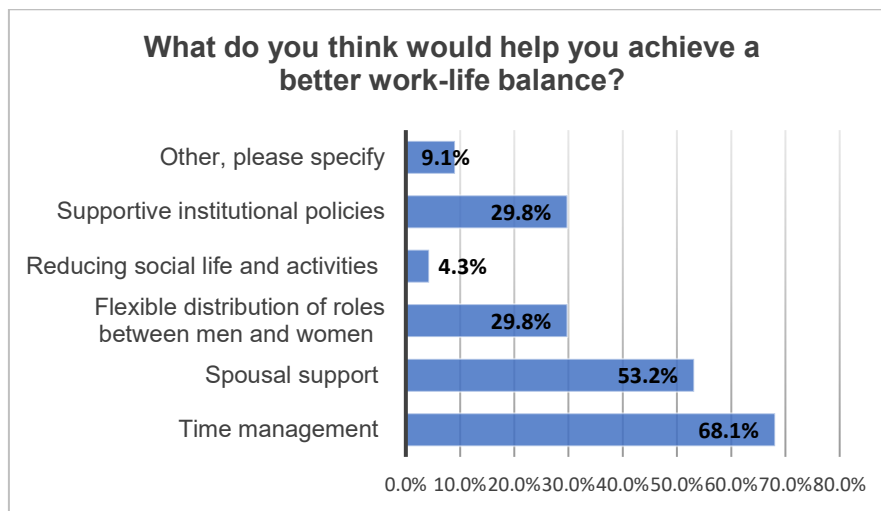


Figure 2: Achieving a better work- life balance

5.2 Curriculum and Research

Figure 4 illustrates percentages on extent to which Gender Equality is integrated at faculty courses at the target institution. 47.7% of respondents stated that courses which address gender issues in their departments are provided to a minimum extent, whereas 2.3% indicated the opposite. 27.3% surveyed with "not sure" as they don't possess a wide range of information on that topic, whereas 11.4% said that gender issues are addressed to a good extent, compared to the same percentage which indicated to little extent. Figure 3 represents analysis for integration of gender topics at faculty and curriculum level.

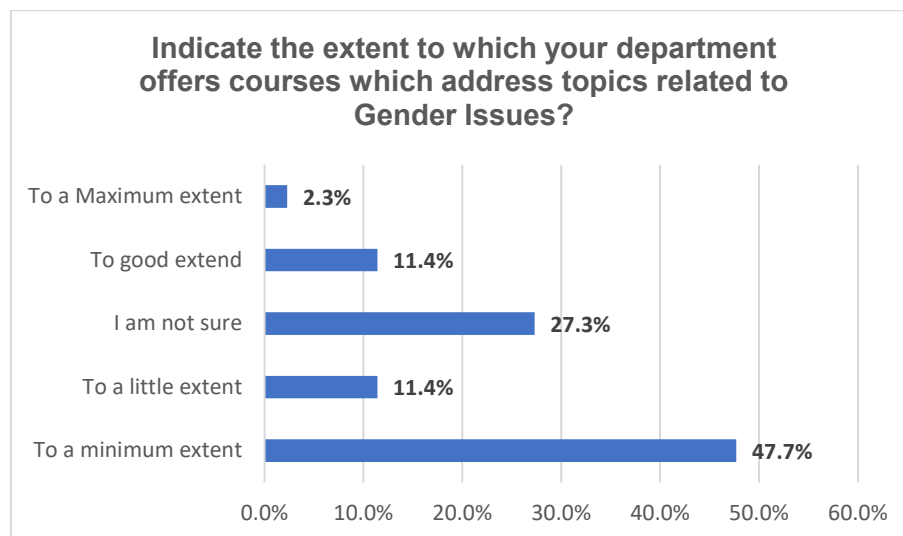


Figure 3: Integration of Gender Equality in faculty courses

Descriptive analysis proves that there is little awareness about gender issues since 87% of respondents are not conducting research. Furthermore, 89% are not currently doing any research that address gender issues, compared to only 11% who are doing so. Figure 4 illustrates percentages on academics performing research in gender issues at the target institution.

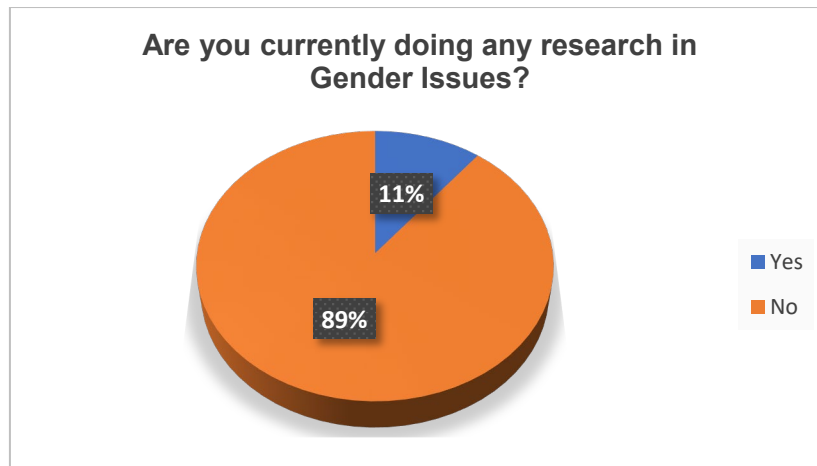


Figure 4: Research production in the Gender Issues

5.3 Institution HR practices

Respondents are asked if a gender quota, based on merit, would be good institutional policy, 59% agreed and 41% disagreed. On a question on gender quota 40.4% indicated that positions should be given based on abilities and not only gender. 10.6 % justified that it might be viewed as unfair. 6.4 % said it will not be helpful, and only 4.3 % said it is not necessary. Figure 5 illustrates percentages on introduction of gender quota in higher education.

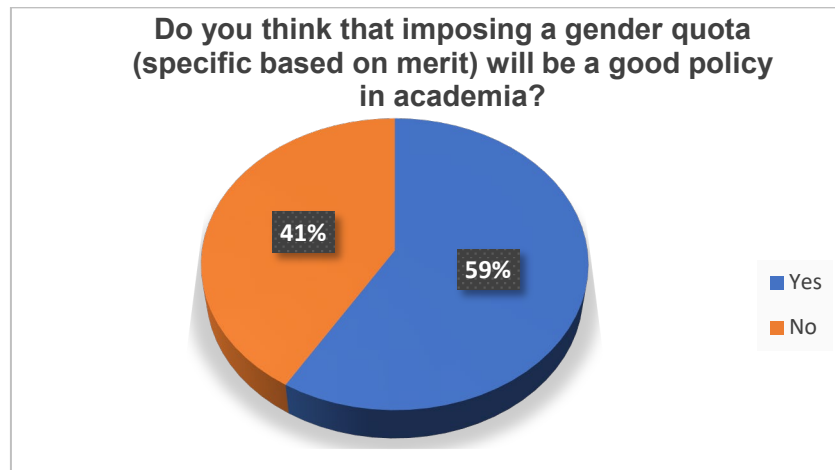


Figure 5: Gender Quota based on Merit

Descriptive data analysis generally reflects perceived agreement levels of respondents towards institution HR practices, where the highest mean score (4.13) goes to equal opportunities for promotion for both men and women. Whereas, the lowest mean score (3.13) goes to providing training programs for women. This signifies the lack of training programs oriented for women and the critical need for this kind of training. Table 2 illustrates average mean scores and standard deviation on factors associated with HR practices.

Table 2: HR Practices at Institution

HR Practices at Institution	M	SD
1. Training programs for women	3.13	1.23
2. Equal opportunities for promotion for both men and women	4.13	1.08
3. Common recruitment & selection policy which is equal	3.97	1.09
4. Performance appraisal is independent of gender	4.11	.95
5. This university has Gender Equality at workplace	3.72	1.01

HR Practices at Institution	M	SD
6. This university is a women friendly workplace	4.00	.89
7. Equal vacations all employees	4.08	.92
8. Common training and development policy for all.	3.74	.98
9. Fair reward and recognition policy	4.02	.93
10. Women get proper maternity leaves as per the law	4.12	.87
11. Women are allocated the same rewards as men	4.08	.95
12. Women are allocated the punishments as men	4.10	.94
13. Women are given leadership roles	3.91	1.01
14. I feel included in decision-making processes	3.27	1.03

5.4 Sexual Harassment, Sexism, and Stereotypes

Generally, descriptive analysis demonstrates higher percentages of respondents who neither experienced nor observed sexual behavior, ranging from 85.1 % for those who neither experienced nor observed sexual teasing, jokes or remarks, to 91.5 % for those who neither experienced nor observed pressure for sexual favors, or sexual assault. 6.4% experienced sexual teasing, jokes or remarks, with another 6.4% who observed this behavior, and only 2.1% who experienced and observed this phenomenon, while 85.1% neither observed nor experienced this. 6.4% experienced unwanted physical contact, while 4.3% observed this, while 89.4% neither observed, nor experienced. However, the subject of sexual harassment behavior is a complex issue as it is differently interpreted across cultures. Moreover, higher percentages indicating neither observed nor experienced can be related to conservative culture of the Middle East. Such topics are perceived as taboos. Table 3 illustrates descriptive data analysis on sexual harassment at institution for academics.

Table 3: Sexual Harassment at Institution

Sexual Harassment at Institution	Experienced	Observed	Observed and experienced	Neither	Total
Sexual/sexist teasing, jokes, remarks or questions	6.4%	6.4%	2.1%	85.1%	100.0%
Pressure for dating	6.4%	2.1%	2.1%	89.4%	100.0%
Sexual/sexist letters, phone calls, emails	6.4%	0.0%	2.1%	91.5%	100.0%
Leaning over, cornering, pinching, touching, unwanted physical contact	6.4%	4.3%	0.0%	89.4%	100.0%
Pressure for sexual favors	8.5%	0.0%	0.0%	91.5%	100.0%
Stalking	6.4%	4.3%	2.1%	87.2%	100.0%
Physical/sexual assault	6.4%	2.1%	0.0%	91.5%	100.0%

Examining bullying behavior from a manager within the institution, 22% indicated they observed bullying behaviors, while 7.3% experienced it, 9.8% experienced and observed, while 61% neither experienced nor observed. 29.3% indicated they have observed a colleague exercising bullying behaviors, while 9.8% experienced and observed bullying from a colleague. 4.9% experienced only, and 56.1% neither experienced nor observed these behaviors. Similarly, responses towards students who practiced bullying behaviors range are as such, 27.9% observed such behaviors, 11.6% observed and experienced, 4.7% experienced, and 55.8% neither experienced nor observed.

5.5 Female Academic Role Model and Empowerment

Respondents were asked to provide their perception of a female academic whom they consider inspiring and viewed as a role model. Figure 6 illustrates characteristics possessed by an inspiring female academic. Respondents indicated charisma and expertise in academic field as distinctive characteristics with 57.4%. Confidence follows next by 53.2%, while 36.2% goes to independence; resilience signifies 34.8%, and ability to

uplift her students' marks 34%. Assertiveness was also identified by 25.5% of that sample. Figure 6 illustrates characteristics of female academic role model.

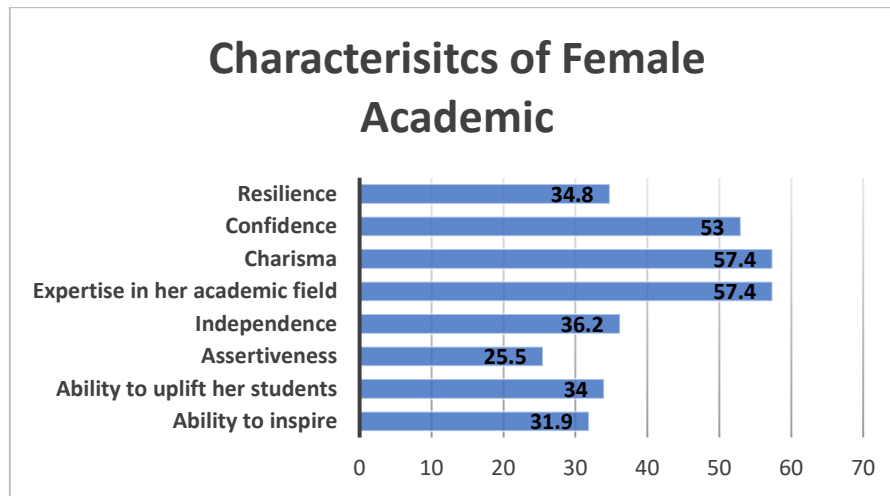


Figure 6: Characteristics of a Female Academic

6. Discussion Recommendations and Future Research

The results of study on academics discloses results on individual levels. For example, motivation behind working in academia indicate various factors, where motivation to conduct research is the highest level. With regard to academics' career ambition is still an area which requires improvement, where the majority has not yet achieved their career ambition. Satisfaction with work -life balance discloses good levels. However, family responsibility and social environment which assigns traditional roles to men and women are considered as barriers to achieving balance between work and family life. At a departmental level results signify that courses which addresses gender issues are at the very minimum levels. This brings a very interesting and predictable results that gender issues including the subject of gender equality and equity are not addressed adequately at the target institution. the results confirm little awareness exists on the subject of gender equality. Moreover, the results reveal minimal levels of gender research being performed in this scope at target university. At the institutional level, results disclose that the introduction of gender quota based on merit would be considered as a good policy to boost female representation at various domains in higher education. However, the results vary across gender, indicating higher level of support by female academics, to the introduction of gender quota within higher education sector. The examination of sexual harassment does not reveal significant concern for the target institution, although the discussion of this topic is sensitive. Alternative methodology would bring deeper insight on the topic, including focus groups or individual in-depth interviews. The responses on sexual harassment reveal significantly that the subject is underdeveloped and sensitive topic which requires research and awareness workshops in Syria and the Middle East in general.

The examination of female academic role model empowerment reflects positive attitudes towards female academics as role models, who demonstrated effective personality traits, skills, abilities and competencies. Moreover, the results show that female academics at the target institution have positive perception and feel empowered as women working in higher education sector.

The future direction of this research recommends building a conceptual model of factors affecting female academics role models in Higher Education sector in Syria. The model would consider factors at multi- levels including individual, group, organisational and socio- cultural levels. Furthermore, future research would also test the model after its theoretical and conceptual development. It would be comprehensive approach combining theory building and theory testing approaches. Also future research direction may include a comprehensive approach of private and public universities, expanding on the samples of the study. Furthermore, future research should focus of policy implication and advocacy. Critical gender research issues such as sexual harassment and gender policies in research, curriculum and governance and human resources practices are excellent areas for extensive future research.

7. Conclusion

This research provided a diagnoses analysis on factors which may influence female academics' experience and may impair their career advancement addressing challenges towards achieving gender equality in higher education. The findings disclose that motivation for performing research in the scope of gender, is a critical need and area of development. The topic of gender requires examination and development. The introduction of gender quota is considered as a good policy at the institutional level. Sexual harassment does not disclose significant findings, although it is a future area of investigation which requires a combination of quantitative and qualitative research approaches. The topic of female role model is a crucial area of investigation, and discloses positive perception and attitudes of academics towards female role models. This paper is the first step to further research in the scope of gender equality and equity and female empowerment in higher education in Syria.

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Filipino Hospitality Industry Gender Disparities: Hiring Practices, Salary Levels, and Promotional Opportunities

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Abstract: This research employs a qualitative approach, utilizing the snowball sampling technique to conduct in-depth interviews with women from various roles within the Filipino hospitality sector. The study employs narrative analysis to elucidate discriminatory practices in hiring, remuneration, and professional advancement opportunities. Findings reveal a pattern of gender disparities, with biased recruitment practices directing women into lower-paid service roles while men ascend to leadership positions. A significant pay gap persists, attributed to occupational segregation and undervaluation of female-dominated professions. The study identifies unconscious biases, lack of mentorship, and a corporate culture favoring stereotypically "male" leadership attributes as barriers to career progression. Recommendations include advocating for anti-discrimination legislation, transparent hiring protocols, and addressing pay differentials through audits and awareness initiatives. Employers are urged to implement unbiased recruitment and mentorship programs, while educational institutions and civil society organizations play roles in empowering women and advocating for policy reform. The study underscores the need for collective commitment to gender equality to transform the Filipino hospitality industry into a model of inclusivity and collaboration.

Keywords: Gender Disparity, Occupational Segregation, Glass Ceiling, Work-Life Balance, Philippine Hospitality Industry

1. Introduction

The Filipino hospitality industry, vital to the Philippine economy, grapples with persistent gender disparities despite its economic significance (Department of Tourism, 2019). Research by Alvero (2018) and Roces (2019) underscores the underrepresentation of women in management roles, attributed to factors such as implicit bias, network effects, and gendered expectations (Cudjoe & Dasgupta, 2007; Ely & Ibarra, 1999; Pe-Pua & Roces, 2015). Additionally, women face a substantial gender pay gap, with the World Bank (2018) reporting disparities of up to 30% within the hospitality sector (Pe-Pua & Roces, 2015). Alvero (2018) and Roces (2019) further note challenges in career advancement, citing factors like the glass ceiling phenomenon and work-life balance issues (Williams & Singh, 2003; Pe-Pua & Roces, 2015). Addressing these disparities is not only ethically imperative but also crucial for economic and social progress, as gender equality fosters innovation, productivity, and overall economic prosperity (World Bank, 2018; United Nations Women, 2023). The purpose of this study is to investigate gender dynamics within the Filipino hospitality industry across three key dimensions. It aims to analyze biases in hiring practices, examining recruitment processes and gender representation to uncover potential barriers for female candidates. This study seeks to understand gender-based remuneration disparities by examining wage gaps and factors contributing to them, such as occupational segregation. It prioritizes amplifying the voices of hospitality workers through qualitative interviews to gain insights into their lived experiences and identify patterns in career trajectories and work-life balance. By intertwining these strands, the research aims to provide a comprehensive understanding of gender disparities in the industry and advocate for positive change towards a more equitable and inclusive workplace environment.

1.1 Research Questions

1. How do hiring practices in the Filipino hospitality industry contribute to gender disparities?
2. What role do salary levels play in perpetuating gender inequalities?
3. How do promotional opportunities differ based on gender within the industry?

1.2 Theoretical Framework

The study utilized feminist economics as its primary theoretical framework. Feminist economics provides a comprehensive perspective for understanding the gender disparities prevalent in the Filipino hospitality

industry. This framework emphasizes the interplay between gender, economic structures, and institutional practices, shedding light on how power dynamics shape women's participation in the labor market and their access to resources and opportunities (Folbre, 2006).

Within feminist economics, concepts such as the gendered division of labor, occupational segregation, and the undervaluation of female-dominated professions offer valuable insights into the challenges faced by women in the hospitality sector. Feminist economists highlight the importance of recognizing and challenging discriminatory practices, advocating for policy interventions, and promoting gender-responsive organizational practices to address gender inequalities in the workplace (Barker & Kuiper, 2018).

Grounding this study within the theoretical framework of feminist economics, researchers are able to analyze the nuances of gender disparities in hiring practices, salary levels, and promotional opportunities within the Filipino hospitality industry. This approach enables a deeper understanding of the systemic factors contributing to inequality and provides a foundation for proposing strategies to promote gender equity and inclusion in the sector.

2. Literature Review

Gender disparities persist in the global workplace, hindering women's access to opportunities, fair compensation, and leadership roles across sectors despite advancements in gender equality. Women represent 51.7% of the global workforce compared to men's 62.4%, with occupational segregation further exacerbating inequalities (World Bank, 2022; World Economic Forum, 2022). The gender pay gap remains significant, with women earning 15% less than men for similar work globally (World Bank, 2022). Root causes include gender stereotypes, unconscious biases, and work-life balance challenges, leading to restricted career advancement and fair compensation for women. These disparities result in lower incomes, limited career prospects, and reduced productivity, impacting individuals, organizations, and society (World Bank, 2022; World Economic Forum, 2022). Addressing these issues requires challenging stereotypes, implementing gender-inclusive policies, and enforcing equal pay regulations.

Several studies delve into the specificities of gender bias within Filipino hospitality. A 2018 study by Alvero found that women are underrepresented in managerial and leadership positions, facing a "glass ceiling" effect that hinders their career advancement. This underrepresentation is often attributed to implicit biases held by employers, who may favour male candidates even when qualifications are equal (Cudjoe & Dasgupta, 2007). Additionally, the industry's reliance on personal networks for recruitment can disadvantage women, who may have smaller or less-developed professional networks than men (Ely & Ibarra, 1999). Beyond hiring, gender pay gaps also plague the industry. Studies reveal that women in the Philippines earn significantly less than their male counterparts, with a 2015 study by Pe-Pua and Roces finding a staggering 30% difference in the hospitality sector alone. This disparity can be attributed to factors like occupational segregation, where women are often concentrated in lower-paying jobs like housekeeping or waitressing, while men occupy higher-paying positions like management or chef (Alvero, 2018). Additionally, a lack of transparency in salary structures and promotion practices can make it difficult for women to challenge pay disparities (Roces, 2019). The challenges don't stop there. Women in Filipino hospitality also face difficulties when it comes to career advancement. Studies show that they are less likely than men to be promoted to management or leadership positions (Alvero, 2018; Roces, 2019). This can be due to a combination of factors, including work-life balance challenges, lack of mentorship and support, and the persistence of traditional gender roles that discourage women from pursuing leadership positions (Pe-Pua & Roces, 2015).

2.1 Revealing Power Dynamics Through Feminist Lenses

The application of feminist perspectives serves as a crucial analytical tool, illuminating the complex power dynamics within the Filipino hospitality industry. Through this lens, gender bias and patriarchal structures become evident contributors to women's disadvantaged position. Examining practices such as recruitment processes, wage gaps, and promotional opportunities reveals tangible manifestations of entrenched power imbalances (Acker, 2006; Collins, 2005). Unlike individual-centric approaches, feminist viewpoints advocate for a broader scrutiny of cultural, social, and economic structures underlying gender inequalities (Walby, 2009). This involves examining societal expectations, family dynamics, and discriminatory policies, uncovering disparities in opportunities within the industry. Ultimately, the feminist approach not only identifies but actively challenges prevailing norms and power structures hindering women's progress, aiming for a future marked by greater equity (Mohanty, 2003).

2.2 Deconstructing Gender Roles With Social Constructivism

Social constructivist theories, offering a complementary perspective, highlight the socially constructed nature of gender roles within the Filipino hospitality industry. This framework contends that gender roles are not intrinsic but evolve through social interactions, expectations, and power dynamics (Berger & Luckmann, 1966). Application of this lens unveils the construction of specific roles as "masculine" or "feminine" within the industry, leading to gendered assumptions and constraints (West & Zimmerman, 1987). Moreover, social constructivism urges an examination of language and everyday practices to reveal implicit biases and discriminatory mechanisms embedded in ostensibly neutral actions (Weedon, 2002). This micro-level focus elucidates how seemingly innocuous interactions perpetuate and reinforce gender inequalities.

2.3 Collaborative Power: Merging Perspectives for Impact

The convergence of feminist and social constructivist perspectives forms a potent framework for investigating gender disparities in the Filipino hospitality industry. This synthesis empowers the exploration of root causes, surpassing surface-level explanations to unveil the intricate mechanisms sustaining gender inequalities. Moreover, the integrated approach informs interventions and strategies conducive to promoting gender equality within the industry. Addressing both structural inequalities and individual biases, these interventions aim to foster a more just and inclusive workplace. Recognizing the role of agency and resistance within social constructivism underscores the potential for individuals and groups to actively shape their realities (Emirbay & Aksoy, 2011). Examining how women navigate and resist gendered expectations in the hospitality industry informs strategies for empowerment, equipping them to challenge and dismantle existing structures.

2.4 Gaps in Existing Literature

Existing literature on gender disparities in the Filipino hospitality industry reveals several gaps that warrant further exploration. Firstly, there's a need to delve into intersectionality and marginalized groups, considering the experiences of individuals with intersecting identities such as LGBTQIA+ individuals, women with disabilities, and those from diverse socioeconomic backgrounds. Secondly, while institutional policies are often studied, a deeper examination of micro-level power dynamics, including everyday interactions and subtle biases, is essential. Thirdly, there's a call for research to focus on women's agency and resistance strategies in navigating gendered expectations within the industry. Additionally, the impact of technological advancements on gendered inequalities and the effectiveness of interventions require investigation, alongside longitudinal studies to evaluate policy outcomes. Lastly, incorporating the perspectives of men and industry stakeholders can provide valuable insights into addressing systemic gender disparities effectively.

3. Methodology

3.1 Qualitative Research Approach

This study embraced a qualitative research approach to delve deeply into the intricate narrative of gender disparities within the Filipino hospitality industry. The adoption of qualitative methodologies was driven by several compelling reasons. Firstly, these methods allowed for rich and in-depth insights into the lived experiences of individuals, capturing the nuances of their thoughts, emotions, and interpretations of gender-related challenges within the industry. This depth facilitated a nuanced understanding often overlooked by quantitative approaches. Secondly, qualitative methods were effective in capturing the complexities inherent in gender disparities, providing a comprehensive analysis of the multifaceted nature of inequalities within the sector. Lastly, prioritizing individual narratives amplified the voices of marginalized groups, including LGBTQIA+ individuals, women with disabilities, and those from diverse socioeconomic backgrounds, shedding light on their specific challenges and successes within the industry. The qualitative approach offered a robust framework for exploring gender dynamics in the Filipino hospitality industry.

3.2 Narrative Analysis Research Design:

Narrative analysis, a qualitative research approach focused on exploring individuals' stories and experiences, was chosen for this study due to its ability to uncover deeper meanings and insights. By examining women's narratives within the Filipino hospitality industry, the study aimed to uncover how they interpreted, negotiated, and resisted gender disparities. This method also allowed for the examination of power dynamics, revealing subtle cues regarding patriarchal structures and implicit biases. Moreover, narratives were viewed as avenues

to trace instances of agency and resistance, shedding light on how women navigated gendered expectations and fostered empowerment. The application of narrative analysis involved conducting semi-structured interviews with women from diverse backgrounds within the industry and employing thematic and discourse analysis to identify recurring themes, patterns, and underlying power dynamics in their narratives.

3.3 Participants

Participants for this study were selected using a snowball sampling technique to ensure a diverse and comprehensive representation of women's experiences in the Filipino hospitality industry. The selection criteria encompassed several key factors. Firstly, participants had to identify as female employees currently engaged in various roles within the industry. Additionally, they were required to have a minimum of two years of experience in the field, enabling them to offer insightful perspectives on gender-related challenges and dynamics. Diversity was also a crucial consideration, with participants chosen from various backgrounds, including factors such as age, ethnicity, sexual orientation, disability status, and socioeconomic background. This approach aimed to capture the intersectional nature of gendered experiences within the industry. Finally, participants were selected based on their willingness to openly share their experiences and perspectives during in-depth interviews, ensuring rich and meaningful data collection.

3.3.1 Recruitment Process:

Table 1: A multi-pronged approach was employed to recruit participants:

Recruitment Method	Description	Advantages	Example
Snowball Sampling	Existing contacts in the industry refer potential participants.	Reaches diverse groups, builds trust	Restaurant manager refers colleagues from different departments.
Social Media Outreach	Posts shared on relevant platforms inviting eligible participants.	Wide reach, diverse demographics	Facebook group post targeting female hospitality workers.
Direct Contact	Hospitality establishments contacted to identify potential participants (with their consent).	Accesses specific establishments, diverse roles	Contacting hotels or restaurants to reach front-desk staff and chefs.

These combined methods (Balida, 2023) ensure a diverse and representative pool of participants, ultimately resulting in sixteen (16) women being interviewed for the study. The study included sixteen participants from various segments of the Filipino hospitality industry, offering a diverse demographic and professional spectrum. Participants ranged in age from 25 to 42, with both men and women represented across different roles within the industry. Their tenure in the field varied from 3 to 18 years, reflecting diverse career trajectories. Additionally, participants encompassed a range of diversity factors, including LGBTQIA+ identification, socioeconomic diversity, and disability status, providing a multifaceted perspective on gender disparities within the sector.

3.4 Data Collection

This study employed a comprehensive approach to data collection, prioritizing the firsthand experiences of women grappling with gender disparities in the Filipino hospitality sector. Central to this approach were qualitative, in-depth interviews conducted with sixteen women from diverse backgrounds within the industry. Through these interviews, participants shared personal narratives detailing their encounters with hiring practices, career progression, pay differentials, and other gender-related obstacles. By utilizing open-ended prompts and follow-up questions, the study unearthed rich narrative responses, delving beyond mere facts to capture the emotional weight, personal interpretations, and coping mechanisms employed by women in navigating these challenges. Diverse participant selection techniques, including purposive sampling and snowballing, ensured a varied representation of women across demographics, amplifying marginalized voices and providing a comprehensive understanding of gendered inequalities within the sector. Overall, this multi-faceted data collection approach facilitated a nuanced exploration of the realities of gender disparities in the Filipino hospitality industry.

3.5 Data Analysis

The analysis embraced the inherent complexity of narratives, employing a multifaceted approach that combined thematic analysis, discourse analysis, and narrative inquiry techniques. This allowed us to move beyond surface-level interpretations and uncover the deeper layers of meaning embedded within the stories.

Table 2: Narrative Analysis Techniques: Unpacking Layers of Meaning

Analysis Method	Focus	Key Insights
Thematic Analysis	Recurring patterns and concepts	-Identified common challenges faced by women: gender-based discrimination, unfair career progression, and hostile work environments. -Uncovered shared coping mechanisms: resilience, solidarity, and seeking support networks.
Discourse Analysis	Language usage and power dynamics	-Revealed subtle biases woven into everyday language and interview interactions. -Exposed power imbalances through analysis of questioning patterns and assumptions made about women's capabilities.
Narrative Inquiry	Individual story structures and emotional dimensions	-Examined how personal experiences shaped participants' agency and responses to challenges. -Highlighted the emotional impact of discrimination and the power of individual narratives to counter dominant narratives.

Combining these techniques can achieve a nuanced understanding of how gender plays out in the narratives, both as a source of hardship and as a catalyst for resilience and resistance.

The coding process employed an iterative approach, beginning with the identification of initial codes derived from the data and refined through constant comparison and collaboration among researchers. This iterative refinement ensured that the codes accurately captured the nuances of the narratives and encompassed the full spectrum of experiences. Thematic maps were subsequently developed to visually represent the relationships between key themes and sub-themes, elucidating their interconnectedness and contextualizing them within the broader social landscape where gender disparities unfold. Through stages such as initial coding, Memoing and reflexivity, constant comparison, thematic development, sub-theming, thematic mapping, validation and interpretation, and reporting, the study ensured a systematic and rigorous analysis of the data, culminating in robust findings and insightful interpretations that contribute to a deeper understanding of gender disparities within the Filipino hospitality industry.

The triangulation method was employed to ensure robustness and credibility in capturing gender disparities within the Filipino hospitality industry. Data source triangulation involved collecting narratives from in-depth interviews with participants, cross-referencing them with official industry statistics and reports, and integrating relevant academic literature on workplace gender inequalities. Methodological triangulation encompassed narrative analysis of interview data, document analysis of policy documents and company guidelines, and observation of workplace interactions. Member checking was also utilized by sharing thematic interpretations with participants and incorporating their feedback into the final analysis and reporting, ensuring accuracy and authenticity in representing their experiences. Through these triangulation methods, the study aimed to provide a comprehensive and nuanced understanding of gender dynamics and disparities within the hospitality industry, facilitating meaningful insights and actionable recommendations for stakeholders.

4. Findings

4.1 Overview of Participants

The participant cohort comprises 16 individuals from diverse segments of the Filipino hospitality industry, spanning various demographics and professional roles. Ranging in age from 25 to 42, participants hold positions in hotel management, culinary arts, waitstaff, front desk operations, and event coordination. Both genders are represented, with industry experience ranging from 3 to 18 years. The cohort also includes members of the LGBTQIA+ community, individuals with disabilities, and those from diverse socioeconomic backgrounds. This diverse profile enriches the forthcoming narrative analysis, promising a nuanced exploration of gender dynamics and disparities within the industry. The comprehensive representation aligns with the study's aim to investigate gender inequities across different dimensions in the Filipino hospitality sector.

4.2 Hiring Practices

This section delves into the lived experiences of the participants, where their narratives become stark, echoing indictments of the hospitality industry's recruitment practices. Through their stories, we witness the insidious presence of discrimination and bias, casting a long shadow over their pursuit of career opportunities.

4.2.1 Echoes of Discrimination in the Hiring Hall:

The narratives paint a disturbing picture of discriminatory practices woven into the very fabric of recruitment processes. Participants (not their real names) recounted: ["**They told me, 'This job suits a young man better.'**"] - Sarah, a seasoned waitress denied a management position, her qualifications overshadowed by gender stereotypes. ["**The job ad spoke of 'leadership grit,' felt like they were looking for a male Rambo.**"] - Maya, a talented chef hesitant to apply due to the overtly masculine language in the job description. ["**During the interview, they kept asking about my family plans, like being a mother would make me a bad manager.**"] - Emily, a qualified candidate facing invasive questions irrelevant to her skills. ["**It felt like the men all knew each other, had an inside track. I never stood a chance.**"] - Daniela, a young bartender struggling to break into a network dominated by male colleagues.

These experiences highlight the pervasive nature of discrimination, operating both overtly and subtly to create an uneven playing field for women in the industry.

4.2.2 The Glass Ceiling Weighs Heavy:

The consequences of these discriminatory practices extend far beyond initial discomfort. The participants narrated: "**I've hit the glass ceiling. No matter how hard I work, the promotions always go to the men.**" - Jessica, a veteran hotel manager stuck in her role despite exceeding expectations. "**My male colleague with less experience makes 20% more than me. It's just not fair.**" - Olivia, a frustrated chef facing a persistent pay gap for the same job. "**The constant microaggressions, the feeling of not being truly valued, it takes a toll. It's exhausting.**" - Chloe, a front desk officer coping with the emotional burden of a hostile work environment.

These findings showcase the profound impact of gender biases on women's opportunities and advancement within the hospitality industry. They point to a systemic need for reform, demanding greater transparency, accountability, and active measures to dismantle discriminatory practices and foster a truly equitable environment for all.

4.2.3 Gender Pay Gaps

Table 3: Asia

Region	Average Gender Pay Gap (%)	Year	Data Source
Asia (Average)	15.20%	2023	Korn Ferry Global Gender Pay Index
East Asia & Pacific	20.00%	2023	UN Women Asia and the Pacific
Southeast Asia	18.50%	2023	International Labour Organization
South Asia	33.00%	2023	UN Women South Asia
Central Asia	22.70%	2023	Asian Development Bank
West Asia	24.50%	2023	World Bank

Table 4: The Philippines across Sectors

Sector	Gender Pay Gap (%)	Year	Data Source
All Occupations	16.80%	2023	Philippine Statistics Authority (PSA)
Formal Sector	20.60%	2023	PSA
Informal Sector	11.50%	2023	PSA
Private Sector	18.20%	2023	PSA

Sector	Gender Pay Gap (%)	Year	Data Source
Public Sector	15.50%	2023	PSA
Agriculture	14.30%	2023	PSA
Industry & Services	19.20%	2023	PSA
Top Management Positions	25.90%	2023	Korn Ferry Global Gender Pay Index
Professional, Technical & Related Positions	22.10%	2023	Korn Ferry Global Gender Pay Index
Administrative & Support Service Occupations	18.50%	2023	Korn Ferry Global Gender Pay Index

Table 5: Tourism Sector in the Philippines

Factor	Explanation	Impact on Pay Gap
Industry Structure:	- Dominance of informal employment, particularly in rural areas. - Lower wages and fewer social protections in informal settings.	<i>Widens the gap for women often concentrated in informal tourism jobs.</i>
Occupational Segregation:	- Women overrepresented in lower-paying roles like housekeeping, waitressing, and receptionist. - Men occupy higher-paying positions like management, chef, and executive roles.	<i>Perpetuates a pay gap based on job type and perceived gender suitability.</i>
Education and Skills:	- Gender differences in access to and completion of higher education in tourism-related fields. - Men may possess more specialized skills or qualifications preferred for higher-paying jobs.	<i>Can contribute to the gap if not addressed through training and opportunities for women.</i>
Family Responsibilities:	- Women more likely to take on childcare and household duties, limiting career advancement opportunities. - Flexible work options and childcare support are often limited in tourism jobs.	<i>Disrupts career progression and reduces earning potential for women.</i>
Discrimination and Bias:	- Gender stereotypes and prejudices can influence hiring practices, promotions, and salary decisions. - Subconscious bias against women in leadership roles can hinder their progress.	<i>Creates an unfair pay gap based on gender rather than merit or qualifications.</i>

4.3 Promotion Barriers for Tourism Workers in the Philippine

Beneath the shimmering facade of the Philippines' booming tourism industry lies a hidden reality – a persistent gender gap when it comes to promotions. To understand this disparity, I spoke to several women (not their real names) whose voices crackle with both resilience and frustration. *"I've been with this resort for five years,"* confided Elena, a senior housekeeper, her eyes betraying a weariness beyond her years. *"I know every corner, every guest preference, yet the managerial position always seems to go to my younger male colleague."* Elena's story echoes sentiments shared by Maya, a seasoned tour guide. *"They say women aren't strong enough for the pressure of leadership,"* she scoffed, her voice laced with bitterness. *"But I handle demanding clients and unpredictable itineraries every day. Strength isn't about gender, it's about experience and skill."* The invisible barrier of bias stretches beyond leadership roles. Sarah, a receptionist with dreams of becoming a travel agent, spoke of subtle obstacles. *"Training opportunities often favor men,"* she explained, her voice hushed. *"It's like they assume we're not interested, or wouldn't be able to handle the technical aspects."* The burden of family responsibilities adds another layer to the challenge. *"Childcare options are scarce and expensive,"* sighed Isabel, a server juggling motherhood and a demanding restaurant job. *"Taking on promotions often means sacrificing time with my kids, a choice no man ever has to make."* Yet, amidst the frustration, flickers of defiance and hope. *"We're not asking for handouts,"* asserted Elena, her voice firm. *"We just want equal opportunities, a chance to prove ourselves."* Maya echoed this sentiment with a determined glint in her eyes. *"We're building networks, mentoring each other,"* she said. *"We're raising our voices, making sure our stories are heard."* The path towards gender equality in tourism promotions is undoubtedly arduous. But as Isabel concluded, *"We're not made of glass. We're made of resilience, of determination. And one day, we'll shatter that ceiling."*

These glimpses into the diverse experiences of women in the Philippine tourism industry paint a poignant picture of their struggle against promotion barriers. Their voices, raw and powerful, serve as a call to action – to dismantle the discriminatory structures and pave the way for a future where talent, not gender, dictates one's ascent in the tourism landscape. This narrative merely scratches the surface. Each participant holds a unique story, waiting to be heard and understood. By amplifying their voices, we can shed light on the complexities of gender inequity and work towards a more equitable and prosperous future for all, under the warm Philippine sun.

5. Discussion

5.1 Synthesis

The recurring themes identified across the exploration of hiring practices, salary levels, and promotional opportunities in the Filipino hospitality industry align with the theoretical framework of feminist economics, shedding light on the systemic gender inequalities embedded within the sector. One of the key findings is the segregation of women into lower-paying service roles, while men dominate higher-paying managerial and executive positions. This division perpetuates traditional gender norms and restricts women's access to better-paying jobs and leadership roles, echoing feminist economic perspectives on the gendered division of labor (Barker & Kuiper, 2018). Implicit biases against women in leadership roles and preconceived notions regarding their abilities emerge as significant barriers to career progression. These biases influence hiring decisions, promotions, and salary negotiations, contributing to the perpetuation of the gender pay gap, consistent with feminist economic analyses of discrimination in the labor market (Folbre, 2006). The lack of transparency in hiring and promotion processes further exacerbates gender-based discrimination. Unclear criteria for salary determination create an environment ripe for bias, making it challenging for women to challenge unfair practices effectively. This aligns with feminist economic perspectives on the importance of transparency and accountability in organizational practices (Sen, 2011). Women's disproportionate responsibility for childcare and household duties limits their flexibility, career commitment, and access to training and advancement opportunities, reflecting feminist economic analyses of the care economy and its impact on women's labor force participation (Folbre, 2006). Informal employment, prevalent in the tourism workforce, particularly in rural areas, exacerbates gender disparities by offering lower wages, fewer benefits, and limited legal protections, disproportionately affecting women. This underscores the need for feminist economic interventions to address the informalization of work and its impact on gender inequality (Barker & Kuiper, 2018). The heightened risks of sexual harassment and discrimination faced by women in the hospitality industry highlight the intersection of gender and power dynamics in shaping workplace environments. This resonates with feminist economic analyses of the gendered nature of workplace violence and its implications for women's economic participation (Sen, 2011). Limited access to training and development programs further impedes women's career advancement, perpetuating their economic vulnerability. Addressing these barriers requires feminist economic approaches that prioritize investment in women's skills development and empowerment (Folbre, 2006). This discussion aligns with the theoretical framework of feminist economics, emphasizing the systemic nature of gender inequalities in the Filipino hospitality industry and underscoring the need for comprehensive interventions to promote gender equity and empowerment within the sector.

5.2 Implications for Gender Equality: Recommendations and Strategies

The study provides a comprehensive set of recommendations and strategies aimed at various stakeholders to promote gender equality within the Filipino tourism sector. For government entities, the study suggests enacting and enforcing anti-discrimination legislation tailored to the industry, alongside promoting policies that incentivize gender equality among employers. Investing in accessible childcare facilities and implementing mandatory awareness training to combat unconscious bias are also proposed. Employers are urged to conduct gender pay audits, review hiring practices, offer flexible work arrangements, invest in skills development programs, and create zero-tolerance policies for sexual harassment and discrimination. Educational institutions are encouraged to offer more scholarship opportunities, integrate gender equality perspectives into curricula, and provide career guidance programs. Civil society organizations are called upon to advocate for policy changes, conduct research on gender disparities, and provide support and training to women in the tourism sector. Additionally, workplaces are advised to establish mentorship and networking programs, offer leadership development initiatives, implement work-life balance initiatives, set gender parity goals, and foster an inclusive work culture. These recommendations collectively aim to address systemic barriers and promote a more equitable and inclusive environment for women in the Filipino hospitality industry.

5.3 Limitations of the Study

The study acknowledges potential biases in participant selection, including sampling methods, self-reported data, and power dynamics, which may influence the findings' comprehensiveness and accuracy. Concerns regarding the generalizability of findings arise from sample size limitations, context specificity, and focus on specific sub-sectors within the tourism industry. Additional considerations include the study's limited scope and methodological constraints. To enhance the study's robustness, recommendations include employing diverse

sampling methods, using mixed methods, conducting research across different regions or sub-sectors, and transparently discussing limitations to provide context for the findings. The study's findings underscore the intricate nature of gender disparities within the Philippine tourism sector, necessitating a multifaceted approach for resolution. It emphasizes the importance of policy changes, employer initiatives, awareness campaigns, and support systems to foster a more equitable environment for all workers. While serving as a foundation for future inquiries, the study suggests potential research directions. These include examining the efficacy of existing policies, exploring the impact of technological advancements on women's careers, and investigating the role of advocacy groups in combating gender-based discrimination. Such endeavors aim to deepen understanding and drive progress towards gender equality in the Philippine tourism industry.

6. Conclusion

This study illuminates pervasive gender disparities within the Filipino hospitality industry, revealing patterns of occupational segregation, unequal pay, limited advancement opportunities, and instances of sexual harassment and discrimination. It contributes to theoretical understanding by dissecting the complex interplay of sociocultural factors, industry structures, and individual experiences perpetuating gender inequality. Practically, it informs evidence-based interventions such as policy changes, employer initiatives, and awareness campaigns tailored to the industry's specific needs. Closing the gender gap necessitates collective action, including legislative reforms, equitable workplace practices, educational initiatives, and advocacy efforts by various stakeholders. Ultimately, fostering a just and equitable industry requires a commitment to challenging biases, promoting inclusivity, and empowering women to thrive in all facets of the hospitality sector.

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Gaming Equity: Women, Videogame Companies, and Public Discourse

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Abstract: It is by now well documented and widely acknowledged that the videogame industry has since its inception been a bastion of hegemonic masculinity. Only more recently, however, with events like Gamergate, #metoo, and the public accusations of workplace toxicity and sexism brought against prominent AAA giants like Riot and Activision Blizzard King, have game companies initiated policies and processes for change—or at least what looks like change, based on company websites and interviews with female employees. Does this mean women are being heard, at last? These are turbulent times for the industry, with legal actions, policy shifts, personal callings-out and billion-dollar corporate mergers and restructurings. What has changed and what is changing for women in games? How, and by whom, is that change being made? This paper begins with a closer look at what women have said since these events, about their experiences, expectations and frustrations working in the industry. Has the public scrutiny turned upon the games industry, post-gamergate and beyond influenced what women have to say about their conditions and experiences working in games? Are they better supported in taking the risks and shouldering the costs of speaking up? What workplace changes in policy or practice may have resulted from women giving public voice to their experiences? Building upon an earlier study of public speech by women about their experiences in the videogames industry (de Castell & Skardzius, 2019), this study both updates and extends its database, and deepens its analysis, by looking explicitly at a speech event's context of elicitation: who elicits the "event" of public speech, on what topics, with what purpose? Through that dialogical lens we can make more visible and explicit how minority self-representation and marginalized identities and voices are deployed to bolster business as usual, even as they are still expected to lead the charges and fight the battles for a just and inclusive working life in games.

Keywords: Women, Video Games Industry, Equity, Legal Action, Riot Games, Activision Blizzard King

1. Background

Over the past decade, several major events have shaken the videogame world, as well as exposing it to wider public and political scrutiny. In 2014, Gamergate, an internet-based movement targeting women¹ in games whether as makers, players, researchers or journalists, exploded in vitriolic attacks against "feminists" in general, and against several moderately prominent individuals in particular. During Gamergate (Mortensen, 2018), many women connected to the games industry, writing about games, or doing gender-focused research in the academy, were harassed and threatened online and off. Some had to conceal or change their address to protect themselves and their families, others to request police protection, others to simply cancel their own events. An aggressive anti-woman campaign demonstrated how deeply invested, and how widespread, was resistance to changing the hegemonic gender order in game culture no less than in the games industry.

"Boundary policing" in male-dominated industries (Jenson & de Castell, 2016) is of course nothing new and long pre-dates Gamergate. The work of classicist Mary Beard has established that gender-based boundary-policing has been around for centuries. Her argument also rings true in the context of the games industry when she writes, "If you venture into traditional male territory, the abuse comes anyway. It's not what you say that prompts it—it's the fact that you are saying it" (Beard 2014, p.11).

Zoe Quinn's echoes Beard's point: "GG [Gamergate] was a symptom of the larger systemic bigotry that has always existed, an extension of DV [domestic violence]" (2021, Jan 6). Who gets to find and make a home in games, whether as players or builders or anywhere in between is closely bound up with what has happened to public speech rights. Have women had a stronger public voice since Gamergate, or have they been further

¹ "Women" is used throughout this paper in its trans-inclusive sense.

silenced by the echo chamber of abuse it exposed and amplified? Above it all, what has been the game industry's response?

When the #MeToo movement started in the movie industry in October 2017, the initial reaction in the games sector was not especially noticeable. Since that time, however, events signalling a crisis in the videogame world have become increasingly frequent. For example, in August 2018, *Kotaku's* reporter Cecilia D'Anastasio published an investigation exposing the culture of sexism at Riot Games (D'Anastasio, 2018). Three months later, two women, one current and one former employee of Riot Games, filed a class action lawsuit against the company, "accusing it of endemic gender-based discrimination and fostering a 'men-first' environment" (D'Anastasio, 2018b). Following the *Riot* case, in August 2019, a series of sexual assault allegations were made on Twitter against high-ranking men in the industry. The Twitter movement was started with an artist and game designer Nathalie Lawhead's blog post "Calling out my rapist". Commended for its bravery, this post encouraged more women in the industry to speak out, and to publicly support each other's accusations. Some women in relative positions of power, such as [Meghna Jayanth](#), a video game writer and game designer, spoke on behalf of others, who, unsurprisingly, wanted to keep their identities private.

One year later, in summer 2020, a groundswell of reports of sexual misconduct shook the video game industry. Jessica Richey, a streamer based in NYC, [has collected and archived 418 testimonies](#), 13 anonymous and others public. Many of the reports that surfaced in summer 2020 were directed at one particular gaming company—Ubisoft. In addition to Twitter, many Ubisoft employees anonymously reported to *Gamasutra* ongoing issues of toxic work culture, abuse, sexual misconduct, systematic harassment, lack of support from HR, and that abusers remained immune, while those trying to speak up were silenced (Kerr, 2020b). Have women been more encouraged and better enabled by cultural movements in longer-established creative industries to venture into the public domain and share their experiences and voice their concerns about working in the videogame industry? And if so, what change has been the result?

2. How do we Know what we Know? (What we did)

To learn more about the impacts of these events on women's public-domain communications about their conditions and experiences working in the industry, we began by extending and updating a dataset we'd created for an earlier study (de Castell & Skardzius, 2019) of 189 women working in the games industry in Canada and the USA. As in our previous study, we compiled public domain communications by women concerning their experiences working in the games industry from corporate employee profiles, published books, interviews, panels, presentations, social media, news, and podcasts available on the internet, and included women working in diverse roles in the games industry, across the different areas of the industry - the AAA, indie, casual, mobile educational, etc., and with various lengths of experience. We wanted to see if women were speaking more often and/or differently about working in games after these exposing and supportive events than they had been during and following the gender-focused campaign of hostility and aggression that was Gamergate.

To try and find out, we began by adding interviewees from *Women in Gaming: 100 Professionals of Play* (Marie, 2018), which included interviews with one hundred women selected to represent a "diverse array of life experiences, skills, and opinions" (Marie, 2018, p. 6). Focusing only on women living and/or working in North America, and accounting for the women who had already been included in the first dataset, we were able to draw 55 new names from Meagan Marie's book. We next added names sourcing IGDA [Women in Games Special Interest Group profiles](#), [Women of Ubisoft Profiles](#), [Dames Making Games](#), and [Pixelles](#) websites and Twitter pages. We expanded the search to include Twitter (since rebranded as X) because what got said there was less 'curated' than interviews conducted and published in other media, and being used not just to express individual perspectives, but as well to connect with and support others in shared communities of interest. As Anna Megill explained when asked why she chose to stay on Twitter despite the harassment she was getting there: "my answer? To be seen. It matters that I'm still here" (Megill, 2019, July 26). And Twitter was used to learn about other women in the industry. For instance, women in tech were using Twitter to consolidate lists of "inspirational women in games". The [2021 list](#) received 306 comments, each including multiple names of inspirational women, 1.1K likes and 300 shares. Whether used to encourage and support one another, to be visible, or to build a collective sense of agency, Twitter was an important public speech medium for many women in games.

By these means we added 108 women working in games to the database already compiled for the first paper, which brought us to 297 women in games. We then searched LinkedIn profiles to expand our information about these women's educational background and career paths.

To see what each had written or said publicly since Gamergate, and to look for indications of responses to the #MeToo effects on the gaming industry, we ran 2 advanced Google searches, one from 2014-01-01 to 2017-12-31, and the second from 2018-01-01 to 2021-12-31 for each of the 297 women from our combined datasets using queries name AND 'women' OR 'video games' OR 'gender' OR 'diversity'. For women with active Twitter accounts, we also ran advanced Twitter searches using the queries: 'women' OR 'video games' OR 'gender' OR 'diversity', for the same 2 periods, 2014-01-01 to 2018-12-31, and 2018-01-01 to 2021-12-31.

We retrieved and listened to podcasts and presentations, as well as transcribing texts from interviews, and then we copy-pasted and transcribed 'answers' to the following questions: How did they start in the industry? What drew them to working in games? Did they have to leave a job? Why? Where did they go next? Do they comment on diversity in the industry? How do they speak about gender/race/sexuality? Do they share their own positive or negative experiences? Do they talk about working conditions? What do they say about their own work?

Each of these instances of 'public speech' (public-domain communication) for each woman was then contextualized, by identifying the conditions of its elicitation. Speech is responsive, and dialogical, (even if the interlocuter is a machine) so we began by distinguishing explicitly solicited from unsolicited public communication. We noted who and what that public speech event was a response to. We noted the date of public appearance, and sorted all public speech events into one of two periods, the first, "Gamergate" (GG) including postings from 2014 through into 2017, and the second, #MeToo aftermath (#MT), from 2018 to 2021, two comparable time periods.

When analysing public speech events by women in games, we identified two main categories of context:

1. Solicited speech
 - a) by employer or on behalf of employer
 - b) by critical media
2. Unsolicited speech
 - a) speaking unasked, expressing own views
 - b) speaking independently but choosing to respond as an employee

As is shown in table 1, we found an increase in women's public communications matching our search criteria between the two periods we focused on: 173 from 2014-2017 (gamergate era) and 268 from 2018-present (#MeToo era). Of these, 125 of the 173 Gamergate speeches and 208 of the 268 #MeToo were coded as either critical of their games industry work experiences (-), or approving (+). The distribution in both periods was very close, with almost identical negative vs positive statements in the GG period, and slightly more positive statements in the #MT period (GG= 62-/63+; #MT=100-/108+).

Table 1: Public Speech

	#MeToo Period Solicited Speaking		#MeToo Period Unsolicited Speaking		Gamergate Period Solicited Speaking		Gamergate Period Unsolicited Speaking	
	Solicited by Employer (or on their behalf)	Solicited by the Media	Speaking Alone (unasked)	Speaking personally but as an employee	Solicited by Employer (or on their behalf)	Solicited by the Media	Speaking Alone (unasked)	Speaking personally but as an employee
Any NEGATIVE Experiences at work	13	45	40	2	8	19	35	0
Any POSITIVE Experiences at work	34	41	29	4	9	21	30	3

Where things get rather interesting is when these overall data are disaggregated into conditions of elicitation, where we can see in Table 1 that while solicitations from employers almost tripled from 17 to 47, solicitations from the media also more than doubled from Gamergate levels during the #MeToo period, from 40 to 87. Overall, speech events elicited in the #MeToo period compared with the Gamergate era by BOTH employers and by other media outlets grew by 133%. Across these periods there were nearly as many ‘positive’ as ‘negative’ statements elicited by non-employer media outlets (45-/41+ for #MeToo, and 19-/21+ for GG), which is also true of the employer-solicited speeches after Gamergate, at 8- to 9+. This is in telling contrast to the speeches solicited by employers after #MeToo, where the ‘positive’ statements far exceeded the ‘negative’ ones, 13- to 34+. What else is interesting here is that, very differently from solicited speaking, the number of unsolicited public communications by women working in games rose only very slightly in the second time period (66-70), although the proportion of ‘negative’ to ‘positive’ comments moved substantially higher, from 35-/30+ in Gamergate to 40-/29+ in #MeToo. It is important to note that while the data in Table 2 represents all of the 441 speech events we looked at from both periods, the data in Table 1 represents the subset of 333 that evinced either a positive or negative comment on the speaker’s working conditions within the games industry or about the games industry in general.

Table 2: Solicited vs. Unsolicited Speech

	#MeToo Period Solicited Speaking		#MeToo Period Unsolicited Speaking		Gamergate Period Solicited Speaking		Gamergate Period Unsolicited Speaking	
	Solicited by Employer (or on their behalf)	Solicited by the Media	Speaking Alone (unasked)	Speaking personally but as an employee	Solicited by Employer (or on their behalf)	Solicited by the Media	Speaking Alone (unasked)	Speaking personally but as an employee
	73	93	93	9	32	53	84	4
Years Working Averages	17.8	19.6	18.8	12.3	18.2	22.3	20.9	0.0
Years working in Games Averages	14.4	18.1	16.5	10.2	15.2	18.4	18.9	0.0

When we cross-reference speakers with age, years of overall work experience and years of experience in the games industry, we see the women whose voices were solicited by their employers (e.g. “the Women of Ubisoft”) generally had fewer years of work experience, fewer years in the games industry, and were younger in age than the women invited to speak by non-employer media outlets. For #MeToo this worked out at an average of 14.4 years working in the industry for employer-solicited women vs. 18.1 years for those solicited by the media. During the Gamergate period the average industry experience was 15.2 years for employer solicitations vs. 18.4 years for the media, as can be seen in Table 2. Employers seemed to be selecting as their spokespersons younger women with less experience working in games. Not surprisingly, non-employer outlets featured the voices of women who were both older and had more work experience on the basis of which to speak. It would be difficult to avoid the conclusion that the games industry has elected as its spokespersons younger women with less games work experience, and made spaces for women’s voices that have less to do with hearing about their work experience and more to do with appropriating women’s voices to enhance a company’s public image.

We witnessed a marked increase in public statements by women in games in blogs, interviews, books, and social media after Gamergate. Some of this increase in public speech by women about their work, however, far from being a manifestation of increased equity, voice and empowerment, appears appropriated and mobilized by game studios to create a positive public image of the organization’s intentions and achievements: a kind of ‘protective colouration’ whose function is to create the illusion of respectful and equitable diversity and inclusiveness, while keeping substantive positive changes to a minimum.

3. What has the Industry Been Doing? The Cases of Riot Games and Activision Blizzard King

What influence does women's always risky public speech appear to have in the places they work? To track industry response to this series of public counter-hegemonic, gender-based challenges, we looked at three game companies' websites between 2013 (before Gamergate) and October 2021 (this paper's time of writing). We focused on Riot and Activision Blizzard King (ABK) because of the prominent and public scrutiny they received during this time.

3.1 Industry Case #1: Riot Games, Problems Brought to Light

Riot Games is a major player in the gaming world, with over 3000 employees across 20 offices and earning over \$1 billion year after year from popular games like *League of Legends* and *Valorant*. As mentioned earlier, in 2018, Cecilia D'Anastasio published a scathing piece about a culture of misogyny and gender-based harassment at Riot Games. She details a workplace where women were routinely rejected for promotions to leadership teams, questioned about their families and love lives, subjected to commentary about their appearance, and sexually harassed at work. Former employees spoke about receiving unsolicited images of male genitalia from colleagues or supervisors. One woman reported hearing from a co-worker that her name was on a list that senior management was passing around noting women working at the company they would like to have sex with.

3.2 Regulatory Response

In October 2018, California's Department of Fair Employment & Housing (DFEH) advised Riot Games of an investigation of sexual harassment, discrimination, and retaliation against women in its workplace. The investigation would eventually become a "state government gender discrimination and sexual harassment lawsuit against Riot Games" in 2019 (DFEH n.d.). In early 2019, Riot Games made public that it had reached a \$10 million private settlement with approximately 100 women who had all been required to sign non-disclosure agreements. Both DFEH and California's Division of Labor Standards Enforcement objected to that settlement, arguing that it was insufficient and would not deter the company from continually violating pay equity laws. DFEH sought those agreements as part of their investigation, requiring that Riot Games produce them by January 2021. Riot Games dragged out that process until April 2021. Upon receipt of the settlement and separation agreements, DFEH found that they contained language meant to dissuade or intimidate employees from "voluntarily and candidly speak[ing] with the government about sexual harassment and other violations" and suggested that employees could not "obtain relief in the government's actions" (DFEH, Aug 2021). As a result, The Court ordered Riot Games to issue a correction, but again the company delayed in doing so for another two months.

Ultimately, the case was settled for \$100 million in December 2021. The company also agreed to implement "systemic reforms to resolve allegations of workplace sex discrimination and harassment" (DFEH, Dec 2021). The settlement was made to address legal violations against approximately 1,065 women employees and 1,300 women contract workers. Beginning January 2021, Riot Games has agreed to pay \$80 million in compensation to workers (another \$20 million in legal fees) and another \$18 million over three years for diversity, equity, and inclusion programs. Riot Games is also required to provide 40 full-time positions in engineer, quality assurance, or art-design roles to members who had previously worked as temporary contractors. Finally, the company was required to hire an independent third-party approved by DFEH to "conduct a gender-equity analysis of employee pay, job assignments, and promotions" and to "audit compliance with workplace protections, including a review of complaint investigations and outcomes" each year for three years (DFEH, Dec 2021).

3.3 Company Response

Given the amount of public attention Riot Games received related to gender-based discrimination and harassment in 2018/2019, it is not surprising that some changes were made to their public-facing website. One small, but noticeable change is an increase in the number of women in leadership roles. In December 2018, Riot Games created a "Chief People Officer" (CPO) position as part of their senior leadership team. They hired Emily Winkle, who, at the time, became only the 3rd woman holding a senior leadership role at the company (out of over 20). The role of the CPO is to oversee "talent acquisition, onboarding...compensation, perks and benefits, performance management, learning and development, cultural programs, and employee relations" ([Emily Winkle | Riot Games](#)).

In the end, Riot was required to pay out \$100 million to resolve those pay inequities. The “individual issues” they *resolved* without state oversight were found to be wholly inadequate. Reading through the various diversity and inclusion-related pages on the Riot Games website would lead one to believe that the company was making diversity and inclusion changes of their own volition. In reality, those changes that have been made happened when there was increased public pressure in the form of media scrutiny, and government intervention. Moreover, it is evident that while putting a positive public face on the scandal by highlighting even the tiniest changes in a positive direction (e.g. hiring more women), the company was at the same time, doing what it could to push back against challenges to their hostile, discriminatory, and sometimes illegal workplace practices.

3.4 Case #2: Activision Blizzard King, Problems Brought to Light

The most recent of the three companies highlighted in this paper to face public scrutiny over allegations of sexual misconduct is Activision Blizzard (AB). Activision was founded in 1979, merged with Blizzard in 2008, and Activision Blizzard acquired King to become Activision Blizzard King (ABK) in 2015. In February 2022 (after the allegations were made), the company announced that it was being purchased by Microsoft, though the purchase had not yet been made official at the time of writing. The company employs about 10,000 people and owns enormously successful titles such as *Call of Duty*, *World of Warcraft*, and *Candy Crush*.

In November 2021, reporters from *The Wall Street Journal* published a piece detailing a frat-boy culture, sexual harassment, and alleged rapes that happened in the workplace. The allegations include over 500 reports from current and former employees of harassment and discrimination since July 2021. The article also outlines a culture of dismissal and a refusal to take any steps to correct behaviours or hold offenders accountable (Grind, Fritz & Needleman, 2021). One particularly egregious example is that of a former employee who was allegedly raped by her supervisor, Javier Panameno, once in 2016 and again in 2017. The employee reported the rape to HR at the time in both cases, and to the police in 2017, but in all cases, nothing was done. The accuser emailed Activision CEO Bobby Kotick directly about the incidents in 2018, threatening legal action. She ended up settling out-of-court. Two months following the settlement, her former supervisor and alleged rapist was fired (Grind, Fritz & Needleman, 2021).

3.4.1 Regulatory Response

Over the past few years, ABK has faced multiple state and regulatory interventions. In 2018, California’s Equal Employment Opportunity Commission opened an investigation into ABK. The complaint that initiated the investigations stated that employees endured “sexual harassment that was severe or pervasive to alter the conditions of employment” (Grind, Fritz & Needleman, 2021). ABK paid \$18 million to settle the case in September 2021. The settlement also requires that eligible claimants can request to have harmful documents removed from their personnel files and that unfair termination be reclassified as resignation, as well as many other provisions to prevent workplace harassment, discrimination, and retaliation (see: <https://www.eeoc.gov/newsroom/court-approves-eeocs-18-million-settlement-activision-blizzard>).

In July 2021, the California Department of Fair Employment and Housing (DFEH) filed a lawsuit against ABK. The suit alleges the company has fostered a “pervasive ‘frat boy’ workplace culture”, stating that “Male employees proudly come into work hungover, play video games for long periods of time during work while delegating their responsibilities to female employees, engage in banter about their sexual encounters, talk openly about female bodies, and joke about rape”. It specifically names former *World of Warcraft* developer Alex Afrasiabi as a serial abuser and makes reference to his 2013 BlizzCon hotel room commonly known by its nickname the “Cosby Suit”, referencing convicted rapist Bill Cosby (Gach, 2021). The suit details systemic gender-based pay, compensation, and opportunity inequity across the company. It outlines how the company has consistently ignored complaints of harassment and discrimination against female employees, as well as discouraging employees from making complaints. The suit provides an example by telling the story of a former employee who died by suicide after a nude photo of her was widely distributed at a work event. On August 25th 2021, the DFEH updated the lawsuit to include temporary workers. They also accused the company of interfering with their investigation, by shredding documents requested by the DFEH, by falsely informing employees they must speak with ABK before contacting the DFEH, and through its hiring of law firm WilmerHale (Farokhmanesh & Totilo, 2021).

The DFEH lawsuit led to United States federal regulators launching their own investigation into ABK. That investigation resulted in a February 2023 fine of \$35 million (Fung, 2023) for failure to collect and respond to employee workplace misconduct. While the DFEH suit is not yet settled, Microsoft acquired ABK in October 2023 for a record setting \$68.7 billion USD (Welsh, 2023).

3.4.2 Company Response

On July 22nd, 2021, Frances Townsend, Executive Sponsor of the ABK Employee Women's Network and the Chief Compliance Officer, sent an internal email to ABK employees in response to the DFEH lawsuit. In the email she broadly dismissed the complaints, writing "A recently filed lawsuit presented a distorted and untrue picture of our company, including factually incorrect, old, and out of context stories" and later calls the DFEH lawsuit "meritless and irresponsible" (<https://twitter.com/jasonschreier/status/1418512291218264065>). Throughout the email, Townsend repeatedly doubles down on the claim that ABK values equity and fairness. That same day, Blizzard President J. Allen Brack emailed all staff addressing the DFEH lawsuit with broad generalizations that harassment and discrimination are unacceptable and that everyone should feel safe at work. He wrote, "I disdain 'bro culture,' and have spent my career fighting against it" (<https://twitter.com/jasonschreier/status/1418512291218264065>).

In response to the lawsuit and Townsend's internal email, more than 2600 current and former ABK employees signed an open letter to leadership claiming their "values as employees are not accurately reflected in the words and actions of [their] leadership" ([Activision Blizzard employees call leadership response to harassment suit 'abhorrent and insulting' - Polygon](#)). Townsend held a Women's Network listening session on July 23rd, 2021. During the call with 500 participants, Townsend defended her email. Later that day, Townsend stepped down from the Women's Network (Liao, 2021). That same week, in response to the outpouring of allegations and stories of harm endured while working at ABK, several former Blizzard Executives posted apologies on social media for failing their former employees.

Over the next more than a year, there were a series of moves made internally and externally by AB, too many to document here, that resulted in the April 2022, hiring of Kristen Hines as the new Chief Diversity, Equity, and Inclusion Officer. In an official statement announcing her new role, she committed to increasing the percentage of women and non-binary employees at ABK to 50% over the next five years, but made no mention of any other form of diversity ([Activision Blizzard Appoints Kristen Hines as Chief Diversity, Equity, and Inclusion Officer](#)).

4. Very Little Changes: By way of a Conclusion

In general, each of these companies have responded to grievous allegations of widespread harassment and harm in the workplaces they are responsible for with public relations-inspired public apologies, commitments to make donations to social justice focused organizations, and promises to hire more women and people from underrepresented groups. Apologies and donations are well and good, but this last response – to hire more women – is problematic and could easily do more harm than good. The notion that the dearth of women in games (and tech more broadly) has been because of a 'leaky pipeline', in other words, a lack of recruitment efforts and support for women in the industry, has long been understood to be an inadequate assessment of the problem. While there are barriers for women at all stages of the recruitment process, what this moment really highlights is how unwelcoming, hostile, and outright harmful the games industry can be for women *once they get there*. If games companies do not resolve rampant sexism and hateful behaviour in their workplaces, simply adding more women to the mix subjects more women to potential harm and gives them plenty of reasons to leave.

There is little in these cases to suggest, however, that companies are invested in responding meaningfully and substantively to or resolving the issues women have been speaking about. Their objective seems simply to make the *publicity* of the problem go away so they can go back to selling games without having to address deeply structured problems of workplace inequity and carry on as they always have. This is evidenced in the ways these companies responded publicly to accusations of inequity or harassment. All acknowledge there is a problem, in some small way, all indicate that they have resolved said problem, and then reinforce the notion that it was never really that much of a problem to begin with. Arguably, the most blatant example of this is how Riot responded to accusations of gender-based pay inequity discussed earlier.

More meaningful consequences for inaction on the part of these companies have thus far occurred only when the state has stepped in to investigate and hold management to account for meeting the minimum standard of satisfying employment laws. In the cases of Riot and ABK, accountability came in the form of \$100 million or more in fines, court imposed hiring quotas, and a state-approved third party to assess human resources and employment practices and processes over a three-year period. Without the public speech of so many women to focus the attention of the media and the public, however, it is unlikely the state would have pursued any such action against these companies. It is also noteworthy that both Riot and ABK are based in California, known to have stronger legislative protections for workers than many (indeed most) jurisdictions.

Workplace inequity, whether that workplace is public or private, is a public concern. Governments have both the authority and the responsibility to enforce fair and decent workplace conditions. Failing to do so renders public speech pointless—and has much the same effect as prohibiting it. As the public sphere is eroded, with its crushingly mis-named ‘social’ media becoming ever more explicitly the private property of the wealthiest among us, political incentive is required to move regulators to use their power and exercise their responsibility. That is why speaking in public is so very important, for all the risks and harms it brings. What has been accomplished by women and allies giving public voice to their experiences via such public events as gamergate and #meto, catalysed critical responses from gamers both ‘lay’ and professional, and from sponsors of professional gaming events. Withdrawal of sponsorships, contraction of a fan base, and all-around bad press has enabled the identification and indictment of games companies for actions too long overlooked, forgiven, and even rewarded, and there is some reason for optimism that as game companies begin to publicly criticize their erstwhile confreres, there may be some wider impact even without recourse to the kinds of legal actions described here. What this paper hopefully can demonstrate is that “women in games” is not any kind of special interests issue, it’s a public domain problem, and while “speaking in public” is surely a fraught and dangerous tactic for women and marginalized others, and one which is all too easily appropriated and subverted, when those voices *can* make themselves heard over industry’s “blah blah blah” mantras of good intentions, heard by both the gaming and the general public, and *listened to* by state regulators, things can change.² Placing the responsibility for that change on the shoulders of women, however, simply will not work, and will continue to cost them dearly for the audacity to speak in public about the harms done to them in their workplace families and communities. Harms *can* be reduced, toxicity diminished, abusers removed, and opportunities, resources and rewards more equitably distributed across the workforce—but only with a groundswell of public censure will state authorities charged with responsibility for enforcing inclusive and equitable workplace regulations acknowledge and act on it.

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Up-Cycling Barbie: “Bad Feminism” for Mixed-Up Times

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Abstract This paper explores both the critical and the contradictory ways ‘gender’ is enacted in what has become a blockbuster at once wildly popular, and as well a site of controversy and censorship. Examining the reporting on and reviews of the film *Barbie*, providing some of the actual history of its design, as against its narrative representation in the film, looking in particular at its ironic remediation of gendered games and play, the paper also identifies some of the cinematic techniques through which the movie reinvents Barbie as a filmic feminist, through a deconstructive and reconstructive upcycling of the iconic material Barbie *en plastique*. The director’s embrace of an explicitly feminist narrative re-frames a 60-year-old doll and upcycles Barbie for a new generation, reaching an unprecedented global audience with its diverse, inclusive casting, its satirizing of patriarchy and a passionately feminist speechifying moment that couldn’t happen nowadays across an increasingly litigation-sensitive academy, yet has gained astonishing traction in popular media, and enthusiastic re-citation in TikTok. Those commitments, however, sit uncomfortably with the Mattel Toy company’s embrace of a new market for a product at risk of obsolescence from a generation of mothers raised on one or another ‘wave’ of feminist thought, and the considerably different versions of feminism that the film avows, and those it enacts.

Keywords: Barbie, Feminisms, Gender, Media

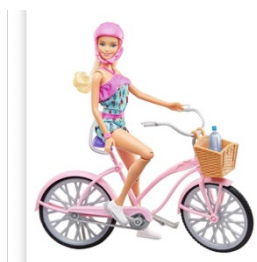


Figure 1

All images are screenshots of promotional material

/ˈəpˌsaɪk(ə)l/

verb

gerund or present participle: **upcycling**

reuse ([discarded](#) objects or material) in such a way as to create a product of higher quality or value than the original. ([Oxford Languages](#))

1. Introduction

*How many of us harbor memories of dismembering our dolls, hacking off their hair, positioning them in compromising postures? What does it mean that so many of us have memories like this?*¹

In 1999, a paper in Jenkins’ and Cassels’ edited collection *From Barbie to Mortal Kombat*, began with those very same questions intended to interrogate the gender stereotypes that deeply inflected playthings designed for girls, paradigmatically, Barbie. When *The Barbie Movie*² re-introduced an old and nearly obsolete character, and

¹ Re-Tooling Play: Dystopia, Dysphoria and Difference, Suzanne de Castell and Mary Bryson, p. 232, in *“From Barbie to Mortal Combat”*, Justine Cassels and Henry Jenkins (Eds) MIT Press, 1998. All excerpts from this paper appear here in italics.

² While none has been the cultural and financial blockbuster “Barbie” (2023), 40 Barbie movies were released between 2001 and 2022. <https://www.radiotimes.com/movies/barbie-movies-order/>

propelled her directly centre stage for a global culture, we recalled then revisited that old chapter, to reconsider its critical analysis of the culture and gender politics of Barbie decades ago, and to see whether and here that critique lands today, in the light of the cultural work this film has done.

This paper is about Barbie's dramatic up-cycling, deconstruction, reconfiguring, and repositioning, asking what has changed in its wake. Its also about how director Greta Gerwig's re-visioning of this apotheosis of girls' toys represents feminism, in these mixed-up times³ when 'gender' becomes too often a flashpoint inciting often toxic ideological battles, instead of being a site where emerging conceptual and ethical challenges to traditional understandings get radical interrogation so that understanding is built, rather than bastions of conviction defended. Engaging in critical gender theory and research under such conditions can feel like walking on eggshells, neither knowing how, nor being courageous enough, preferring not to think very deeply nor indeed to say very much at all about 'gender'. And that makes this an important movie for gender researchers to take seriously.

This film's audacious bravery in making people laugh while so directly, so literally, and so frequently indicting and ridiculing "patriarchy", is an impressive ideological takedown accomplished remarkably, if also problematically, with its counterpart, 'feminism', being scarcely heard. The word is spoken first in a voice over narration at the movie's opening, (as "the *problem* of feminism"), and a second time uttered, just once, by its "real world" barbie-disdaining daughter, whose mother's "divergent" play with Barbie resulted in the latter's intrusive (and ultimately transformative) thoughts of death, experiences of cellulitis, and flattened feet. The word "feminism" is never spoken in Barbieland, however.

This paper explores the critical and the contradictory ways 'gender' is enacted in what has become a blockbuster at once wildly popular, and simultaneously a site of controversy and censorship, and whether and how Barbie's cinematic "upcycling" has indeed "created a product of higher quality or value than the original" (op.cit). We'll examine the reporting on and reviews of the film *Barbie*, looking in particular at its ironic remediation of gendered games and play, and identifying some of the cinematic techniques and narrative tropes through which the film reinvents Barbie, the filmic feminist, through a deconstructive and reconstructive upcycling of that iconic Material Girl *en plastique*.

2. Re-Viewing Barbie

While it's been with heady relief that some audiences have embraced this movie's ironic nostalgia for stereotypical gendered play, other viewers have expressed less favourable sentiments, from boredom through disappointment to anger and even outrage. The Barbie movie has been banned in many places, and for many reasons: Russia (promoting morally degraded Western values); Algeria (damaging morals: "promotes homosexuality and other Western deviances"); Viet Nam (inclusion of a map of the North China sea displaying the "nine-dash line" used on Chinese maps to depict as Chinese territory a contested area considered by Vietnam its own continental shelf); Kuwait ("ideas and beliefs that are alien to the Kuwaiti society and public order."); Lebanon (contradicts "moral and religious values as well as the principles of Lebanon" and "promotes homosexuality and sexual transformation... sexual deviance and transsexuality"); initially banned but later released in United Arab Emirates (violating Islamic values); Saudi Arabia (inappropriate for its audiences: released later with LGBTQ+ content removed); reviewed/temporarily banned, then released in the Philippines (same contested map issue as Vietnam, released after request to Warner brother to blur the image); Pakistan (objectionable content, presumed to be LGBTQ+, released but to be censored "where deemed necessary", according to the Punjab Film Censor Board. (Lloyd, 2023; McArdle, 2023)

The main reasons given for banning the Barbie movie, then, have been two: first, the controversial map, depicting a child-like hand-drawing of part of the "real world" traversed in Barbie's travels, and second, its "morals and values", specifically the movie's depiction of a gender-inclusive (LGBTQ+) world in "Barbieland", and of an overthrow of the Kens' patriarchal gender order by the Barbies. In both cases, play is mistaken for reality: the map is an entirely inaccurate kid's drawing meant to represent how children who play with Barbies might picture a far-flung world through which they might one day travel; and the range of sexualities presumed to be "promoted" is entirely unreal, and could not possibly be sexualities at all, since these are all plastic dolls notoriously lacking both genitalia and any sexual practice whatsoever. As for its gender order reversals, the

³ Catherine Rottenberg observes, "the feminist landscape is shifting so quickly these days. Perhaps we could say that we are currently witnessing competing sensibilities and discourses that nevertheless overlap, draw on, yet push back, one against the other?"

Kens' collective transformation into "patriarchs" after discovering male privilege in the "real world", no less than the Barbies' collective emancipation into a powerful ruling class, are both comically extreme and naively child-like: patriarchy for Ken is about horses, Stetson hats and a boys' only playhouse that looks like a saloon; empowerment for the Barbies is about a top-down takeover, becoming "bosses" and subordinating the Kens. These two rationales for banning and censoring turn out to be based on an absurd conflation of dolls with people, children's drawings with geopolitical realities, and pretend play with real life.

Interestingly, many of the reviews shared by individual viewers make the same mistake: those who condemn the movie for its concluding portrayal of "emancipation" in Barbieland manage somehow to forget that Barbieland is precisely NOT the "real world", it's a world imagined in play, and the Barbies' imaginary political overthrow could not be more explicitly represented as a fantasy, no less than the ridiculous patriarchal fantasy of the Kens. Then there is the criticism that depicting Barbie in the "real world" being sexually harassed is not "realistic", somehow both overlooking that this is a satirical comedy, not a documentary—and forgetting that for many women, sexual harassment is an everyday real-world event. Most frequently criticized is the negative, stereotypical representation of men that reinforces traditional gender roles, (the same criticism that has for decades been levied against Barbie dolls), and the contradiction between impassioned feminist speeches, and the enactment of a decidedly unfeminist takeover of patriarchal Kendom by the newly emancipated Barbies, who promptly re-interpret emancipation as the resumption of their previous positions as girl bosses of Barbieland. Their superbly ironic promise to the kens is that in time they will have all the opportunities and privileges women enjoy in the real world. What most needs acknowledging is that there has never before been any such widespread public conversation about the gender formations and deformations engineered by Mattel's designs on girls' play, and brilliantly illuminated in this updated re-visioning of all things Barbie.

3. Mobility and Change in a Plastic World



Figure 2

"Upcycling" requires movement and transformation, both of which are, on the face of it, impossible to accomplish in the medium of hard plastic which neither moves nor changes. Barbie is, materially, the same doll, before and after the shift in its value. The object is the same; its context is what changes. And it is in precisely this way that director Greta Gerwig brilliantly deploys of both technical and narrative techniques to endow immutable plastic with plasticity. For the movie's many "travel" shots, Gerwig eschewed both location shoots and GCI in favour of what Production Designer Sarah Greenwood characterized as "theatrical methods of making things work" (Torres, 2023), using conveyor belts to move the settings backwards while the characters and vehicles stayed in place. That technique, combined with caricature-ish hair and makeup and noticeable "stiffness" in boldly positioning and movement, manages to enable mobility while giving its characters a feeling of "thinginess" in a plastic world. Having characters acting against a retrograde backdrop supports the film's narrative premise that everything Barbie is and does, her identity and mobility, comes, not from the plastic doll in the foreground, but from the flesh and blood player in the background. Recognizing that the player is always more than the individual, a lot of this film's story details the conditions and experiences of how girls and women are powerfully impacted, in both their identifications and their opportunities, by the patriarchal capitalism of the "real world", including, of course, the kind of doll the kind of doll designed for girls to play with. This story's telling of how girl-power both drives and is supported by playing with Barbie, brilliantly accomplished by its director's innovative resuscitation of old school film

techniques, leaves out of account, however, the ways girls are not so much playing with as played by their Barbie dolls.

4. From Baby to Barbie



Figure 3

As against the realpolitik backstory of womens' lot in the "real world", the backstory of Barbie, the plastic doll that real-world girls bring to life, is "Hidden from History", as feminist historian Sheila Rowbotham (1997) would say, in a cozy tale of Ruth Handler, co-founder and president of the Mattel Toy Company creating the very first Barbie doll (and naming it after her daughter, Barbara). This "hidden history" of Barbie gives a very different account of origins than the movie's heartwarming Ruth Handler narrative that brings mothering and corporate capitalism together. That strong "mothers and daughters' theme is threaded throughout the movie, reprising both the Ruth and Barbie origin story, and the filmic ex-Barbie-playing mother and her feminist next-gen Barbie-repudiating daughter.

From a corporate perspective, a darker intent of the Barbie upcycling project was, for Mattel Inc. ("*We empower the next generation to explore the wonder of childhood and reach their full potential.*") both to groom an emerging market at risk of mass-refusal, and to re-capture their mother's approval of a plaything widely castigated as damaging to girls' self-esteem and body image---and of its universe of associated commodities. Motherhood is a central, if sometimes puzzling, theme of this film. "*We mothers stand still so that our daughters can see how far they've come*" says the Ruth Handler character, reprising the traditional narrative of maternal sacrifice. Apart from perhaps cryptically referencing Gerwig's deployment of theatrical techniques of moving the background while keeping the characters in place that accomplishes the illusion of mobility, it's not at all clear from any other part of the movie what this commendation of "standing still" refers to--- Handler did not "stand still", nor indeed does "standing still" characterize most mothers' daily routines---and why maternal immobility is cast as a model of mothering is puzzling.

While Barbara Handler was indeed involved in Barbie's origins, it was as a tourist in Germany in 1956, when she and Ruth saw a "Bild Lili" doll⁴ in a shop window, and brought home several to serve as prototype for Handler's pitch to Mattel for a new kind of doll. Ruth recognized in Lili an incarnation of the kind of doll she thought, quite rightly, would revolutionize girlish play, away from the kind of maternal relationship that had been paradigmatic of girls' play, between a young girl and her (sometimes both crying and peeing) baby doll in diapers and nightie, to a vicarious living out of a host of possible adult futures.

*I remember I cried the first Christmas I got a doll, a baby doll, from my parents. When they asked why I was crying I remember telling them I was "just so happy," when what I was, was terrified and appalled at the realization that this was what I was supposed---biologically supposed---to like. To love, even. How on earth to play with this diapered apparition into which you squeezed water on one end and mopped it up at the other? Unlike my friends (who had Barbies) I never abused "Baby Wet-ums," who in time, after what I must have imagined would be a respectable period of intense maternal guardianship, lay dusty on her flannel-sheeted metal bed. (de Castell & Bryson, *Re-Tooling Play*, p. 232)*

Ushering in a new "dystopia of gendered play", a ground- breakingly modernized "*treachery of the toy purposely built, like the Princess phone or the Easy-Bake Oven, "just for you", those "special" feminized playthings that*

⁴ "Barbie," the paradigmatic "girl toy," was modelled on "Lili," a cartoon character, described by one Barbie biographer, M.G. Lord as a "pornographic caricature", that was subsequently developed into a 'sexy' German toy designed not for children but for adult men (op. cit. 251).

escort girls to their proper place in the gender order, (op. cit, 232), Barbie accomplished a radical “re-tooling” of girls’ play, transforming little girls from devotedly nurturing mothers into liberated career women: nurses and airline stewardesses and models and beach babes, then later doctors, pilots, astronauts, computer engineers and game designers. Since her initial launch in 1959 as a “teen model”, Barbie has enjoyed more than 200 different careers (Barbiemedia,2023)

Handler’s doll re-design was indeed radical, just not in the ways we are invited to imagine. She describes the design of Barbie in a 1977 interview (Latson, 2023), “Every little girl needed a doll through which to project herself into her dream of her future” This meant Barbie needed breasts. “So I gave her beautiful breasts” That implicitly girl-powered narrative---designing Barbie to enable girls to play out their aspirations for the future---only makes sense, though, if you bypass Handler and Mattel’s full knowledge⁵ of Barbie’s origins as a hypersexed comic strip character in Axel Springer’s populist tabloid *Bild*, and then realized in plastic, as a ‘jokey’ sex toy for men. Breasts were always already ‘given’ to Barbie, long before Ruth Handler appeared on the scene, and not for the reasons Handler invokes.

So beneath Mattel’s persuasive rhetoric and plasticized embodiment of the idea that “Barbie” (and therefore her young owner/manager, no longer her ‘mother’) can be “anything!”⁶ lies the insidious reality that while replacing the paradigmatic Baby Doll effected a tectonic shift in girls’ play, propelling it away from girls’ cramped positioning as mothers and domestic servants---it did so only to reposition them within a new universe of subordination, one inspired no less by male fantasies of women’s proper place. In this case, however, it’s the fantasy of a saucy, scantily clad high-heeled good-time girl. Young girls’ play with dolls becomes neither mothering nor, indeed, self-projection where girls imagine themselves as the Barbies they play with, but becomes, instead, a “set-up” of Barbie, stage-management, wardrobe, event planning.

5. Barbie the (Feminist?) Movie



Figure 4

In times of radical upheaval to discourses about gender, to the ways gender is spoken about and can be thought about, and lived out, entertaining any discussion focused on the very idea of gender can be perilous. In public media, and no less in academic, political and feminist discourses about gender, new lexical and grammatical imperatives and conceptual prohibitions make it hard to know how even to ask the so-obvious question “Is Barbie a Feminist Movie?” Director Greta Gerwig’s answer is a definite yes; others are not so sure. (Gibson, 2023). What might be more approachably asked is “how does Barbie, the Movie perform feminism?”. And what does that performance *enact*, which is to say, what impacts might this movie’s “popular feminism” (Banet-Weiser et al., 2020) have on its audiences, and what does that display bring into being? Broaching that question requires moving beyond the film’s literal feminist performances: its verbal repudiations of “patriarchy”, the inspirational speechifying by America Ferrera, by “weird Barbie”, and by Barbie herself, the motherly backstory performed by the film’s Ruth Handler, and of course the very graphically performed racial and gender diversity

⁵ Legal proceedings brought against Mattel by Lili’s original makers, O&M Hausser, for copying Lilli in the design of Barbie, were settled out of court and the US toy giant bought Lilli’s copyright in 1964.(Javaid, 2023)

⁶ Contrary evidence appears in one research study that found that “...girls who played with Barbie indicated that they had fewer future career options than boys, whereas girls who played with Mrs. Potato Head reported a smaller difference between future possible careers for themselves as compared to boys.” Sherman, A.M., Zurbruggen, E.L. (2014) p. 195

of both Barbies and Kens, and, on the other side, portrayals of the overtly sexist abuse Barbie encounters once in the ‘real world’, the literal and figurative restraints placed on Barbie by the Mattel executive team to try and re-immobilize “Enlightened Barbie” in her cardboard packaging, the sexism of the newly patriarch-ified Kens and the reverse sexism displayed in the hostile Barbie takeover, as well as the fact that this takeover is accomplished entirely through the Barbies’ strategic deployment of hyper-stereotypical “women’s wily ways”: flirting, seducing, rapt attention, indulgence, compliments and compliance ---all these evoke, display or perform , whether affirmatively, satirically or negatively, recognizably feminist ideas, aspirations and sentiments. These identifiable invocations and performances associated with critical feminist thought are also the kinds of examples audience reviews cite, whether disapprovingly or in solidarity. Poking a bit deeper, we might propose that what Gerwig has accomplished—getting millions of people worldwide finally not only hearing the word “patriarchy”, but laughing at it, her skilful engineering of a massive captive audience compelled to listen to an impassioned speech about the everyday hardships and abuses and exclusions and exploitations women routinely endure---undoubtedly the largest audience a speech of that kind has **ever** enjoyed, surely deserves kudos for exemplifying feminist activism with global mass-cultural reach.

The contrary position is taken by those who argue that a diversity of “window dressings” of the identical plastic doll is simply a way to evade “the important correlation between multiple versions of Barbie and rampant capitalism that has for centuries subjugated women”. (Gibson, 2023) Whatever its director’s intent, or its impact on audiences, the movie’s intent—and result-- is profits for the Mattel toy company whose product, a doll now over 60 with a hitherto declining market, now boasts billions, with brand partnerships massively extending the doll’s profitability. It’s unlikely we’ve ever before seen a film whose production cost of 1.45 million is so closely matched by the 100 million Mattel invested in marketing it. (Storyboard18, 2023)

An even deeper, and far riskier, interpretive dive needs to be taken, though, beyond the recognition that feminism is being handily deployed by corporate capitalism to round up and re-engage previously alienated consumers of Barbie and to groom hitherto reluctant novices, in the process generating billions from ticket sales and streaming, and presumably even more from branding, product placement, and massive sales of plastic dolls, costumes, vehicles, clothing: the vast array of Barbie-associated commodities celebrating *La Vie en Plastique*. Leaving aside debates about whether that alone disqualifies Barbie from being a “feminist” movie, what hasn’t received nearly as much critical attention, but needs to, requires plummeting down into the perilous depths of what feminism means and looks like when confronted with contemporary gender theories, policies and practices.

One take on how Barbie approaches the politics of gender conflates the plastic-ness of Barbie with an endorsement (though one that remains unspoken) of gender plasticity. In the words of one commentator, “*The doll’s lack of genitals avoids othering any potential trans Barbie. In real life, anti-trans conservatives often use the concept of genitals to invalidate trans women’s womanhood, as though women are solely defined by their body parts. However, in Barbie, this point of view is completely dismissed because the dolls do not have genitals.... While this might not have been intentional, the doll’s lack of genitals also negates the assumption that all dolls are supposed to mirror cis women. In fact, having a trans actress play one of the Barbie dolls showcases that the dolls’ womanhood and femininity is not limited to cis women. The film demonstrates that trans women are part of womanhood.*” (Castagnaro, 2023) Once audiences are mostly on board in viewing the movie as a hilariously satirical re-visioning of a stereotypically gendered plaything (some of course condemning the film for overturning the gender order), they are well-prepared for its last laugh: “Real-World Barbie” in her final scene, waiting for an appointment with her gynaecologist.

This concluding scenario suddenly relegates diversity and inclusion, represented by Non-Binary (previously gay-coded) Alan, Weird Barbie (deformed and dismembered by previous gender-non-conforming owners, her job is to restore damaged Barbies), the choice of Hari Nef, a trans actress, to play the role of Doctor Barbie, all back into a hyper-binarized world of “real” men and “real” women.⁷ Even though we all must know all kinds of people played with Barbies (like my gay brother who designed clothes and knit Barbie a sweater using diamond buttons and soft white fur from Rex, our dog), no queer families or trans folk or non-binary kids are playing with Barbies in the movie’s “real world”. Strangely, neither that selective portrayal of ‘reality’, nor its specific “I’m here to see my gynaecologist” ending seem necessarily to make much of a dent either in the film’s enjoyment, or in its gender-critical uptake. One trans commentator writes, “*The film’s finale suggests that our*

⁷ Trans men do of course also visit their gynecologist---but that medical engagement doesn’t signify their transformation into “real women”. Both trans men and trans women are targeted by the film’s concluding moment.

lives as humans are united by fundamental truths that supersede all of the false binaries we have constructed to imprison ourselves." (St. James, 2023) Dr. Leana Wen, an emergency physician and professor of health policy and management, construes that conclusion as a vital reminder of the importance of women's health: *"Having everyone see Barbie go to the gynecologist normalizes the experience. It solidifies the understanding that reproductive health is an integral part of overall health."* (Holcombe, 2023).

Cheerfully generous interpretations as these are, the stubborn fact remains that the film's treatment of gender is regressive, and does not even begin to deal with the complications of contemporary gender policies and politics. Certainly, the movie includes representational diversity both in its many version of Barbie and Ken, as well as in its casting of gender- and racially diverse actors. Its what it *does* with them that bears scrutiny.

For example, the origin story of Weird Barbie, whose job is to repair other Barbies who are broken, is that she was permanently damaged by being played "too hard". So there is a right way of playing with Barbie that ensures she is not harmed, and that right way of playing shapes the kind of Barbie she will become in Barbieland—or whether she will live on its margins as a social outcast. For girls who could no more assume the position of 'teen model' than the position of 'mother', playing with a doll that has, by design, an 'agenda' like Barbie's is a major psychic challenge. Girls for whom grooming and dressing and dates with Ken meant radical gender dysphoria might well have had little choice but to resort to the hair cutting and extreme make up and positional exploration characterized as "playing too hard". This gender dysphoric play is the kind that produced "weird barbie", (incidentally played by queer actress Kate McKinnon) who lives outside the Barbie community in a very different-looking dreamhouse, with discontinued Barbies as housemates. The losers, outcasts and rejects, interestingly enough, all get assigned "therapeutic" roles: Alan is the only Ken who refuses to join the patriarchy, tries to escape it, then helps the Barbies to regain their sovereignty. Hari Nef's job as Dr. Barbie, and Weird Barbie's repair shop both involve 'fixing' impaired Barbies. Inclusion, in Barbieland, means making yourself useful in a world where everybody else plays. Some Barbies are more equal than others, to echo George Orwell. And the movie's conclusion makes completely clear that players of those more equal Barbies are the gender-normative ones, neither those who play "too hard" with their gender-restrictive plastic toys, nor those who embrace gender plasticity in their 'real world' identifications, whether or not they are candidates for a gynecology appointment.

It's important to understand how media-mediated and popularized feminism can both advance and impede feminist ways, means and purposes. The Barbie movie does unprecedented cultural work in the name of feminism, and without doubt brings new ideas and new lenses on gender to a massive global media marketplace,⁸ but Ken gets most of the story, the Big Dance Number and the Big Song, and its story ends with biological sex being what affirms Barbie a "real woman". The lesson here is that Barbieland's utopian freedom to be anything, and the Barbieverse's total embrace of diversity, depends upon plastic, not plasticity. When warm flesh takes over, there is no indeterminacy about gender's relation to biological sex. That's more than retro sentimentalism. It's a refusal and rhetorical reversal of an operating principle that feminism has fought for long and hard—that biological sex should not be a straightjacket, and that vastly divergent kind of sexual practice and gender expression are possible and deserving of respect. Whatever position one takes on the sex/gender tradition, on binaries and continua, on malleability and identity, what the film is enacting here is a reversion to a pre-feminist heteronormative order.

"If [Mattel] hadn't made that change to have a multiplicity of Barbies, I don't think I would have wanted to attempt to make a Barbie film ... I don't think you should say, 'This is the one version of what Barbie is, and that's what women should aspire to be and look like and act like.'" (Margot Robbie, star and producer of Barbie, The Movie, quoted in White, Abby (2023)

Whether or not as Handler hoped, Barbie's multiplicity of occupations opened up wider dreams and aspirations for young girls, it would be reasonable to assume that Barbie's primary qualification for any job imaginable is her appearance. And that makes Barbie's vocational diversity more of an affirmation than a challenge to received

⁸ "Rosalind Gill notes, "It is clear that there's a real relationship between the media visibility of feminism and feminist energy and activism. But I'm also troubled by which versions of feminism garner visibility – the largely white, heteronormative, corporate and neoliberal-friendly versions. I am not saying there is 'one true feminism' – but I am struck again and again by which versions get to be seen and heard, and which remain marginalised." (Banet-Weiser, S., Gill, R., & Rottenberg, C. (2020). p. 16)

gender stereotypes, a re-iteration, through an upcycled preservation, of “*girls' historically assigned locations in the gender order.*” (op. cit. 234), because the stubborn fact remains that in playing with Barbie, girls are, in reality, playing with a doll modelled on a jokey sex toy designed for and sold to men, and they are exploring, experimenting, rehearsing and building their aspirations for the future on that material premise. In playing with a doll that actualizes men’s sexual ideals young players are projecting and playing out their futures through male desires. More than two decades ago, we noted the designs of toys for girls “*have had very little to do with what a woman wants, and everything to do with what is wanted from a woman.*” (op.cit. p 238). And because that intent continues to inflect both the doll and its play, while feminism has done a lot to upcycle Barbie, things haven’t gone so well the other way.

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From Norm and Theory to Practice: a Tailor-made GEP for the Institut de Ciències del Mar

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Abstract: The European Commission is fully committed to promoting gender equality in research and innovation. It is a priority for the [European Research Area \(ERA\)](#) and a cross-cutting principle under [Horizon Europe](#). Gender equality plans (GEPs) have been established as the primary instrument for implementing institutional changes in Research Performing Organizations (RPOs) to address structural barriers to gender equality in research and innovation. Within this framework, specific objectives are defined, and thematic areas for intervention are recommended. In this regard, the formulation of a GEP for the Institut de Ciències del Mar (ICM), implied a broader challenge as it had to comply with diverse national regulatory frameworks. Nevertheless, the variety of reference frameworks, instruments and approaches did not condition the aspiration to design a GEP that fully responded to the specific context of the ICM. Thus, the GEP became the roadmap to generating an organisation cultural change that allows the effective integration of gender equality across all its areas and actions. Drawing from ICM's experiences, we aim to share the path undertaken by ICM and shed light on the multifaceted challenges encountered during the GEP's design and successful implementation. There is a pressing need to transition from mere adherence to the normative framework to achieving genuine gender equality in practice. Transforming normative principles into practice requires tailored and individualised strategies, feasible objectives with measurable results, appropriate measures to achieve them, and indicators to measure progress. This challenge involves effective institutional changes that remove obstacles to gender equality, both inherent in the research system and stemming from the institutional model of human resources management, funding, decision-making and research programs. The commitment to gender equality must transcend the field of research and research to encompass all staff and institutional practices. Successfully transitioning from theory to practice requires institutional commitment, data-driven decision-making, resource allocation, stakeholder engagement, internal collaboration, responsibility, leadership, and strong gender expertise. This paper stems from the European Horizon Project *Leading Towards Sustainable Gender Equality Plans in RPOs (LeTSGEPs)*.

Keywords: Gender Equality Plan, Research Performing Organizations, Gender Equality, Gender Institutional Change

1. Introduction

Gender Equality Plans (GEPs) have become a key instrument in Research Performing Organizations (RPOs) to contribute to addressing the multiple gender biases and discriminations that not only hinder the advancement of women's careers in multiple aspects but also undermine the overall quality of research.

At the Institut de Ciències del Mar (ICM), we wish to share our journey to go beyond mere compliance with the regulations and move towards the goal of real gender equality in the organisation. Our GEP, while considering the various regulatory frameworks and maximising the use of available tools and good practices, responds accurately to the specific reality of the ICM. The GEP, which integrates tailored strategies and measures that respond to the gender biases, inequalities and discriminations verified during an in-depth institutional gender diagnosis, is the result of evidence-based gender expertise and organisational-based knowledge, with the participation of various institutional actors. With the full commitment of the management team and adequate knowledge and resources, the GEP serves as a roadmap for the integration of gender equality principles throughout the ICM.

The paper is organized into five sections. Section 2 reviews the key elements of the normative framework for gender equality in RPOs within the EU and Spain. Section 3 discusses the tools and methodologies proposed by the EU Project LeTSGEPs for designing the GEP. Section 4 provides insights into ICM's experience aligning the normative framework with practical implementation, following LeTSGEPs guidelines throughout the GEP cycle. Section 5 is dedicated to conclusions.

2. The Normative Framework for Gender Equality in RPOs

The European Commission is fully committed to promoting gender equality in research and innovation, aligning this goal with the [European Research Area \(ERA\)](#) and [Horizon Europe](#). To address the structural challenges to gender equality in research and innovation, GEPs have been established as a highly effective instrument for driving institutional changes within RPOs.

This commitment positions gender equality at the centre of European research policy, emphasizing its priority for institutional and cultural change. The ERA has set key objectives: (1) achieving gender equality in scientific careers, (2) attaining gender balance in decision-making processes, and (3) integrating gender dimension into the content of research and innovation (R&I).

Consequently, EU countries have been asked to develop national action plans for gender equality, leading to positive impacts within numerous research organisations and acting as a catalyst for transformation. RPOs, along with funding bodies, are encouraged to implement institutional changes, particularly through the adoption and implementation of GEPs.

Since the inception of the last Research and Innovation Framework Programmes, the European Commission has fostered the implementation of GEPs, with dedicated calls to support their design and implementation in the research and innovation ecosystem. From 2021 and in alignment with the [Gender Equality Strategy 2020-2025](#) of the European Commission, which sets out gender equality as a cross-cutting priority, there is a proposal to develop inclusive GEPs within Member States and stakeholders to promote gender equality and inclusion. Among the several measures to address this challenging task, GEPs have been established as an eligibility criterion for participation in the Horizon Europe Framework Programme for Research and Innovation for the period 2021-2027.

In Spain, the *Organic Law 3/2007, of 22 March, for the effective equality of women and men* (from now on *Equality Law*), establishes the regulatory, institutional, and public policy framework to guarantee the right to equality between women and men. This law has a cross-cutting nature, which should imply that the prevention of direct or indirect discriminatory conduct based on sex and actions to make the principle of equality effective are projected onto different areas of the social, economic, cultural, and political reality. The framework established by the *Equality Law* is fully integrated into sector-specific regulations, ensuring its broad application.

Under the *Equality Law*, a GEP constitutes an ordered set of evaluable measures, adopted after a diagnosis of the situation, and aimed at removing the obstacles that prevent or hinder the effective equality of women and men. The GEP establish the specific equality objectives and results to be achieved and the strategies and measures to be adopted for their attainment. It must also establish an effective system for monitoring and evaluating the objectives and results set, based on the definition of sex-disaggregated and gender-sensitive indicators.

Since the adoption of *Equality Law* (and the subsequent regulations that have allowed its development), GEPs have become essential for advancing the institutionalization of the principles of equal treatment and opportunities in the workplace. With the approval of *Law 14/2011 for Science, Technology, and Innovation* (reformulated in 2022), not only are GEPs further impulse in research centres, but also the need to promote the inclusion of the gender perspective as a cross-cutting category in science, technology and innovation, as well as a balanced presence of women and men in all areas of the Spanish Science, Technology and Innovation System.

3. The Theory: Tools and Methodologies for Gender Equality

The LeTSGEPs European project (2020-2023) pursued the design and implementation of measures that would lead to systemic institutional change and address gender bias in the consortium's implementing partners. This initiative has been articulated in GEPs which serve as a crucial instrument for enacting the necessary deep structural transformations towards gender equality in RPOs.

To guide the development of these GEPs, LeTSGEPs proposed the articulated use of two tools: the *Gender Equality in Academia and Research* (GEAR Tool), developed by the European Institute for Gender Equality (EIGE, 2016, updated 2022), alongside *Gender Budgeting* (GB).

EIGE adheres to the EU definition of a GEP “a set of commitments and actions that aim to promote gender equality in an organization through a process of structural change” (European Commission, 2021b). This policy instrument aims to sustainably transform organisational processes, cultures, and structures within the field of Research and Innovation (R&I) to combat and reduce gender imbalances and inequalities.

The GEAR Tool is a guiding instrument for the formulation of GEPs, understanding this change as a strategy aimed at removing the obstacles to gender equality that are inherent in the research system itself, and adapting institutional practices related to human resource management, funding, decision-making and research programmes. The GEP process is structured into four key phases:

- Analysis phase, in which sex-disaggregated data are collected, and procedures, processes and practices are critically evaluated to detect gender inequalities and gender bias.
- Planning phase, in which objectives are defined, outcomes are established, actions and measures are designed to correct identified problems, resources and responsibilities are allocated, and timelines are agreed upon.
- Implementation phase, where measures are implemented, and outreach efforts are undertaken to gradually expand the network of stakeholders.
- Monitoring and evaluation phase, in which the process and progress are regularly monitored and evaluated. The results of the monitoring allow for adjustment and improvement of the measures, optimising the overall impact of the GEP.

Under the Horizon 2020 Program, GEPs must include, among other strategies, [Gender Budgeting \(GB\)](#) as a lever means to drive institutional systemic change to promote gender equality. GB entails the application of gender mainstreaming in the budgetary process. It involves assessing gender-based assessment of budgets at all stages of the budgetary process, restructuring revenues and expenditures to promote gender equality (Council of Europe, 2009).

There are various methodologies to implement gender budgeting, including integrating gender into performance-based and programme budgeting, categorising budget programmes and gender analysis requirements, linking gender budgeting and participatory budgeting, tracking financial allocations to promote women's rights and gender equality, linking budgeting to gender wellbeing, or combining gender budgeting with impact assessments; but they all share common elements: the integration of the gender perspective throughout the budget cycle, the articulation of the budget with the objectives of gender equality set out in the political and operational instruments (plans), participation and transparency in the budget process, and the monitoring and subsequent evaluation of budget execution (EIGE, 2022b).

Within the framework of LeTSGEPs, GB was based on the human capabilities approach that broadens its focus from being solely centred on monetary income and assets to the impact of policies on well-being in its multidimensionality and complexity. so, as budgets reflect the political commitments of institutions, "following the money" helps to reveal the factors that cause gender inequality to persist within institutions. GB's efforts were directed at achieving transparency in interpreting gender issues within financial statements. Since budgets are not gender-neutral, it was essential to design gender-sensitive strategies that would contribute to a more equitable, transparent, and efficient distribution of resources (Addabbo, T., et alia, 2020; Addabbo, T. et alia, 2023).

4. From Norm and Theory to Practice: the ICM's GEP

Driven by its participation in two projects in the framework of the EU Horizon2020 Program, [Leading Towards Sustainable Gender Equality Plans in Research Performing Organizations](#) (LeTSGEPs) and [Responsible Research and Innovation grounding practices in BIOSciences](#) (ResBIOS), the Institut de Ciències del Mar (ICM) designed its first **[Gender Equality Plan \(2021-2024\)](#)**. The plan was fully aligned with European regulations referred to above.

The formulation of ICM's GEP also implied a broader challenge as it had to adjust to a regulatory framework that finds its axis in *Organic Law 3/2007, for effective equality between women and men* (hereinafter, *Equality Law*). Furthermore, coordination was required with the *II GEP* of the Spanish National Research Council (CSIC), the institution to which the ICM belongs. This GEP serves as an umbrella for its member centres, including the ICM.

In this context, the key to the success of our GEP lies in the fact that, while complying with the regulatory frameworks, applying any of the available methodologies and considering existing good practices, it responds appropriately to the particularities of our organisation.

ICM's GEP phase-by-phase

The ICM has strategically integrated the normative framework into its operations by using the tools and methodologies recommended by LeTSGEPs (GEAR Tool and Gender Budgeting) but also has taken into account other tools generated in the framework of other projects funded by the EU through Horizon 2020 (see Horizon2020 [Sister projects](#)) The figure below presents the key elements ICM has considered in the different phases of the GEP cycle.

4.1 Analysis Phase

The diagnosis was based on qualitative and quantitative gender-sensitive indicators, specifically elaborated *ad-hoc* according to the ICM characteristics and context. The choice of suitable indicators was done with due regard to the availability of robust and representative data from reliable sources, as well as the possibility for reassessment over time. Such a methodology enables the tracking of evolution and changes or improvements resulting from the implementation of the GEP.

The findings from the ICM shed light on significant gender disparities within the institution, particularly in the progression of scientific careers. The data reveals a clear pattern of vertical segregation, particularly as they advance in their scientific careers. While gender balance is maintained at the pre-doctoral and post-doctoral stages, there is a substantial and progressive decrease in the representation of women as they move up the career ladder, resulting in a leaky pipeline. The result is the “scissors effect” where the higher the career category, the lower the participation of women. The *Glass Ceiling Index* (GCI) at the ICM is significantly high: 3.14 underlying gender disparities in career progression.

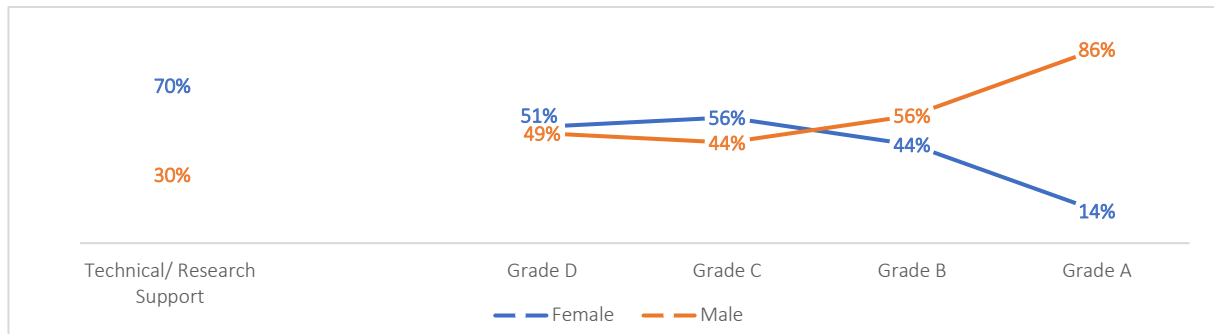


Figure 2: Distribution of research and technical staff (2019)

(This classification refers to "She figures", EIGE)

Vertical segregation also impacts the representation of women in research leadership positions. Of the centre's 14 research groups, only 3 were led by women (21.4%). Leadership is influenced by the internal dynamics of the research groups and the barriers and misconceptions about women's careers.

As a result of this gender disparity in leadership positions, there exists gender bias in research fundraisings. The application for funding projects involves a principal investigator (PI) leading a team. In the same research group, there may be different projects, whose applications may be led by different members. With marked differences in the number of women and men leading projects and applying for funding, there is a big gap in terms of funds raised by women and men. The funds obtained by female researchers represented 19,8% of the total (2019). Although fundraising has an important cyclical dimension and many variables affect the leverage of funds, there is sustained evidence over time that there exists gender bias in access to research funds (EIGE, 2022c).

There also exists an important feminization of *academic housekeeping*, a concept that refers to the management support tasks within the organisation, which are indispensable for its functioning but remain largely invisible. These roles are typically voluntary, and predominantly carried out by women (Kalm, 2019). In 2019, the ICM established four *Task Forces* and three *Committees* to address different institutional tasks. Notably, all these groups were feminised in absolute and relative terms, except for the Scientific Strategy group, one of the executive committees. This feminisation, with 70% of members being women, is accompanied by a hierarchy based on the nature of activities and individuals performing them. Paradoxically, despite their greater commitment to the "community" tasks, women do not experience improvement in their position, neither academically nor strategically. On the contrary, they spend more time on these tasks compared to male researchers adversely affecting their career progression and salary prospects, perpetuating further gender inequalities.

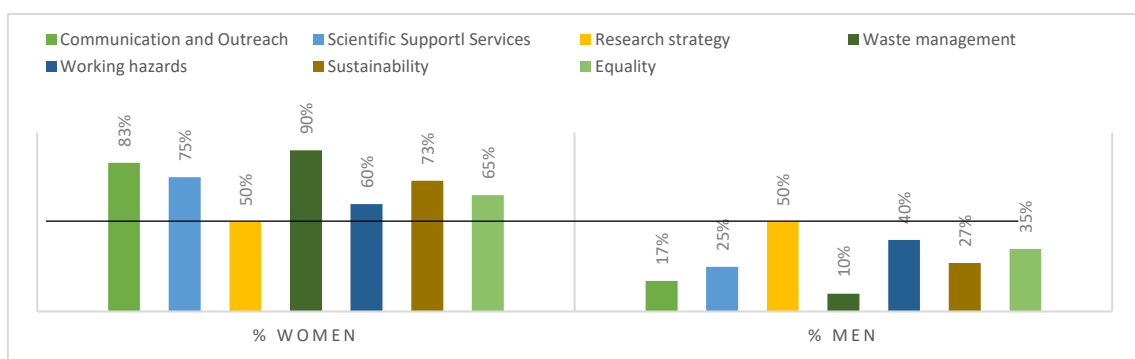


Figure 3: Committees and Tasks Forces at ICM (2019)

Another verified evidence is the feminised use of work-life balance measures. The need to reconcile work and family hinders the possibilities for the development of their professional careers and has a direct impact on the wages women receive since they are the ones who most often work part-time, with temporary or interim contracts, and who usually take childcare leaves. In a recent *perception survey on gender equality among ICM staff*, 43,4% of women in front of 28% of men considered that there are obvious differences in the use that women and men make of work-life balance measures. Furthermore, 68,4% of women and 58% of men recognized that maternity/paternity leave adversely affects one's research career. Consequently, the use of

balance measures penalizes women as they “miss the competitiveness train” and contributes, in some cases, women to exiting research careers.

The diagnosis raised awareness of situations of gender-based inequalities and provided an understanding of the factors that contribute to or favour these disparities. While systemic barriers may be common to other RPOs, internal barriers - institutional and individual - are always nuanced: institutional gender biases affecting human resource management, funding, decision-making, scientific leadership and other procedures and practices; Individual gender biases, misconceptions about women's careers; individual resistances and ineffective engagement. Although certain findings, horizontal and vertical segregation, lack of recognition of female researchers and technicians, feminisation of work-life balance, academic housekeeping, etc., may not differ from situations found in other RPOs, the factors leading to them, and the corrective measures are specific.

How structural, organisational and individual barriers within the ICM are interconnected determines the areas requiring intervention and guides the selection of appropriate strategies and measures to address these issues

4.2 Design and Planning Phase

The results of the institutional gender diagnosis performed were the basis for the development of our tailor-made GEP. The results made it possible to become aware of situations of gender bias and inequality and to identify the factors that produce or favour them. Consequently, these findings allowed informed decisions to be made to reverse these situations, prioritising areas of intervention and guiding the design of specific measures to address the causes of the problems identified.

The GEP is both holistic and comprehensive, adapted to institutional and cultural settings, addressing the whole organisation, and engaging all relevant stakeholders. Since its establishment, the GEP has become the ICM framework for action and roadmap to generate a structural change that will allow the effective mainstreaming of gender equality across all areas and activities of the organization. The GEP also reflects the result of an articulated work and consensus among multiple actors in the organization and materializes the ICM commitment to equality.

Table 1: Logical framework of the ICM’s GEP[illegible]

The GEP commits efforts in eight fields of action, including the five fields recommended by Horizon Europe. For each field, specific objectives and results have been established, underpinning a set of fourteen measures to be implemented in four years (2021 to 2024). These measures aim to achieve the overall objective of the GEP. To this end, the GEP comprises cross-cutting measures that need to be anchored in institutional policies and practices - such as gender budgeting - and positive action measures aimed at correcting clear situations of inequality - such as interventions that seek to reduce horizontal and vertical segregation (the so-called glass

ceiling). All the measures are mutually articulated and build on each other. The logical framework planning tool was used to define the intervention logic of the GEP.

Each measure identifies the institutional key site(s) of inequality to be addressed, the target groups, the involved actors and the responsible for the implementation, the measure's importance for the institution, the expected (measurable through indicators) outputs (short-term effects) and outcomes (mid-term effects) of the measure, the execution calendar and the resources assigned to its implementation (funds).

Thus, by way of example, measure 1.3. *Integration of gender aspects in internal funds* responded to the gender bias identified in grant allocation and the need to guarantee equal opportunities in access to funds. Given the obvious limits of influencing external processes, the measure is established concerning internal funds (see Figure 4). This measure is at the core of GB.

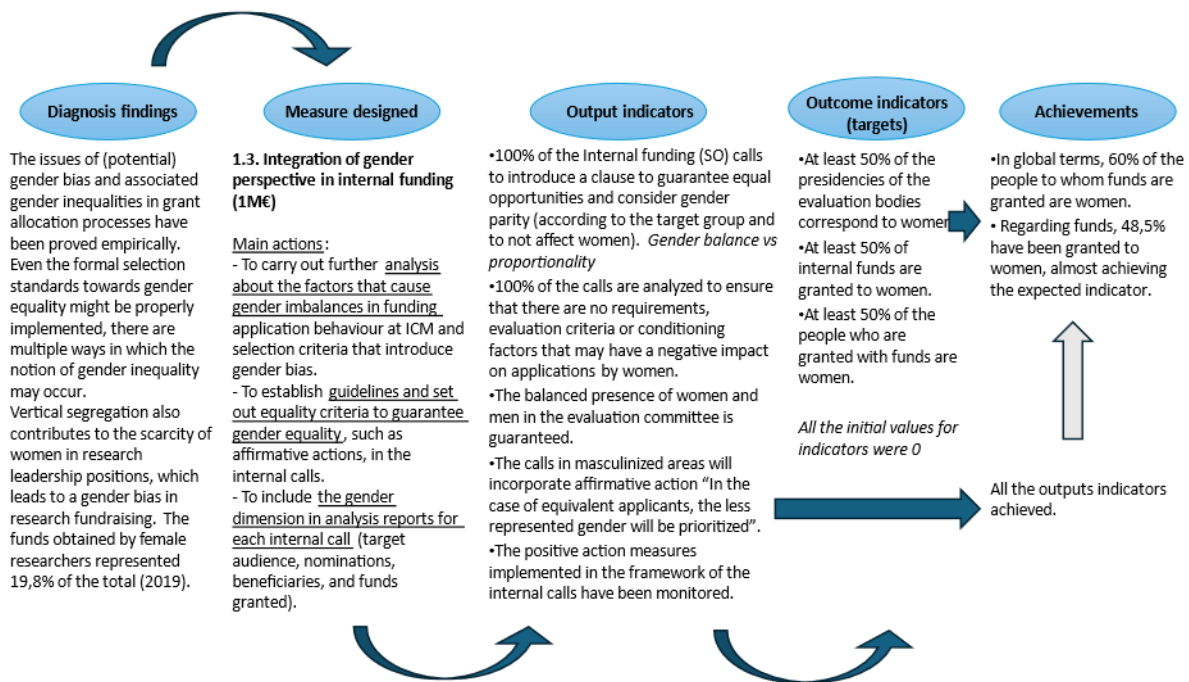


Figure 4: Example of a complete cycle of a measure (diagnostic results, corrective measure, output and outcome indicators and achievements).

Importantly, the ICM's GEP is designed as a living document, being adaptable and responsive to new challenges and changing contexts in the organization. This flexibility allows ICM can continually assess the effectiveness of its measures, make necessary adjustments, and stay aligned with evolving goals and priorities in the pursuit of gender equality.

4.3 Implementation Phase

The implementation phase focuses on the execution of the measures which involves testing the adequacy of actions designed, the allocation of responsibilities and resources, the mechanisms for articulation of the parties involved, and the implementation schedule. In parallel, to promote an environment conducive to implementation, and in addition to keeping management abreast of all initiatives, training and awareness-raising of the team is necessary. Ongoing monitoring of the process through data collection, and progress, including risks to the implementation of the GEP, is also required. The implementation of the GEP is not free of complexities and challenges necessitating a proactive and flexible approach to ensure the successful realization of gender equality objectives.

4.4 Monitoring and Evaluation Phase

The GEP also integrates a *Monitoring and Evaluation Framework* (M&E).

The M&E is designed to be an ongoing process that monitors the achievement of the GEP's objectives and results ensuring quality, and facilitates adjustments to the implementation process, as regards decision-making,

obligations, and requirements in the implementation process. This approach is permanent, crosscutting to the entire GEP and involves all actors participating in the GEP implementation. The M&E incorporates articulation mechanisms with all GEP actors to ensure excellent use of data collection tools, systematization, and reporting. The results will be used at various times, with different regularity, different resource needs and for different purposes.

The M&E at ICM includes indicators following EU standards shared among LeTSGEPs RPOs (EIGE, 2021a), facilitating a comparative analysis across institutions. However, although common indicators may permit comparison, they remain insufficient for capturing the reality and specific characteristics of ICM. Thus, the M&E system is based on a wider set of indicators comprising 80 output indicators and 57 outcome indicators. Some indicators make it possible to measure the change, for example, the *“increase (%) in the presence of women in decision-making positions”*, considering a baseline input value of 21,6% of women in the Governing Board. Other indicators guide the achievements to be reached, so *“at least 50% of the participants - in any action or process - must be women”*. Additionally, some indicators assess the results of the implemented measures (*“success rate of women and men in the different competitive calls to access to internal funds”*). Indicators allow for tracking of changes and verify the level of achievement of the expected results.

Revisiting the example of measure 1.3, the output indicators determine the expected products, and the outcome indicators guide and establish the expected scope of the measure. Its achievement is the result of the proper implementation of all actions foreseen in the measure (see Figure 3).

Furthermore, the M&E framework also provides a valuable opportunity to learn from the implementation process. One of the significant benefits of ongoing monitoring is not only the ability to assess the effectiveness and immediate results of specific actions but also to gauge the long-term sustainability of these initiatives. These aspects are presented as part of the conclusions in the next section.

5. Conclusions: GEP Cycle Considerations

In concluding our experience with the GEP, we have identified some limiting and success factors for the GEP implementation. As success and enabling factors, we underline:

- *Institutional compromise*: It is essential to have the direct involvement of the management team throughout the entire process. Bottom-up initiatives need to find an echo in management, emphasizing the need for GEP appropriation across all staff levels.
- *Institutionalization of the GEP* as a roadmap for the integration of gender equality principles throughout the ICM.
- *Gender expertise* is an essential asset that highly contributes to accelerating the progress towards gender equality and inclusion. This expertise should be accompanied by a mechanism in the organization that is responsible for promoting the GEP.
- The *active participation of all internal stakeholders* in the implementation of the GEP is essential. This must be accompanied by the development of gender competencies and capacities and maintaining effective coordination mechanisms across the institution.
- As limiting factors, we appoint to:
- A high dependence on the *voluntary contribution* of the Equality Task Force (ETF) members can limit the GEP's effectiveness and sustainability.
- Encountering difficulties in accessing or obtaining meaningful data for gender analysis presents a significant barrier to informed decision-making and strategy development.
- The scope of action for implementing certain aspects of the GEP may be restricted by the overarching jurisdiction of the CSIC, particularly concerning hiring, promotions, and salary adjustments.
- *Resistances to change* in specific groups within the institution to embrace changes advocated by the GEP.

6. Considering de GEP Cycle

Institutional gender diagnosis is the key step to establish the specific reality among women and men in the RPO. A wide set of indicators should be considered using both qualitative and quantitative data. It should be represented in a clear and comprehensible way and made available so that the impact of policies can be tested

in a dynamic setting. Benchmarks against national averages and similar institutions can enhance understanding of organisational gender equality status.

GEP design. The design and scope of a GEP should be tailored to the specific needs of the organization, considering factors like organizational type, context, disciplines, and identified gender biases and inequalities. GEPs must be flexible and customized, acknowledging that the same issue can have different causes in different contexts. The GEP should establish clear responsibilities for the different activities and leadership to steer its implementation and for the progress and results. It should also consider the necessary resources for its proper implementation.

Gender budgeting. Integrating gender budgeting into the GEP is beneficial for both feasibility and sustainability. It involves incorporating a gender perspective throughout the budget cycle, ensuring participation and transparency, and linking the budget to gender equality objectives.

GEP monitoring and evaluation. Developing a set of indicators is a fundamental part of the GEP.

Sustainability. Sustainability implies that the initiatives and changes implemented under a GEP are sustained over time. This involves integrating gender equality into the core values and operations of the organization, ensuring that it remains a priority even as personnel or leadership changes. Sustainable GEP is adaptable to changing circumstances, including new research, evolving societal norms, and internal organizational shifts. It should be flexible enough to accommodate new insights. Ensuring the sustainability of a GEP also involves the allocation of sufficient resources—both financial and human.

Networking and knowledge sharing. To advance the quality of GEPs, it is key to continue sharing good practices among RPOs, seek alliances and promote networks in which to share and generate knowledge. Building alliances and fostering communities of practice not only enriches the GEP process but also accelerates the collective journey towards gender equality.

Finally, it is worth noting that the institutionalisation of gender equality in our RPO has been demonstrated to generate numerous indirect impacts, such as the improvement of performance, productivity, and competitiveness; the improvement of corporate image, the working environment, and staff motivation; the attraction and loyalty of qualified human capital and the reduction of turnover; the promotion of corporate social responsibility. Despite the actions undertaken, there is still a long road ahead.

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The Territorial Planning Process of the Fez-Meknes Region from a Gender Perspective: An Exploratory Study

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Abstract : Since 2015, Morocco has become aware of the imperative to integrate the gender dimension into the territorial planning process. In this context, the region, as a key actor in territorial management, is called upon to take into account the gender approach during the elaboration of its Regional Development Programme (RDP) as a planning tool in accordance with Law 111-14 concerning regions in Morocco. This article aims to understand how the gender approach is integrated by stakeholders in the process of drawing up the RDP by analysing the specific interests and needs of women and men. Analysis of the various phases of the RDP elaboration process from a gender perspective, including preparation, diagnosis, strategic vision, action planning, budgeting, and finally, the implementation and monitoring-evaluation phase, led us to adopt a qualitative methodology. This approach was implemented through the mobilization of a single case study focusing on the RDP of the Fes-Meknes region for the period 2016-2021. Consequently, we conducted semi-structured interviews with a sample of 15 key informants directly involved in the elaboration of the RDP at its different stages. The results indicate that little account is taken of the specific needs of women at all stages of the process, from preparation to implementation and monitoring-evaluation. This is due to several factors, including the scarcity of sex-disaggregated data at the regional level, the ambiguity of the new legal text on the concept of gender and its integration into the RDP, the ineffectiveness of organizational mechanisms related to gender issues, the lack of knowledge and tools for gender-sensitive planning, as well as the weakness of the 'gender culture' among members of the regional council (RC).

Keywords: Gender Approach, Planning Process, Territorial Planning, Regional Development Programme RDP

1. General Introduction

In Morocco, in light of global trends, we are witnessing an increasingly growing awareness of the impact of gender-based inequalities on the country's economic and social development process. In response to this situation, several legal reforms have been implemented, reflecting a strong commitment to addressing gender-based inequalities across various development sectors. Among the key reforms, it is worth highlighting that the 2011 Constitution instituted the principle of equality between men and women, more specifically in Article 19, which stipulates: «The Moroccan State shall work to achieve parity between men and women. To this end, an Authority for parity and the fight against all forms of discrimination shall be created » (art. 19).

In the same vein of reforms, it is worth noting that Morocco has integrated the gender approach as an essential strategy for developing its public policies, with the aim of responding effectively to the needs of women and men (CEBSG, 2018). This is one of the most effective measures that can be put in place to prevent inequalities between women and men and respond effectively to their needs. Although progress has been made at national level, it remains limited to a few sectors, despite their shortcomings.

In line with the reforms undertaken by Morocco, the territorial level, in the light of the decentralization process begun in the 1980s and continuing to the present day, is now the framework for the effective deployment of national strategies for inclusive and sustainable development. Since then, local authorities, seen as key players in territorial management, have gradually been given powers of their own, shared with the State and transferred (Title II of Law 111-14), enabling them to respond better to the needs of women and men. Moreover, it is only since 2015, with the adoption of the new territorial governance model known as 'Advanced Regionalisation' (art.1 of the 2011 Constitution), that the regions, in collaboration with the other local authorities (provinces/municipalities and communes), have been called upon to draw up their development programmes incorporating a gender perspective. However, it should be stressed that planning in general, as well as gender-sensitive planning, are still new practices in local authorities, particularly at regional level, introduced with the new organic law 111-14 dedicated to the regions.

To date, there has been limited scholarly inquiry into the integration of the gender approach within regional development programmes in Morocco. To fill this research gap, we are committed to developing a theoretical framework resulting from an in-depth literature review based on the gender and development approach. This approach aims to understand how the gender perspective is integrated across the board throughout the planning process, drawing on the Harvard model of strategic business planning. This model, which defines

strategic planning as necessary to define the company's strategic positioning, was the first to be put into practice by private companies in the early 1960s and adopted in the field of public action in the 1970s (Paul, 1993). This new type of public action management is also defined in the book by Olsen and Eadie (1982) entitled 'The Game Plan, Governance with Freefight', where strategic planning is presented as "*a disciplined effort to guide the fundamental decision-making of communities and public organizations*" (Olsen & Eadie, 1982). The aim of this study is to analyze the RDP of the Fés-Méknes region, taking into account its particular context and gender sensitivity.

2. Theoretical Background

Since its introduction in the 1970s, it has been clear that there is a gap in the definition of the concept of gender. The concept has been the subject of ongoing controversy and debate among theorists, practitioners and specialists in the field of gender studies. If, for some, the term "gender" is a substitute for the word "women", for others it is interwoven with social relations, based on the idea that the unequal distribution of resources, responsibilities and power between women and men results from these "sex social relations" (Berni, Reveillard, Chauvin, & Jaunit, 2012). While for others, the term "gender" reflects the roles culturally and socially assigned to women and men. The concept first appeared in the famous 1972 book by Anglo-Saxon sociologist Ann Oakley, referring to socially constructed notions of feminine and masculine sex, as well as to a process of interdependent and complementary hierarchical construction between men and women (Oakley, 1972).

The introduction of this new concept challenged previous approaches to development, such as the 'women and development' approach, followed by the 'women in development' approach (J. Bisilliat, 2000). For the first current, women were long considered an absent category in the development models supported by Northern donor countries during the first decades of the Cold War (Wilson, 2015). In contrast, advocates of the 'gender and development' approach believe that the analysis of women's situation cannot be done in isolation, but must be put in relation to that of men, given that the relationship between the two sexes is based on unequal power. In other words, this approach aims to identify power relationships, institutions and social practices in order to promote women's empowerment, taking into account inequalities in all development sectors (Degrave, 2011). This is what development specialists call planning from a gendered perspective, as Claudy Voué has pointed out: "*relations and inequalities between women and men are influenced by all kinds of unplanned events and processes*" (Vouhé, 2001). This is what development specialists call planning from a gendered perspective, as Claudy Voué has pointed out: "*relations and inequalities between women and men are influenced by all kinds of unplanned events and processes*" (ibid). On the other hand, Bisilliat (1996) has pointed out that changes in gender relations are often the result of gender-blind policy interventions or programs, which affect women's and men's roles as well as their access to and control over resources in the private and public spheres (Bisilliat, 1996).

In short, gender planning means defining development problems and priorities in a given context, such as at regional level, identifying the specific needs and constraints of different groups, formulating objectives and strategies, allocating resources, monitoring implementation and evaluating impact (Vouhé, 2001). According to Claudy Voué, a "gender intervention" or "gender-sensitive intervention" will consciously seek to reduce inequalities between women and men, or at least not to increase them (Ibid). Taking this approach into account in the planning process involves several stages and the use of various tools. Several analytical frameworks have been developed, such as the Harvard framework, the Longwe framework, etc. (Candia, Ines, & Maitrayee, 1999), with the aim of influencing planners' intentions with regard to traditional gender-blind planning.

In Morocco, taking the gender approach into account in the various territorial development projects has become a legal requirement, as we have already pointed out. Several pieces of legislation require local authorities, particularly the region, to integrate this approach when drawing up their RDPs.

According to Law 111-14 on the regions and Decree no. 2-16-299 of 29 June 2016 laying down the procedure for drawing up the RDP, "*the regional development programme is the reference document used to document the projects and actions scheduled or planned to be carried out in the region with a view to promoting integrated and sustainable development, in particular improving the region's territorial area and strengthening its economic competitiveness*" (Art.2). The RDP is the reference document for programming projects and activities falling within the remit of the region. It is drawn up during the first year of the Regional Council's term of office and sets out, for a period of six years, the development actions that the region intends to carry out within its territory (DGCT & TARGA, 2022).

In the same vein, Law 111-14 requires that the development of the RDP should take into account the gender dimension throughout the process, as an upstream planning approach to make the programme more gender-sensitive (Art. 83), and that the region should take into account the gender aspect when setting the objectives of the projects included in the budget and when defining the quantified indicators for measuring the expected results (Art. 171).

Drawing upon the literature on gender approach and planning, as well as the territorial planning process, particularly the RDP as a regional planning tool, we will develop, in the figure below, a conceptual model integrating the gender approach across all phases of RDP development, from preparation to implementation and monitoring-evaluation.

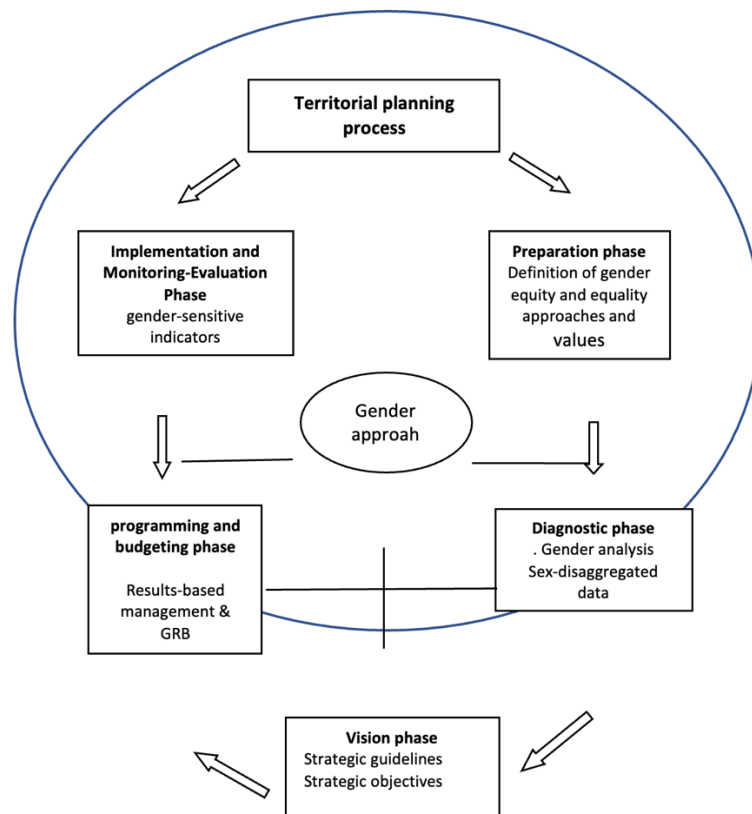


Figure 1: conceptual framework of the planning process from a gender perspective (authors)

3. Methodology

To carry out this research, we have chosen a qualitative methodology, considering this approach to be the most suitable for gaining an in-depth understanding of the territorial planning process, as a complex phenomenon involving multiple stakeholders. This approach will enable us to gather a variety of perspectives and experiences from the actors involved in the planning process, which will enrich our understanding of the dynamics at play. The case method lends itself particularly well to the analysis of the planning process from a gender perspective, as it aims to grasp how a system works, to deal with contemporary phenomena in their context, and to mobilize various sources of data (Yin, 2009).

In this study, we will use a longitudinal single-case approach to analyze how gender mainstreaming in the RDP planning process evolves over a five-year period, from 2016 to 2021. This approach will enable us to observe changes and trends over time, providing valuable information on the impact of policies and interventions on gender equality. In addition to interviews with key stakeholders, we have also relied on a desk review of key documents relating to the development of the RDP, in order to complete our understanding of the planning process. Before proceeding with the thematic content analysis, the recorded interviews were transcribed onto more than 130 pages and coded using Excel, thus ensuring a rigorous and in-depth analysis of the data collected.

Table 1: Identification of the interviewees

Interviewees	Sex	Age	Education	Responsability /Function	Level Of Participation In The Rdp
I.1	M	53	Master's	Division Chief of Regional Affairs	At all stages of the RDP process: diagnosis, vision, action plan, budget, implementation, and monitoring-evaluation.
I.2	M	41	Master's	Division Chief of Training and Human Resources.	Indirect participation in all stages of the planning process.
I.3	W	45	Master's	Division Chief of the Advisory Bodies.	Involvement in all stages of RDP preparation: preparation, diagnosis, strategic vision, action plan, budget, implementation, and monitoring and evaluation.
I.4	M	53	Master's	Division Chief of Finance, Budget, and Accounting.	Participation in RDP budgeting through preparation of the multi-year programming file.
I.5	M	51	PhD	Division Chief of the social, cultural and sports affairs.	Involvement at every stage: from diagnosis to implementation.
I.6	W	32	Master's	In charge of Social Projects within the Social, Cultural, and Sports Division.	Indirect participation in all stages of the RDP preparation.
I.7	W	31	Bachelor's	In charge of cultural and sports projects in the Social, Cultural, and Sports Division	Indirect participation in all stages of the RDP preparation.
I.8	M	32	PhD	In charge of monitoring the Regional Development Program (RDP) within Regional Development.	Direct participation in all stages of the RDP
I.9	M	58	PhD	Former First Vice President of Regional Council (responsible for economic affairs of the region)	Participation at all stages of the RDP from preparation to monitoring and evaluation.
I.10	M	43	Master's	Former Fourth Vice .President of the Regional Council.	Participation at all stages of the RDP process, from preparation to monitoring and evaluation.
I.11	M	58	PhD	Former Member of the Regional Council from the previous term (Member of the Finance Committee).	Participation at all stages of RDP: from preparation to monitoring and evaluation
I.12	W	37	Master's	Former Chairwoman of the Committee for Women, Youth, and Sports.	Participation at all stages: diagnosis; strategic vision; action plan; budget; implementation, and monitoring and evaluation.
I.13	M	37	Master's	Former member of the Equity, Equality, and Gender Approach body (Coordinator of the thematic committee dedicated to gender approach).	Participation in the territorial diagnosis stage.
I.14	W	42	Bachelor's	Former member of the Equity, Equality, and Gender Approach body	Participation in the territorial diagnosis stage.
I.15	M	37	Bachelor's	Former member of the Equity, Equality, and Gender Approach body.	Participation at all stages of RDP: from diagnosis to implementation.

4. Findings

The results of this research, aimed at analyzing how the gender dimension is incorporated into the regional planning process, highlight a weak integration of this approach throughout the process, particularly in its initial preparation phase before and during the launch of the RDP.

4.1 Preparation and Launch Phase

This is the first stage of the process during which the regional council initiates the development of its RDP. This phase is characterized by the preparation of a special prescription document (SPD) by the members of the regional council, particularly the elected officials in coordination with the governor of the region, for the benefit of the entity that will be designated to provide technical expertise in developing the RDP.

Upon reading this document (SPD)¹, it becomes evident that the concept of gender is regarded as an essential approach in the elaboration of the RDP. However, despite the awareness among stakeholders of the necessity for its integration, both the concept and the gender approach remain unclear to the majority of respondents. Indeed, most of them emphasize that the concept of gender remains ambiguous in the law governing regions, particularly regarding its consideration in the elaboration of the RDP.

This observation is mainly due to the lack of training specifically dedicated to elected officials, particularly on the gender approach, its relevance, and the necessary tools for its integration. According to most of the interviewees, the concept of gender is poorly understood. For them, both the concept of gender and the approach as a whole are still new, not only in the Fés-Méknes region, but also within all the territorial collectivities of the Kingdom. They consider this concept to be poorly appropriated by all stakeholders and to remain ambiguous in Law 111-14 regarding its integration into the RDP.

As the following testimonies show:

"For me, gender encompasses both the female and male sexes, unlike certain perceptions that consider it as including marginalized individuals, youth, or other categories. In summary, gender concerns both women and men" (I.1)

"The concept of gender encompasses various categories within society, including women, children, the elderly, and individuals with specific needs. In my view, it is not limited solely to women, contrary to what many people believe, but encompasses all of these categories that I have mentioned" (I.3).

These responses indicate that there is no shared vision of the concept of gender among RC members, whether men or women, due to the lack of accompanying training during this phase to unify understanding of the concept and the approach in general. In addition, the results highlight the lack of gender awareness among RC members, whether elected or civil servants.

4.2 Diagnosis Phase

The territorial diagnosis phase is the first key stage in the operationalization of the RDP planning process. Identifying gender at this stage requires the availability of sex-disaggregated data as a sine qua non for a gendered analysis of the needs of women and men. Respondents claim that this phase has been carried out, but with limited consideration of the gender dimension. Firstly, because of the absence of a person responsible for gender issues within the consultancy and the RC. Indeed, the analysis focused on two sectors, namely education and health, for which information is somewhat available at regional level. However, it should be noted that the data for these areas is disaggregated by sex (male and female), but not by age.

According to the following testimonies:

"Conducting a gender analysis means examining the available statistics to obtain an overview of the situation of women. This approach also makes it possible to identify the areas in which women are marginalised in order to propose appropriate responses" (I.10).

"The gender analysis consists of examining the data collected, in particular the basic documents of the RDP, including the information collected from the administrations and the projects and programmes being implemented in other devolved services". (I.1).

From these responses, it appears that gender analysis consists of studying the situation of women by sector. However, there was no feedback on the sources of inequality or an exhaustive analysis of the situation in the various areas within the region's remit (art 80 to 90 of law 111-14). In fact, the responses show that no training has been provided on gender analysis or on the tools to be used to implement a gender-sensitive territorial diagnosis.

4.3 Strategic Vision Phase

Once the strategic diagnosis stage has been completed and validated by the RC, based on the results of the diagnosis, it launches the development of the strategic vision. The responses received from all the interviewees indicate that the vision drawn up by the RC is aimed at the overall development of the region, indirectly seeking

¹ Prepared in accordance with Decree No. 2-12-349 of 8 Joumada I 1434 relating to public contracts. (B.O. n° 6140 of 4 April 2013).

to improve the conditions of both women and men, without focusing specifically on improving the situation of women and men. As stated by a previous elected representative: *"The gender approach was not very present in our thinking when we were preparing our strategic vision. We were thinking mainly about our vocation for these 6 years, which was to ensure more attractive regional development for our region. We were a long way from thinking in terms of gender"* (I.9).

Indeed, the majority asserted that it is mainly in the fourth strategic focus, 'Reducing social deficits and territorial inequalities' (RFM & KPMG, 2017), that women's needs are indirectly addressed. However, none of the other areas directly targets the mitigation of inequalities. The members of the RC, particularly the elected representatives, maintain that their main objective was to promote regional development ensuring greater economic attractiveness, wealth creation, and the strengthening of regional potential, for the benefit of both women and men, and, consequently, all citizens. This is illustrated by the following verbatims :

"The gender approach is taken into account directly in the fourth strategic priority, reducing social inequalities, while in the other priorities it is integrated indirectly. Our vocation is regional development, so our actions target both women and men" (I.7).

"In my opinion, the areas identified in the diagnosis indirectly target women, with the exception of the social field, where projects have been proposed that will directly target women" (I.1).

4.4 Action Plan Phase

The various strategic lines established have been put into practice through 97 territorial development projects for the Fés-Méknès region (Région Fés-Méknès, 2020-2022). However, of these 97 projects, only 3 directly target women, mainly in the social field, as the head of the social affairs division states: *"More than 30 projects have been included in the programme as part of the contract-programme, and their main objective is to directly and indirectly benefit women. These projects are mainly in the social field, encompassing sectors such as health, primary education and culture"*(I.6). Whereas the 94 projects indirectly affect women and are aimed at the general development of the region, as indicated by the majority of respondents.

In the same direction, according to some respondents, the project selection stage is very critical, and is preceded by a 'negotiation' phase carried out by the council's elected representatives in coordination with the region's wali and the ministerial departments in the various sectors. This is the stage where each elected representative enters into a phase of advocacy by defending the projects within their responsibilities within the council to the ministries. As stated by the head of the regional council *"Establishing an action plan consists of a phase of continuous dialogue and negotiation between the council and the ministerial departments concerning the projects to be implemented in the region"* (I.7).

In addition to this mainly political reason, the respondents put forward other criteria that influence the selection of projects to be set up, such as the availability of the budget, the technical study of the projects and the surface area required for construction, as highlighted by a previous elected representative (I.10). In this context, it is crucial to emphasize the region's interdependence with regard to budgetary constraints and its financial autonomy, which is being called into question at national level. As a consultant in public policy development put it, *"given this state of regional-national dependence, projects meeting women's needs must emanate from the ministries, i.e., from the national level"* (I.15).

4.5 Budgeting Phase

With reference to Law 111-14, particularly Article 171, which stipulates that the region's budget must integrate the gender aspect when setting objectives and indicators, it emerges from the respondents' answers that the Gender-Responsive Budgeting (GRB) tool is poorly understood and not very appropriate. According to them, GRB is often perceived as a budget sum reserved solely for projects directly targeting women.

A CR official explains: *"A gender-sensitive budget encompasses all allocations reserved for projects designed to meet the needs of women, young people and children"* (I.3). Similarly, a council official explains that *"The gender budget is an instrument introduced at international level and by Morocco to promote the socio-economic conditions of women"* (I.7). These testimonies underline the scarcity of training courses for actors on this tool. Although some training courses have been organized at national level, they are described as very basic. A council official said: *"Training has been organized by the Centre of Excellence for Gender Responsive Budgeting in partnership with UN Women. However, this training, although useful, is considered insufficient to establish a*

truly gender-sensitive budget. They were mainly introductory in nature, providing basic knowledge in this area" (I.7).

In addition, the respondents' statements reveal that the budget for the Fés-Méknes region is not gender-sensitive. Instead, it is seen as a traditional budget, made up of two parts (income and expenditure), with no budget line specifically geared towards a gender perspective. A budget department manager explains: *"The region's budget is a 'traditional' budget divided into two parts, an operating budget and an investment budget. As far as taking gender into account in the budget is concerned, it's a whole process that starts with the diagnosis, the strategic priorities and the prioritized projects, whereas drawing up the budget is simply the translation of what has been decided at all these stages"* (I.4).

Similarly, an analysis of the official budget document for the Fés-Méknes region for 2022-2023 confirms this observation. Even the names of the projects in the PDR are not listed individually, but are grouped together under a single heading covering all the projects programmed. The budget manager (I.4) states: *"Our budget is not Gender-Responsive budget. No heading in the budget document is dedicated to women, and even the titles of the projects to be carried out are not indicated in the document. Moreover, integrating gender into the budget requires the development of indicators for the planned programmes and projects, to be measured as and when they are implemented. However, in our region and in all the regions of the kingdom, we are still waiting for a model performance project to be published"*.

4.6 Implementation, Monitoring and Evaluation Phase

As we have already mentioned in the section on budgeting, Article 171 of Law 111-12 states that the RDP must be accompanied by a performance project, including indicators for measuring and monitoring the evaluation of planned projects. However, analysis of the final RDP document, as well as the responses of all those interviewed, show that the logic of planning using performance indicators has not yet been put in place by the region. They state that although this performance logic is mentioned in Law 111-14, it has not yet been applied within the region. According to the respondents, they still need training in these working tools, as most of them do not know what a gender-sensitive indicator is or how to construct one.

For some, gender-sensitive monitoring is understood as the set of indicators used to monitor projects that directly target women (I.7, I.8, I.10). For others, gender-sensitive monitoring makes it possible to assess the extent to which the objectives set by a project have been achieved, particularly the objectives directly targeting women (I.3, I.14).

Testimonials:

"Gender-sensitive monitoring: these are indicators that can be measured over time to monitor the level of implementation of projects in progress or completed with regard to the gender approach" (I.4).

"Gender-sensitive monitoring aims to assess the extent to which objectives have been achieved in projects that specifically target women, as well as in other more general projects. However, in our region, we currently limit ourselves to analyzing the impact of projects, but this evaluation takes place at the end of their implementation" (I.7).

5. Discussion and Conclusion

Analysis of the results obtained has led us to conclude that the RDP planning process in the Fés-Méknes region lacks sensitivity to the gender approach. These findings reveal a gap between theory and reality on the ground. Despite its institutionalization, the gender approach remains ambiguous in Law 111-14 regarding the regions of Morocco, primarily due to the lack of a clear definition of the concept of gender and its integration into the RDP. Faced with these institutional shortcomings, it appears that stakeholders lack visibility of the concept and approach in general.

In addition to these legal reasons, the results led us to conclude that there was a lack of gender culture within the council, reflecting the low level of interest in the gender dimension during the development of the RDP, from diagnosis to implementation and monitoring-evaluation. In accordance with the literature on gender and development, the integration of this dimension into a development action should begin at the diagnosis stage, with a gender analysis enabling an inventory of gender-based inequalities and their various sources to be drawn up.

Moreover, it should also be noted that two sectors targeted by the RDP are considered to be feminized sectors with a strong female presence at both national and regional level. Sectors such as energy, for example, which fall within the remit of the region, remain a male-dominated sector. According to gender specialists, these actions contribute indirectly to the entrenchment of gender stereotypes. There are also technical reasons for the lack of a gender analysis at regional level, due to the absence of a database disaggregated by sex and age at regional level. This data, which is a prerequisite for any gender-based analysis, remains a real obstacle for CR stakeholder.

Similarly, for the other phases, particularly the vision phase, addressing the unequal relationships between women and men for territorial development that responds equitably to specific needs is not yet a priority among regional actors. In our view, this situation reflects a lack of awareness of the importance of gender as an essential component for fair and inclusive regional development.

As for the programming and budgeting phase, the gender perspective is poorly taken into account. Firstly, in terms of programming, this approach is not yet a priority for decision-makers, given the very limited number of projects devoted directly to women. In fact, these players lack the cross-cutting logic of the approach, which consists of thinking from a gender perspective for each development initiative. As for the gendarisation of the budget, as a tool for analysing the approach that calls into question power relations by examining the budgets and priorities of our societies, it turns out that it has not been implemented due to a lack of firm political will, despite its institutionalization under law 111-14 dedicated to the regions (art. 171).

In the same vein, analysis of the last implementation and monitoring-evaluation phase has shown us that there are other managerial constraints, reflected in the low level of adherence to the results-based management approach in general, and the gender-sensitive approach in particular, within the RC. This approach, which implies the introduction of gender-based measurement and monitoring indicators, is very weak in the region's management system. This finding therefore implies that the evaluation of the projects put in place will be gender-blind, in other words, the actions implemented will be analyzed without any focus on the impact on gender relations, which could indirectly widen the inequality gap between the two sexes.

6. Limitations and Further Research

The completion of this study was hampered by a number of limitations, four of which stand out in particular. Firstly, there was a lack of documentation on gender issues in the region. Secondly, the delays and unavailability of actors, particularly politicians, combined with their lack of expertise on gender issues, made the interviews more difficult and prolonged. Due to these obstacles, we were forced to select a single case, that of the Fés-Méknès region, with a restricted sample of fifteen people whom we considered best qualified to respond to our interview guide.

Thirdly, the delay in the publication of the final report of the RDP for the period 2020-2027 by the RC has forced us to focus our analysis on a single experience (2015-2020). Although this period is limited, it gives us an initial perspective on how gender is taken into account in the planning process, in accordance with the new organic law 111-14 on the regions. This law aims to draw up the development programme in a participatory and gender-sensitive manner. These limitations highlight the need for future in-depth research, perhaps with greater access to information and wider stakeholder participation, to better understand the implications of gender in the regional planning process.

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External Return-To-Work Programs Impact On Women Relaunching Their Careers

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Abstract: Women have higher drop-out rates during their professional careers, mainly due to family, child, or elderly care; furthermore, they have more difficulty returning to the workforce even if they are highly qualified, making the future of gender equality in the workplace a continuing challenge. Thus, encouraging women to re-enter the workforce after a career break makes sense from a gender perspective and, at the same time, can also add value to the economy by providing qualified and diversified resources to companies (large ones or small-medium-sized enterprises, or SMEs). Additionally, this encouragement can have short- to medium-term positive effects on career-break women who would like to return to the workforce, as well as long-term effects due to lower or no pension contributions during their career break. The aim of this study is to identify the push and pull factors affecting women's ability to return to the job market after a career break. Moreover, the purpose of this study is to understand what has been studied about the impact of return-to-work/returnship programs (RTW) and externally provided return-to-work programs (RTWE) in helping bring back women to the labor market. The research is qualitative and exploratory, based on a literature review. The findings of this research provide an overview of relevant factors related to women's return to the market and allow for new research avenues on RTWE's outcomes for both women and small and medium-sized enterprises. In terms of originality, the goal of this research is to encourage data-driven debates about the potential implications of women's return-to-work programs as a strategy to help women return to the workforce and whether this strategy can be adopted by different-sized companies.

Keywords: Women, Career Break, Return-to-Work, Returnship, re-Entry

1. Introduction

The debate about gender diversity and equality is in vogue, and the United Nations Sustainable Development Goals (UN SDG, 2023) highlighted it with Goal Number 5: Achieve gender equality and empower all women and girls. This study focuses on this goal and addresses an emerging topic: returnship/return-to-work programs (RTW) and return-to-work programs externally provided (RTWE) and how they can help women go back to the workforce. Scientific evidence is limited, but its preliminary findings are promising and contribute to new insights on how to improve equality in the labor market and society at large.

In 2022, Portugal was ranked number two in global talent shortages (Manpower, 2022). This country was wasting a talent pool: qualified (high-level skills, education, and experience) women who, in most cases, chose to take some time off their careers to take care of their families (e.g., children, elderly, disabled, and/or support a partner's job). When these women decide to return to the job market, they have a hard time finding their way back into the workforce. The Portuguese Statistics National Institute's (INE) data from December 2022 shows that 53% of unemployed are women, compared with 48% in December 2011 (INE, 2023). Additionally, of the 78,2 thousand people unemployed with at least a bachelor's degree, 68% were women. Not encouraging numbers for women, which represented 59% of university graduates in 2021 (PORDATA, 2022), 40% of corporate middle managers, 16% of top management, and 6% of CEOs (McKinsey, 2023). These neglected, qualified resources have a negative economic impact when society loses the opportunity to put their talent to good use.

But why do women decide to take a career break? A study about women in Portugal (Sagnier & Morell, 2019) shows that women with children have six daily extra hours of work (apart from their labor working hours) when compared to only 3,5 for women without children. Furthermore, 31% of women mentioned that they adapted their professional lives to their personal lives. Within this group, 84% reduced their working hours and/or rejected new challenges, while 16% took the drastic measure of leaving their paid job. It is important to mention that this study was brought out right before the COVID-19 pandemic, which made the overall situation even more challenging.

And Portugal is not alone. McKinsey and Lean In's report demonstrates that in the USA, women represented 48% of entry-level career levels, 40% of middle-level positions, and 27% of C-level positions. Even though these

numbers have improved since 2016, it indicates that a large portion of women either do not get promoted to higher levels and/or leave the workforce. Moreover, managing both family and careers became a more difficult task as the COVID-19 pandemic increased pressure on women, with a higher percentage of women opting out of the workforce compared to men. Furthermore, ManPower Group's report (2020) indicates that millennials expect to take more breaks during their professional lives compared to their parents, and when asked about the reasons for that, women state their breaks will be for the birth of their child (61% compared to 32% of men), child care (33% vs. 20% of men), care for parents and aging relatives (30% vs. 25% of men), and return to education or gain new skills (23% vs. 21% of men). These data support the idea that gender equality inside companies will continue to be a challenge, with clear results for the economy.

To start balancing gender inside companies, Zimmerman and Clark (2016) suggest that two issues should be tackled. First, the number of women deciding to opt out must be reduced. Second, schemes to bring women back to work must be in place. Those schemes vary from career development and retraining workshops to placement schemes, postgraduate studying, mentoring, and reduced fees for society memberships and/or conferences (Panteli and Pen, 2010) and, more recently, tryouts (Sterling & Merluzzi, 2019). Tryouts for qualified career breaker are called return-to-work (RTW) or returnship (Cohen, 2012, 2021; Sterling and Merluzzi, 2019) or RTW externally provided (RTWE) (Cohen, 2012). The primary focus of this research is on the latter type of scheme as well as to understand what the push and pull factors are that affect women when opting back into the labor market.

2. Methodology

This study was based on a literature review. The keywords used in the databases (Web of Science, b-on and Google Scholar) were "returnship, return-to-work program, career break, opt-in, and opt-out". Keywords "women/females" were not included since these programs are mostly focused on women, so the use of these words would be redundant. Initially, the first author looked into 56 research articles, books, and reports. As an emerging field, the authors wanted to have a broader perspective on what has been studied in this arena in different countries, even if it was not published in top journals. Subsequently, the author selected academic journals no less than Scimago Q3 to guarantee that, on the one hand, a broad scholar perspective was encompassed, and on the other hand, selected papers had quality peer-review process. After reading the first set of papers, additional 19 research papers were selected based on their citations in the Reference section of the first set of papers. This process led to a second round of papers being reviewed. Ultimately, the analysis included 48 documents (27 academic papers, eight reports, three books, and ten online articles), and 20 papers were discarded from the conclusions, mostly due to low relevance.

3. Theoretical Foundation Results

3.1 Career and Career Break

The traditional professional career concept was generally described as a series of hierarchical moves from an individual in general within a single organization. But as the world evolved, so did the career paths, and in the last 30 years, many career models have been described. Arthur et al. (1998) described the principles of a boundaryless career where men and women would not limit their career to a single company, field of expertise, or job but rather move across boundaries between employers and/or work units within employers, rejecting the traditional career opportunities for reasons related to work or nonwork. Baruch & Peiperl (1997) proposed the "post-corporate career," which represented a career as being dynamic, horizontal rather than vertical, and even multidirectional. Later, Hall (2004) described the "protean career" as an evolution of the traditional concept where not the organisation but the individual is responsible for their own path based on their personal values and subjective measures of success. Afterwards, Arthur, Khapova and Parker (2009) described the "intelligent career framework" as a career based on three mutually dependent "ways of knowing," indicating how, why, and with whom people work. Finally, Mainiero & Sullivan (2005) proposed the "kaleidoscope career model (KCM)," which stated that men and women make job decisions based on three career values: authenticity, balance, and challenge, which vary in significance over time.

Zimmerman & Clark (2016) have synthesized the three career values that women have during their professional careers (Mainiero & Sullivan, 2005). They proposed an integrative framework for women's off-ramps and on-ramps in the workforce, including the three phases of women's experience during a professional career break (opting out, career break, and opting-in). The term "opt-out" refers to the exodus of professional women from

the workplace (Belkin, 2003). In addition, this expression characterizes the worrying talent drain of highly educated women, often working moms, who choose not to pursue positions in corporate executive suites (Mainiero and Sullivan, 2005).

A career break is a time when an employee is not working for specific reasons (Institute of Physics, 2004). It may be a voluntary or involuntary decision, and it can vary from a few weeks to years. The main reasons for these career gaps are maternity leave or time off to look after children, disabled and/or elderly relatives. Other reasons may include involuntary interruption of employment, returning to full-time education, military service, accompanying a partner on sabbatical leave, or on a foreign assignment. When women return to the workforce, the terms used are opting-in or re-entry (Cabrera, 2007). Most women opt to return to the workforce mostly when personal lives stabilize (e.g., children grow older and/or elderly family members do not require more assistance) or they need to receive payments.

In this case, is it simple for women to return to the workforce? The answer is clear: no. In Portugal, the USA or UK data show that it is not easy to return to the labor market (Sterling & Merluzzi, 2019; Gicheva & Keohane, 2018). Some women, but also men, who decide to return to the workforce are called returnees or relaunchers. These concepts refer to experienced workers who, in the past, were mid- to senior-level professionals, then had an extended career break (more than a year) and wanted to return to work (iRelaunch, Sterling & Merluzzi, 2019). Despite the fact that the impact of COVID has helped to normalize career breaks, professionals who took a longer break still struggle to reenter the workforce. Longer time away from the labor market, especially more than two years, reduces substantially the ability to reenter the workforce (McCrary-Ruiz-Esparza, 2023). The official launch of returnship programs in 2008 by Goldman Sachs started to bring some light at the end of the tunnel for this group of women (Cohen, 2012).

3.2 Returnship – Return-to-Work Programs

A tryout is a hiring arrangement to select candidates for full-time positions (Sterling and Merluzzi, 2019). Tryouts in general run typically during weeks or months, and selected candidates are given the chance to do job-related tasks inside the organization and demonstrate their competencies and skills alongside other regular company employees before being selected as a regular full-time employee. Modern-day tryouts are also called alternative hiring arrangements and can be split among four different types: first, internships for early-career professionals (mainly college-educated workers); second, temp-to-perms for temporary workers (mid-to-low workers); third, returnships or return-to-work programs (RTW) for mid-career professionals or experienced workers who have taken a career break; and fourth, contract-to-hire for specialists and mid-to-high-wage workers. Sterling and Merluzzi (2019) suggested that tryouts have three dimensions: relational (tryout worker-regular employees and tryout worker-organization), psychological (outsider with potential to join the organization), and economic (compensation and legal protection according to the fixed contract).

RTW are short-term programs (three to six months) tryouts that are run mostly by large multinational corporations (Cohen, 2012, 2021) and some public agencies (e.g., Utah Return, 2022). Women from different backgrounds join these programs, but most of their education is linked to information technology, engineering, and management. RTW started in the USA with UBS and Lehman Brothers in 2005–2006 and spread to other companies and countries (Timewise and Women Returnees, 2018), as its conversion rate (50–80%) to full-time positions of RTW participants is extremely high. One of the main reasons is the talent pool shortage, and “returnships 'de-risk' the hiring decision to the extent managers consider engaging with people coming off a career break as a high-risk proposition” (O'Donnell, 2018). Returnship programs have a specific application process, on-boarding and introduction sessions, technical training, professional development and exposure to senior management, mentoring, and, in general, are paid with the potential for definitive hiring at the end. Work during this period in general relates to a specific project, but recently direct hires for normal job assignments are being done (Cohen, 2012, 2015, 2021). RTW gives some time for returnees to adapt to the workplace, and most programs run with cohorts of five to 25 people.

RTWE differs from RTW due to three characteristics: firstly, RTWE is run by an educational institution (Shaw, Taylor and Harris, 1999; Cohen, 2012) or by a non-profit organization that supports career breakers. This means that the short-term skill-building program involves an academic component (such as information technology, job search techniques, and confidence building) (Shaw et al., 1999) as well as real-world work experience in partner companies for participants' personal and professional development. Secondly, participants on RTWE are not necessarily paid (but participants don't pay to participate in the program). Thirdly, at the program's end, there is no option of being hired by the provider of the program, but potential partners where the project is

being done can hire and/or recommend the participants to be hired. Both RTW and RTWE allow companies (sponsors and/or partners) to know the professional on the job (leading to more informed decisions and higher motivation for hiring those candidates) when compared with only interview sets defined in the normal hiring process (where returnees in general lag behind other candidates).

Academic research has been conducted on RTW (Kaushiva and Joshi, 2020; Cohen, 2012, 2015, 2021), but not so much on RTWE. Still, there is some preliminary research exploring this program's results (Shaw, Taylor and Harris, 1999; Cohen, 2012), showing that RTWE helped women opt in and be happy with their new roles even though they were not necessarily at a level commensurate with their qualifications and experience, nor in their original professional area. Nevertheless, RTWE was the catalyst for their return to the labor market.

Most RTW are run by large corporations, but the backbone of the European economy are the small- to medium-sized enterprises (SMEs), which are defined by the European Union as companies that employ less than 250 people and have an annual turnover of less than 50 million euros and/or a balance sheet total of less than 43 million euros" (EuroStat, 2022). These companies have more difficulty creating or running RTWs due to scale, but they can still benefit from hiring returnees from other RTWs or RTWEs (Timewise and Women Returnees, 2018). Additionally, since 2018, Women Returners (2021) has conducted cross-company initiatives in the legal, financial services, and professional services sectors. This new development makes it possible for SMEs to participate in a RTW program for smaller-scale recruiting requirements or to test the concept. Through this model, SMEs or large corporations can share learnings and expenses, as well as work together to broaden the diversity of hiring across the industry.

3.3 Push and Pull Factors of Returnees opt-in Decisions

If a returnee wants to relaunch their career, what is needed? The definition of "ability to relaunch" is commonly used by companies working with RTW to define the skills and competences needed to relaunch their career, but no literature was found that combined in a single construct the factors that allow the ability to relaunch. Some of those factors include employability, self-esteem, and job search behavior (Cohen, 2016).

Employability is a psycho-social construct comprised of three dimensions: adaptability, career identity, and human and social capital (Fugate et al., 2004).

- Adaptability refers to the willingness and ability to change behaviors, feelings, and thoughts in response to environmental demands (Fugate et al., 2004).
- Career identity represents the way individuals define themselves in the career context and can be conceptualized as a 'cognitive compass' used to navigate career opportunities (Fugate et al., 2004), the "knowing why" (Defillippi & Arthur, 1994).
- Human capital encompasses the 'knowing-how' competencies (Defillippi & Arthur, 1994). 'Know-how' competences refer to career-related knowledge and abilities acquired via occupational learning and professional development activities.
- Social capital is the goodwill inherent in social networks (Fugate et al., 2004). In the context of work, information and influence provide individuals with access to career opportunities since they reflect the interpersonal aspect of employability, the "knowing-whom" (Defillippi & Arthur, 1994).

Mruk (2006) defines self-esteem as a certain attitude toward someone or something that has positive or negative cognitive, emotional, and behavioral reactions (i.e., the posture that a woman may have during an interview, which can be determinant of the success of obtaining employment). Job search behavior is described as a multidimensional construct composed of effort and intensity (i.e., the drive and regularity of a person's job hunt), quality of actions taken (such as writing résumés, networking, direct contacts, and interviewing), and persistence (i.e., how determined a person is in their job hunt along the way) (Manroop and Richardson, 2015).

If a returnee possesses these previous characteristics, is she able to opt back in? No, not necessarily since there are other factors that will push and pull these career-breaker women back into the workforce, but the overall message when someone decides to opt-out is clear: "Off-ramps are around every curve in the road, but once a woman has taken one, on-ramps are few and far between—and extremely costly." (Hewlett and Luce, 2005).

Returnees face six different push factors that will help them opt-in, namely corporate support, financial stability, personal fulfillment, personal life stability, and professional identity and growth. These factors are described in Table 1.

Table 1: Push Factors

Main PUSH Factors	Examples
Corporate Support	Corporate support from return-to-work agencies that offer a step-by-step guide to looking for a job, a job board of open positions on partner companies' returnship programs, and/or job fairs to present those career breakers to companies with this type of program. (Sterling and Merluzzi, 2019) ;
	Existence of role models that went successfully through the same process (Cohen, 2012);
Financial stability	Financial reasons (need to earn an income, become self-sufficient, and/or concern about a potential pension deficit impact) (e.g., Hewlett and Luce, 2005)
Personal Fulfilment	Desire for intellectual stimulation (Cabrera, 2007);
	Desire to increase self-worth and confidence through their profession and receive prestige and stature in the community. (Hewlett and Luce, 2005; Hewlett, Sherbin and Forster, 2010);
	Enjoy working (Hewlett and Luce, 2005; Cabrera, 2007; Hewlett, Sherbin and Forster, 2010).
	Give back to society and their community (Hewlett and Luce, 2005; Hewlett, Sherbin and Forster, 2010).
	Knowledge that they stayed up-to-date with developments in the industry and technology by working on projects, volunteering, attending conferences, staying involved in professional groups, or enrolling in classes during their career breaks (Cabrera, 2007);
Personal life stability	Caring for family members is no longer required or family-stabilized (i.e., children or elderly parents) (Cabrera, 2007);
	Return home after a spouse's job relocation (Cabrera, 2007);
	Support from family and friends to opt-in (Offermann <i>et al.</i> , 2020; Singh and Vanka, 2021)
Professional Identity/ Growth	An attractive offer that came up (Cabrera, 2007);
	Craving to reconnect with people they respect and work within a team (Hewlett and Luce, 2005; Hewlett, Sherbin and Forster, 2010);
	Willingness for career advancement, including training (most self-employed people don't take care of their own training and developing needs, even when they know what they need to train) (Cabrera, 2007).

At the same time, these women still face eight additional eight barriers (pull factors) to come back, namely confidence issues, corporate support, current economy, discrimination and bias, financial stability, networking challenges, personal life stability, and work-life balance concerns. These factors are described in Table 2.

Table 2: Pull Factors

Main Pull/ Barrier Factors	Examples
Confidence Issues	Lack of professional self-belief (PWC and Women Returners, 2016; Gicheva and Keohane, 2018);
Corporate Support	Lack of knowledge/ transparency of which company job vacancies have part-job opportunities (PWC and Women Returners, 2016; Gicheva and Keohane, 2018);
	A sense of not having enough opportunities for progress inside different organizations, mainly if working not in full-time working arrangements, and a top level that a woman can achieve a "glass ceiling" (Cabrera, 2007; Gicheva and Keohane, 2018);
	Lack of many role models in top positions (Cabrera, 2007);
Current economy	Potential currently difficult economic situation (Cabrera, 2007);

Main Pull/ Barrier Factors	Examples
Discrimination and Bias	Prejudice against older age (Cabrera, 2007);
	Bias against career breakers: they are less competent and technically obsolete than someone who is currently working (Cohen, 2016; Gicheva and Keohane, 2018; Sterling and Merluzzi, 2019). Stigma starts from the moment that a career gap is seen in the CV, mainly when periods out of the workforce are longer (Cabrera, 2007). "You get 100 applicants, and often those with a career break go to the bottom of the pile or off to the side. Either consciously or unconsciously, there are biases" (Agovino, 2019);
	Risk-averse mentality due to widespread perception that even for high-performance women, career breaks erode their skills, requiring an update of their skills and knowledge (including technological and industry trends) (Cabrera, 2007; PWC and Women Returners, 2016; Gicheva and Keohane, 2018; McCrary-Ruiz-Esparza, 2023);
	Previous experience with discrimination against women in the workplace (Cabrera, 2007);
	Disrespect for potential company culture (mostly masculinity organisational cultures, which involve high competitive levels, zero-sum views of power, and hierarchical relations) (Cabrera, 2007) ;
Financial stability	Quality, affordability, and convenience of childcare (Gicheva and Keohane, 2018) or other family care requirements (i.e., for the elderly);
Networking Challenges	Lack or reduced access to a professional network that will help to find a job and when starting a new position (Cabrera, 2007; PWC and Women Returners, 2016);
	The requirement of networking occurs when events for networking are in general later in the day, making it more challenging to balance work and family lives (Offermann et al., 2020);
Personal life stability	Need for continuing to care for family members, i.e., children and the elderly (Cabrera, 2007);
Work-Life Balance Concerns	Lack of companies' flexible working conditions (hybrid or online) or part-time or flexible roles in quality roles (Cabrera, 2007; PWC and Women Returners, 2016; Gicheva and Keohane, 2018; Offermann et al., 2020) resulted in women accepting under-skilled positions with lower salaries to have those working arrangements.

4. Discussion

Tryouts for qualified career breaker are called RTW or Returnship (Cohen, 2012, 2021; Sterling and Merluzzi, 2019) or RTWE (Cohen, 2012). The primary focus of this research was to understand what has been studied about the impact of RTW and RTWE in helping to bring women back to the labour market. Companies are finding that these women career breakers can bring many advantages to their businesses. Returnees are workers who understand the culture and expectations of the workforce (O'Donnell, 2018) and have huge previous valuable experience. They bring gender and background diversity to companies' teams, which has already been proven to bring better business decisions, higher competitiveness, and shareholders' value. Government policies were created, for example, in the UK, but there is still not much research on the impact of those policies. In other countries, such as Portugal, no research was found, even though two RTWs were launched in the past two years and an RTWE was launched three years ago.

Moreover, the purpose of this study was to understand what the push and pull factors are that affect women when opting back into the labour market. From the analysis, six push factors were identified in the literature. Specifically, factors related to support and stability (e.g., stable personal life, family/friends support, and corporate support) and to psychological-motivational characteristics (e.g., need for personal fulfilment, professional identity/growth and need for financial stability). On the other hand, these women face eight barriers (pull factors). Individual barriers such as confidence issues, the need for personal life stability, work-life balance, and financial stability were identified as critical barriers. Furthermore, barriers can also be related to the current labour market, such as challenges to networking, discrimination and bias, a lack of corporate support, and the potential current economic situation.

5. Paths for Further Research

This study is relevant because it addresses an emerging topic for which there is little scientific literature. As suggested by Sterling & Merluzzi (2019, p.10) in their research agenda paper “Across the alternative hiring arrangements (AHA) typology, the least studied form of tryout is the returnship, with some industry reports suggesting career returnees may have more than a 50% chance of receiving a permanent offer. Yet, this has not been systematically studied by scholars.” Furthermore “We need to learn more about the experiences of returnees, both in the workplace and their home life”, and understand what are the results of returnships in women’s life even when they don’t get a direct offer from the returnship company that they have worked with. An enormous avenue for future research has opened. From a business perspective, returnees and RTW/ RTWE offer a strong business case to fulfill talent vacancies, but there is still a huge scholar potential to be explored to better understand the impacts of returnships and return-to-work externally provided on different types of companies (large corporation or SMEs) as well as different geographies that companies are located.

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Transgender Men and Non-Binary Individuals' Right to Pregnancy

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Abstract: Transgender men and non-binary individuals' rights to conceive and bear children remain unimaginable through dominant gender constructs. Social reproduction and structural violence reinforce the gender binary and restrict transgender men and non-binary individuals from exercising their right to conceive, parent, and receive proper health support. This gender expectation is reified in Canadian historical, socio-economic, and legal contexts, creating significant barriers in relation to accessing trans-reproductive healthcare. This paper brings attention to the paucity of research to understand better the rights of transmen and non-binary individuals when wanting to conceive and raise a family. It highlights the underutilization of the social work profession and their critical role to support affirmative reproductive trans healthcare.

Keywords: Transmen; Nonbinary; Pregnancy; Health Access; Human Rights

1. Introduction

The struggle for transmen and non-binary individuals to assert their right to conceive, to be legally acknowledged as a parent to their children, and to have their identities respected has been a long and arduous one. In 1999, Matt Rice made history as the first transgender man to carry a pregnancy in North America publicly. Unfortunately, legal protections for individuals with diverse gender identities and sexual orientations were not in place at the time, leading to accusations from some transgender men that Rice was confused and not a genuine man (Karaian, 2013). However, Rice's experience sparked interest among numerous transgender men and non-binary individuals in exploring their options for conception (Maiden, 2014). One notable example is Thomas Beatie, who, in 2008, gave birth to his first child after his wife was unable to conceive for medical reasons. Beatie gave birth to two more children, all while identifying as a transgender man. A transgender man named Jay Wallace faced difficulties accessing reproductive healthcare and establishing his rights as a father in Canada. During his third trimester, a nurse questioned the possibility of a man being pregnant. After his son's birth, he had to fight a legal battle to be recognized as the child's father in Ontario because the government form did not allow this option (Karaian, 2013; Nelson, 2011). These transmen's lived experiences highlight the dominant gender discourses that view reproduction as an inherently female attribute, resulting in systemic barriers, scrutiny, and discrimination for non-binary individuals and transmen seeking to conceive (Karaian, 2013).

The socioeconomic landscape for transgender and non-binary individuals in Canada is intricate and multifaceted, contributing to the stigma associated with transmen's rights to bear a child. While there has been some progress in 2SLGBTQIA+ rights, including amendments to the Canadian Human Rights Act in 1996 and the Assisted Human Reproduction Act in 2004 (AHRA, 2004), Bill C-38, and Bill C-16, there remain legal gaps that require attention. An essential area of discussion is the inequitable reproductive healthcare services for transmen and non-binary individuals (Berger et al, 2015; Coleman et al, 2022). For example, the Canada Health Act's primary objective is to protect, restore, and provide for individuals' well-being without barriers; however, transmen and non-binary individuals populations are not offered equitable access to assisted reproductive technology or safeguarded from gender discrimination when pursuing prenatal care (Government of Canada, 2020).

To complicate the inequities experienced by transmen and non-binary individuals, the burden to pay for their own fertility expenses, including the disparaging static discourses on transgender care they experience when advocating for care is highly oppressive (CanLii, 2004; Johnstone, 2018). While we have seen some progress with the World Health Organization's removing transgender as a mental disorder in 2019, North America persists in pathologizing transgender individuals through psychosocial assessments and unwarranted care (Hale, 2007; MacKinnon et al, 2020; Vipond, 2015). Therefore, there is a need to raise awareness and support transmen and non-binary individuals who aspire to start a family, given that reproduction is legally associated with female identity, as established in *Brooks vs Safe Way Canada Limited* in 1989 (Karaian, 2013). In Nova Scotia, for instance, most gender-affirming surgeries necessitate two letters of psychosocial assessment and a third letter from a surgeon verifying its medical necessity (Murphy, 2010; Government of Nova Scotia, 2020). The aim of this paper is, therefore, to bring attention to the inequities in relation to transmen and non-binary individuals' rights to bear children and highlight how dominant gender constructs continue to limit medical care for those who do not fit into cisgender binary categories. In addition, it will highlight the importance of including social

workers as a crucial component in ensuring cohesive and comprehensive reproductive healthcare. The next section discusses the barriers transmen and non-binary individuals face in accessing reproductive healthcare, including the dominant discourses and practices that perpetuate systemic discrimination and deny their human rights. It will examine gender identity and societal and medical expectations, policies that erode their rights, creating an interlocking and compounding web of discrimination that hinders their access to pregnancy and affirmative reproductive healthcare.

2. Systemic Reproductive Healthcare Barriers

The exclusion of transmen and non-binary individuals from reproductive healthcare is a direct outcome of prevalent national values and policies that have influenced the attitudes and conduct of healthcare providers (Mancke, 1999). One example is the British New Elizabeth Poor Law of 1834, which established an alarming dichotomy of deserving and undeserving citizens based on their conformity to traditional moral and social norms, including White national cisheteronormative ideals. Explicitly, these White binary constructs frame any deviations as medically and psychologically abnormal which creates significant barriers for those outside the binary in relation to accessing reproductive healthcare (Ives, Denov, and Sussman, 2015; Ries, 2003; Thobani, 2007). That is, transmen and non-binary individuals are regulated by universal approaches that classify and regulate their bodies as certain kinds of subjects (Reddington, 2023). This binary logic is evident in the prioritization of cisgender women in reproductive healthcare (Berger et al, 2015; Scheim et al, 2021).

One primary area of debate concerns the medical practices regarding transmen and non-binary individuals and their reproductive organs. Transmen and non-binary individuals are vulnerable to inadequate reproductive healthcare due to medical assumptions based on inaccurate information regarding their bodies and gender. There is a common assumption that transmen desire to adhere to traditional gender norms and undergo gender-affirming surgeries to remove their "female" reproductive organs as part of their medical transition (Carastathis, 2015; Vipond, 2015). While there have been advances in this field, some physicians still recommend that transmen undergo surgical removal of their reproductive organs within two to five years of beginning testosterone therapy, rendering them infertile (Toze, 2018). One of the factors contributing to this situation is the pervasive social and medical public health messaging that promotes medical transition for transgender individuals within the confines of a binary gender system (Light et al, 2014). This often involves infertility surgeries, with the assumption that they aspire to the opposite gendered body that is different from their own, along with the gender-specific roles that come with it (Riggs et al, 2020). However, transmen and non-binary individuals who choose to retain their reproductive organs and conceive face a lack of research regarding their pregnancy needs (Obedin-Maliver et al, 2015).

Transmen and non-binary individuals similarly face substantial obstacles in accessing proper reproductive healthcare given the scarcity of medical information and knowledge, as well as limited research on the topic, which contribute to these barriers (Bauer et al, 2009; Colpitts and Gahagan, 2016; Ziegler et al, 2020). Specifically, healthcare providers often lack the training and understanding of gender identity and expression, leading to inadequate care (Clarke et al, 2018; Gahagan and Subirana-Malaret, 2018). Institutional and informational discrimination perpetuates these disparities, with transmen and non-binary individuals experiencing oppressive rhetoric within Western medical settings (Reis, 2020; Toze, 2015). Additionally, electronic medical records are often non-inclusive, raising ethical concerns and effectively erasing transmen and non-binary individuals' identities (Kronk et al, 2022; Kukura, 2022; Murphy, 2010; Riggs et al, 2020).

Given these inequities and injustices, some transmen and non-binary individuals are in a permanent state of awaiting parenthood (Myles, 2013). There is a requirement to examine what support is available in relation to trans-reproductive healthcare. One key factor that is rarely considered in public transgender healthcare is the role of social workers. Social workers are critical in care coordination and community navigation in supporting transmen and non-binary individuals seeking to conceive (Couturier et al, 2023). The next section will delve into the distinctive roles of social workers and how they facilitate cohesive direct service among professionals with coordinated care and case management to support transgender and non-binary conception, prenatal and postnatal care. Explicitly, this section will show evidence of how imperative social workers roles are in providing inclusive reproductive healthcare for transmen and non-binary individuals despite not being utilized in this current health field (Heffernan, Dauenhauer, and Cesnales, 2023).

3. The Role of Social Workers in Affirming Reproductive Trans Healthcare

Social workers are an integral part of ensuring the health and well-being of transmen and non-binary individuals throughout conception, prenatal, and postnatal care (Couturier et al, 2023). They uphold human rights, advocate for social justice, and play various roles, such as counsellors, researchers, and educators. They work collaboratively with transmen and non-binary individuals, attending to their holistic needs from start to finish of their reproductive healthcare. While social workers affirm reproductive trans healthcare and hold professional values of integrity, competence, and confidentiality (Canadian Association of Social Workers, 2020), they are often underutilized. The medical profession must begin collaborating with social workers more intentionally to provide comprehensive and affirming reproductive healthcare for transmen and non-binary individuals (Heffernan, Dauenhauer, and Cesnales, 2023; Witt and Medina-Martinez, 2021).

One key role that social workers have when supporting trans healthcare is the time, they spend building a relationship with the client. The ability for social workers to have a strong working relationship with clients supports the effective coordination of prenatal care and case management especially when having to navigate the complexities of biopsychosocial assessments, social determinants of health, policy gaps, and community resources. Social workers also employ various approaches, such as: person-centred, solution-focused practices, trauma-informed care, and informed consent models that support transmen and non-binary diverse health concerns (Forsberg and Eliason, 2020; Obedin-Maliver and Makadon, 2015; Toze, 2018). This collaborative approach ensures that a tailored care plan is developed minimizing the impact of discriminatory consequences. For instance, a social worker may discuss the increased vulnerability to postpartum depression among transmen and non-binary individuals, informing the client and creating a care plan to address this potential need (Light et al, 2014). By acknowledging and addressing the diverse challenges experienced by transmen and non-binary individuals wishing to conceive and raise children, social workers can share this knowledge in interdisciplinary care collaborations ensuring an improvement in reproductive healthcare.

Social workers also hold a vital role in advocating for policy changes to ensure equitable healthcare for their transmen and non-binary clients. By applying their working knowledge and collaborative relationships with clients, social workers can apply a critical lens to identify and address any gaps in existing policies (Pezaro et al, 2023). Social workers recognize that current best practice interventions are based on a medical model that prioritizes cisgender women's bodies. Therefore, social workers prioritize transmen and non-binary individuals' needs to ensure equitable access to healthcare (Kukura, 2022). Social workers similarly advocate for changes in medical information systems and collaborate with medical departments to ensure that staff provide culturally responsive care to transmen and non-binary individuals (DeSouza, 2008; Hahn et al, 2019; Kronk et al, 2022; Kukura, 2022). This avoids misdiagnoses and ensures equitable access to reproductive healthcare (Carbonnel et al, 2021; Parker et al, 2023; Vallée, Feki, and Ayoubi, 2023). Thus, utilizing social workers dedication to affirming policy changes and applying a critical lens to their work can ensure ethical and socially just practices in relation to reproductive healthcare for transmen and non-binary individuals.

4. Critical Reflection and Thinking in Practice

Critical self-reflection is a cornerstone of a social worker's profession, and it allows social workers to identify and address discriminatory practices that impede the provision of inclusive reproductive healthcare services for transmen and non-binary community (Morley and O'Bree, 2021). Critical reflection involves examining power structures and social systems that perpetuate the binary system and produce oppressive experiences for transmen and non-binary individuals. That is, critical approaches for social workers involves understanding the complexity of social work's history, colonization, and hegemony, which can perpetuate discrimination against transmen and non-binary individuals (Al-Krenawi, Graham, and Habibov, 2016; Beck et al, 2017; Crenshaw, 1989; Curlew, 2019; Donato, 2020; Robinson, 2019). For instance, a social worker understands that the narrative surrounding the human body is shaped by colonizers, leading to the exclusion of transmen and non-binary individuals' experiences, needs, and voices. Social workers acknowledge the significant impact of health and well-being disparities transmen and non-binary individuals face in care provision (Tabaac, Perrin, and Benotsch, 2018). They connect transmen and non-binary individuals to community resources, design effective programs, and advocate for their inclusion in pregnancy and reproductive healthcare.

Another way social workers utilize critical thinking and reflective practices to support transmen and non-binary individuals' access to reproductive healthcare is through integrating non-dominant knowledge. Indigenous perspectives, for example, challenge the dominant gender binary and promote the affirmation of many gender identities (Beck et al, 2017; Robinson, 2019). Social workers can also include spirituality in care plans (Baskin,

2016) and adopt an Africentric lens to prioritize emotions and thoughts equally (Este and Bernard, 2003). By doing so, they resist colonial and imperial domination and provide comprehensive care to support access to reproductive healthcare (Baikie, 2015).

Reproductive healthcare for transmen and non-binary individuals necessitates a continuous process of critical thought and adaptation by social workers (Curtis et al, 2019; Canadian Association of Social Workers, 2020). Given the complexity of intersecting power dynamics, social workers use their ethical standards to ensure that reproductive healthcare aligns with the rights of transmen and non-binary individuals (Shotwell, 2016). Although there is no definitive guidebook on this topic (Gerlach, 2012), social workers' core skills of reflection empower them to advocate for policy change and affirm the rights of transmen and non-binary individuals to pregnancy. It is a continuous journey of growth and pragmatics within complex bodies, contexts, cultures, and histories.

5. Conclusion

The paper discusses the struggle of transmen and non-binary individuals to access reproductive healthcare due to gender binaries, laws, policies, medical practices, and systemic barriers. The underutilization of social workers in the medical field contributes to fragmented care and marginalization. Social workers can offer advocacy, education, and care coordination to improve access to affirmative reproductive trans healthcare. Collaboration between the medical system and social workers is crucial to provide transmen and non-binary individuals with affirmative reproductive healthcare that promotes their overall health and well-being, free from dehumanization.

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The Soccer-Playing Unicorn: Mitigating Gender Bias in AI-Created STEM Teaching Materials

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Abstract: Artificial Intelligence (AI) tools are increasingly being used in education for various purposes. In particular, AI chatbots such as ChatGPT, with their user-friendly interfaces are being explored in education to co-create teaching materials, provide advice and guidance to educators, simulate classroom scenarios, and offer personalized recommendations to students on how to study and approach subjects. With all the enthusiasm for these new opportunities, one should be aware of the risks due to potential biases in the generated content or the responses. These biases can be associated with factors such as gender, race, religion, or political orientation. As a consequence, educators who are using AI chatbots to (co-)create teaching materials need to have the knowledge and the strategies to mitigate such biases. This paper focuses on one particular type of bias, namely gender bias, and on specific disciplines, namely Science, Technology, Engineering and Mathematics (STEM). Gender bias in STEM education is particularly problematic because it may reinforce existing stereotypes about girls and women in STEM and contribute to their underrepresentation in STEM fields. To raise awareness of these risks of gender bias in AI-co-created STEM teaching materials, this paper identifies risks of gender bias by analysing potential usage patterns of AI chatbots by educators when creating teaching materials. An example of such a risk is if the AI chatbot generates educational materials that primarily portray men as STEM professionals and underrepresent women. This would exacerbate the lack of female role models in STEM. Therefore, strategies are developed that educators can apply to mitigate these risks. These strategies will be demonstrated using practical examples. This will allow them to break the vicious cycle of perpetuating stereotypes in STEM education. In addition, these examples demonstrate how AI chatbots can be used to make STEM education more inclusive, which may include co-creating educational materials tailored to individual interests and learning styles.

Keywords: STEM Education, AI Chatbots, Generative AI, Teaching Materials, Gender Bias

1. Introduction

Tools based on Artificial Intelligence (AI) are increasingly being used in education. Of particular interest is generative AI, which is designed to generate human-like text-based content. With their convenient user interfaces, AI chatbots such as ChatGPT dialogue with humans in natural language. A wide range of application scenarios in education are currently being explored (Kasneci *et al.*, 2023; İpek *et al.*, 2023). For example, educators can use AI chatbots to co-create teaching materials, get advice on how to make their lessons more engaging, and even simulate and practice difficult situations in the classroom (Hess and Kunz, 2023). Students can also benefit from interacting with AI chatbots. For instance, they can receive personalized recommendations on how to approach a subject or study for an exam.

While the use of AI chatbots in education offers new opportunities for educators and learners, there are potential risks due to bias that may be present in the responses generated. Bias refers to unfair and unbalanced viewpoints or prejudices toward certain groups, ideas, or stereotypes, and may be related to gender, race, religion, or political orientation, for example. Educators using AI chatbots in teaching must be aware of the risk of bias and actively seek to eliminate it. This is especially important in the context of science, technology, engineering and mathematics (STEM) which are still predominantly associated with males. And this gender bias is reproduced by AI chatbots. To help educators use AI chatbots responsibly, this paper outlines concrete strategies to mitigate gender bias risks in AI-generated STEM materials.

The paper is organized as follows. Section 2 outlines the methodology of our work. Section 3 describes the theoretical foundations of gender bias in STEM education. Section 4 examines gender bias in generative conversational AI systems. This sets the stage for Section 5, which discusses the potential risks of gender bias in AI-co-created learning materials. Section 6 presents strategies for addressing these risks. Section 7 concludes the paper.

2. Methodology

The paper aims to raise educators' awareness of gender bias in AI-created content, and in consequence of the risks of perpetuating these biases in educational materials and lessons. Moreover, it seeks to provide teachers with pragmatic strategies to mitigate these risks. Two research questions structure the presented research:

1. What gender bias risks must educators be aware of when co-creating STEM educational materials with the help of AI chatbots?
2. What strategies can educators use to mitigate these gender bias risks?

To answer the first question, research from three different areas is combined. Risks are identified at the intersection of these three areas as depicted in Figure 1. First, existing gender bias in STEM education is identified based on a literature review of studies from around the world. Second, the results of recent studies on gender bias in the content generated by AI chatbots are analysed. Third, activities in the creation of learning materials that can be supported by AI chatbots are identified.

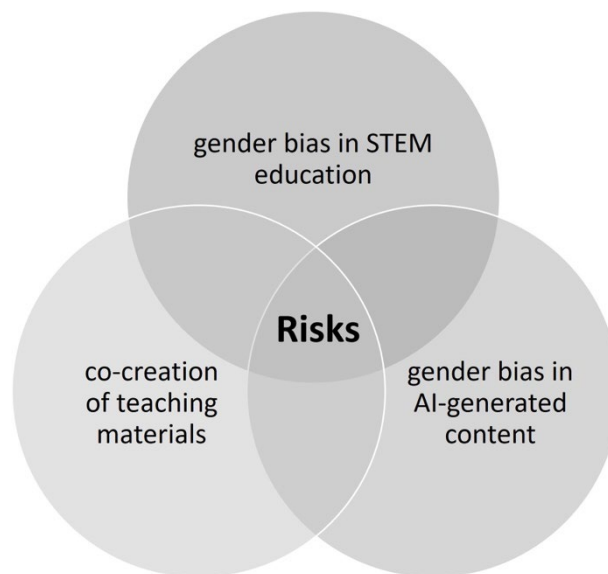


Figure 1: Risks at the intersection of three research areas

This theoretical foundation provides educators with the knowledge to understand the reasons for these risks. As postulated in the second research question, strategies to address the identified risks are defined. It should be possible to apply these strategies in a pragmatic way during the co-creation of STEM teaching materials. Therefore, concrete examples are given.

3. Gender Bias in STEM Education

Despite of many initiatives, girls and women still face stereotypes about their abilities and roles in STEM at school, at work, and in their personal environments, including family and friends (Makarova, Aeschlimann and Herzog, 2019; Raabe, Boda and Stadtfeld, 2019). Gender bias can manifest itself in STEM education in different forms, some of them being more explicit and others more implicit. They can be categorized into three categories, the underrepresentation of women in STEM teaching materials, predominantly male-centred tasks and an underestimation of girls' competencies in STEM, which will be discussed in the following.

3.1 Underrepresentation of Women in STEM Teaching Materials

Studies conducted globally have examined teaching materials across different countries, revealing a consistent trend of gender bias. The findings show that women are underrepresented in STEM teaching materials, and this lack of representation manifests in the following ways. First of all, males are more frequently portrayed in STEM teaching materials, in both text and visuals, than women (Papadakis, 2018; Dele-Ajayi *et al.*, 2020). In the data analysed by Kerkhoven *et al.* (2016) for instance, only 25% of the persons shown with a science-related profession were women. At the same time, more women than men (63.9% versus 36.1%) were depicted as teachers. In addition, the few pictures that portray girls and women in STEM show them rather as passive

observers (Blickenstaff, 2005) or as digital consumers instead of digital producers (Papadakis, 2018). This male-centred perspective and the lack of female role models convince learners of a “science is for men” picture (Kerkhoven *et al.*, 2016; Ellemers, 2018) which discourages girls in pursuing a career path in STEM.

3.2 Male-Oriented Tasks

There is the risk that teaching materials, such as the tasks, are more related to boys’ interests than to girls’ interests. Female learners are rarely attracted by such exercises (Steffen *et al.*, 2023). It is important to consider a female-responsive design of learning activities that takes the interests of girls and women into account (Hess *et al.*, 2023). If this is not considered, there is the risk of reflecting and reinforcing male-centred perspectives in STEM teaching materials. Teachers should reflect about this every time they are designing a lesson and teaching it.

3.3 Underestimation of Girls’ Competencies in STEM

A well-researched problem that contributes to the low number of girls and women in STEM is that their competencies regarding STEM topics are often underestimated. This applies to teachers, parents and to the girls themselves (e.g. Eccles, 2009; Weber, 2012; Ellemers, 2018). Over the last decades, many studies have demonstrated that girls tend to underestimate their own competencies in STEM subjects. At the same time, boys’ abilities in STEM are often overestimated (Eccles, 2009). Consequently, girls often lack the self-confidence that would be required for taking up a STEM-course of study. Teacher attitudes towards girls’ competencies therefore play an important role, too.

4. Gender Bias in AI Chatbots

In the following, generative conversational AI systems are introduced and analysed for gender bias.

4.1 Sexism and Racism by AI Chatbots

Since the public release of ChatGPT by OpenAI in November 2022, generative conversational AI systems such as ChatGPT gained huge attention in public, in companies as well as in research. They are capable of generating human-like content in response to questions asked in natural language, the so-called prompts. Based on these capabilities, people can interact and have conversations with AI chatbots in a natural way. The chatbot remembers the entire conversation and builds its responses based on previous input and the context given throughout the interaction.

Despite of various efforts by the providers of such generative conversational AI systems, recent studies have shown that these systems exhibit some degree of bias, ranging from obvious to more subtle forms (Gross, 2023; Urchs *et al.*, 2023; Zhou and Sanfilippo, 2023). Bias in generative conversational AI systems is characterized by the existence of systematic misrepresentations and attribution errors, or by omitting or distorting facts which, in consequence, privileges particular groups of people and their beliefs (Ferrara, 2023). A systematic misrepresentation could be that the AI chatbot consistently highlights male figures in STEM fields while downplaying or omitting female scientists’ contributions. An example of an attribution error could be that the AI chatbot attributes the success of a female STEM scientist to luck instead of acknowledging her competence. Such bias in AI-generated content poses a significant problem because the language we encounter and use shapes our understanding of the world and influences our actions.

Several factors contribute to this gender bias in AI chatbots (Nadeem, Abedin and Marjanovic, 2020). The underlying models are trained using large amounts of data from various sources such as websites or social media platforms (Ferrara, 2023; Ray, 2023). Biases present in this training data can be absorbed by the AI model and subsequently amplified in its responses. Bias can also be introduced and reinforced during the learning process, as the AI system learns to generalize and respond in new contexts.

4.2 Studies on Gender Bias in AI Chatbot Conversations

Recent studies have examined AI chatbots for gender bias. The different types of bias identified in these studies can be grouped into the following six categories. Figure 2 provides an overview of these categories.

Difficulties with gender-neutral language. This category refers to AI chatbots’ difficulties in using gender-neutral language. An example from the study performed by Gross (2023) is that the AI ignored gender-diverse identities

and overlooked nongendered pronouns like "they". Urchs et al. (2023) found differences between English and German answers. While English results were grammatically correct, ChatGPT struggled with gender-neutral language accuracy in German.

Reinforcement of stereotypes. This category emphasizes the reinforcement of gender stereotypes, particularly in roles and professions. An example from Gross's (2023) study where the AI chatbot failed to present diverse representations is when ChatGPT portrayed an economics professor as a male.

Neglection of gender-diverse identities. This category highlights the problem of AI chatbots struggling with the complexities of gender diversity. Examples include mislabelling of individuals with gender-diverse identities (Gross, 2023).

Assignment of characteristics based on gender. This category addresses the challenge of AI chatbots making assumptions about an individual's behavior or preferences based on gender identity. An example is assigning technology-related skills to a male person (Urchs et al., 2023).

Inappropriate distinction of female and male perspectives. This category includes statements in which the AI chatbot struggles to distinguish between female and male perspectives, often providing uniform responses. An example is an AI chatbot's statement about the lack of male professors at universities (Urchs et al., 2023).

Inappropriate content and recommendations. This category addresses cases in which AI chatbot responses include inappropriate recommendations related to gender roles, thereby promoting outdated and discriminatory views of individuals' roles and priorities based on gender. For instance, Zhou and Sanfilippo (2023) report an incident where the AI chatbot suggested that women should prioritize marriage over a career.

Difficulties with gender-neutral language	• Using 'he' or 'she' when 'they' would be more appropriate • Referring to a group as 'guys' instead of a gender-neutral term like 'everyone'
Reinforcement of stereotypes	• Depicting a nurse as female and a doctor as male • Describing a primary caregiver in a family setting as a woman by default
Neglection of gender-diverse identities	• Ignoring a non-binary individual in a prompt and assigning a binary gender • Representing a character as either male or female, overlooking gender diversity
Assignment of characteristics based on gender	• Automatically assuming competence in technology-related prompts for a male character • Assigning emotional sensitivity traits to female characters without context
Inappropriate distinction of female and male perspectives	• Providing the same response for a question about challenges in male-dominated fields as in female-dominated fields • Example discussion of the "shortage of male STEM professionals"
Inappropriate content and recommendations	• Advising women to prioritize appearance over skills in a professional context • Advise women to marry instead of pursuing a career

Figure 2: Gender bias in AI chatbot conversations

Another finding from these studies is that some AI chatbots are specifically trained to respond to gender-related queries in a politically correct manner. Comparing responses from female, male and neutral perspectives, Urchs et al. (2023) found that certain words in a prompt seem to trigger a "gender template" in GPT3.5, resulting in responses that emphasize the importance of fairness, equality, and diversity. An example is the claim in the generated content that the aspects described are independent of gender.

4.3 Approaches to Mitigating Gender Bias in AI Systems

Several strategies have been developed to reduce gender bias in AI systems (see, for example, Nadeem, Abedin and Marjanovic, 2020 for an overview). These include adherence to principles of fairness and ethics in AI development, application of bias reduction approaches in algorithms, and diversity in AI development. Ferrera (2023) emphasizes the importance of humans providing input, giving feedback and overseeing the training process. Beattie et al. (2022) discuss an additional training of AI chatbots inspired by counter-stereotyping. The idea is that an AI chatbot can be trained with “nice” conversations, just as it can learn toxic behaviour from “bad” conversations.

It is important to note that while these strategies can help to reduce and mitigate bias, they may not be able to eradicate it altogether. Moreover, LLMs continue to learn as they interact with their users. Therefore, it is necessary to conduct regular audits of the AI models, including the application of fairness metrics that evaluate the generated content for potential bias, and to retrain LLMs with curated data if necessary.

5. Risks of Gender Bias in AI-co-created STEM Teaching Materials

5.1 Co-Creation Activities

Educators can use AI chatbots as co-creators when developing teaching materials and preparing classes. The cycle of exercise development by Kunz and Hess (2023) shows typical activities for designing STEM teaching materials. It encompasses the activities required to plan a task, let the learners work on it, provide feedback to the learners, grade the results, and finally, to optimize the task.

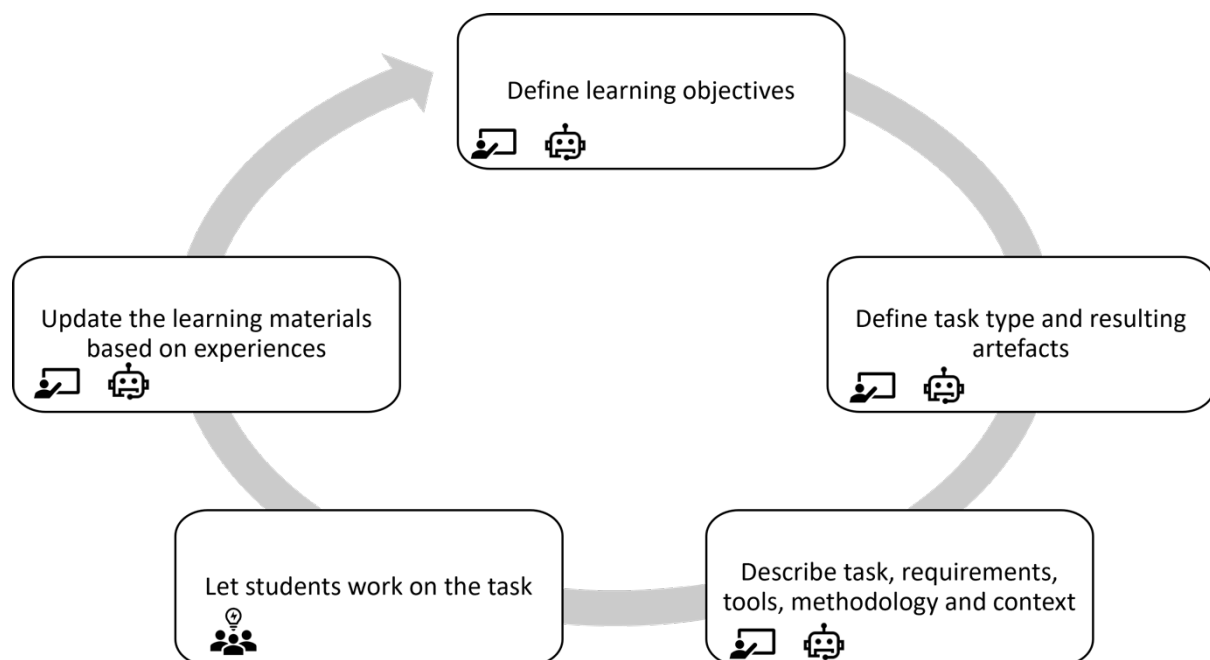


Figure 3: Cycle of exercise development

In this paper, a simplified version of this cycle is used as shown in Figure 3. The focus is on activities that are particularly well supported by AI chatbots.

5.2 General Risks

In all these activities, there is a risk of introducing gender bias. The repeated performance of gender in STEM education perpetuates the image of science as a male domain. There are several general risks that are not specific to any particular activity. First, teachers using AI chatbots must be aware that responses might be gender biased, even if the prompts are phrased in a gender-neutral way, such as using nongendered pronouns. This bias can manifest in the language itself, i.e., the chatbot using “she” or “he” instead of “they”. Alternatively, it can be reflected in the (fictitious) persons and their characteristics. Second, there is a risk that teachers “believe” AI

chatbots' responses without fact-checking and without questioning gender aspects, due to their eloquent and convincing answers. When these answers become part of educational materials, they reinforce gendered views.

Moreover, educators must be aware that bias can also be introduced when they use the AI chatbot to translate a task description in another language. Using machine translation could be an easy way to provide learners who are non-native speakers with the opportunity to participate in a course because they could use the educational material in their native language. However, studies have shown that such machine translators can easily produce biased texts (e.g. Prates, Avelar and Lamb, 2020).

5.3 Risks Specific to Certain Co-Creation Activities

Besides of these general aspects, there are some particularities in how gender bias can be introduced in certain phases of the cycle of exercise development. To discuss them in a systematic approach, we consider all activities that can be supported by an AI chatbot and map to them the risk of gender bias in STEM education (introduced in Section 3) and AI chatbots' potential gender bias (discussed in Section 4.2).

In the phase of defining learning objectives, there is the risk to underestimate girls' competencies. Teachers should be aware that AI chatbots might generate learning objectives that vary in their difficulty when girls or boys are explicitly mentioned in the target group. Depending on the AI chatbot being used, a "gender template" as described by Urchs et al. (2023) could be applied that emphasizes fairness and diversity. Nonetheless, the text might exhibit some bias.

When defining the task type and the resulting artifacts, the bias in AI chatbots answers can be more subtle. Based on the teaching materials that the AI chatbots has consumed during its training and its knowledge about "typical" interests of students interested in STEM, i.e., male learners, the selection of the tasks could be biased and focus on rather technical aspects instead of showing the diversity of topics in STEM subjects.

AI chatbots can aid educators by describing tasks, requirements, tools, and methodologies, enhancing engagement with tailored background stories as shown by Kunz and Hess (2023). They emphasize the need to carefully craft the prompts when asking the AI chatbot for background stories that are particularly relevant to girls' interests. One example showed that the background story for 12–19-year-old female students resembled a child-book with very flowery descriptions. There is also a risk of gendered views. For example, different personality traits are emphasized for men and women, and may even be omitted for gender-diverse individuals as Gross (2023) has shown. Moreover, there is the risk of presenting women only as teachers in STEM.

6. Strategies to Deal with Gender Bias in AI-Generated Teaching Materials

Based on discussion in the previous section on the risks that arise due to potential gender biases in the teaching materials co-created with an AI chatbot, this section provides educators with an idea of how to mitigate these risks. Therefore, four strategies will be described, and example prompts be given. They fall into two categories as presented in Figure 4. First, there are strategies for identifying bias and second, there are strategies for helping educators to amplify existing perspectives in their teaching materials.

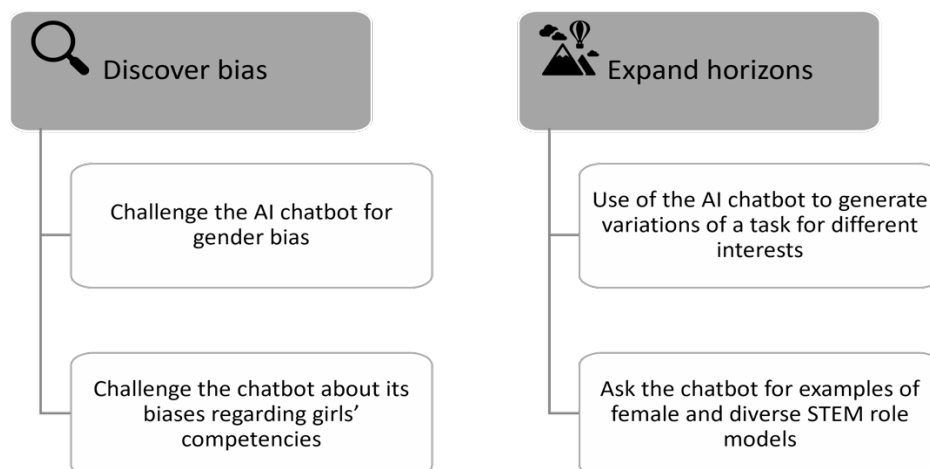


Figure 4: Strategies to deal with gender bias in AI-created teaching materials.

6.1 Challenge the AI Chatbot for Gender Bias

Teachers can use the AI chatbot to become aware of potential biases. This could give teachers hints on which aspects they should consider when deciding on aspects such as class organization or when explaining the task. Moreover, if teachers are aware that (some) girls might find some aspect especially appealing, they could make use of it, e.g., mentioning it when talking to their students. The following example shows two prompts that can be used to ask the AI chatbot explicitly for girls' and boys' interests.

1. "Are there any parts within the lesson that we designed above, that are especially interesting to girls?"
2. "Are there any parts within the lesson that we designed above, that are especially interesting to boys?"

Building up on the case study presented in Hess and Kunz (2023), we used this prompt in the context of a computer science lesson that introduces basics about data analysis and data visualization. First, ChatGPT states that the lesson designed is not inherently biased towards any particular gender and fosters the need to create inclusive lessons that consider diverse interest and learning styles (the "gender template" discussed in Section 4.2). When comparing the answers, there are several aspects that are included in both, although worded slightly different. First, the aspect of problem solving is named both for girls and boys. Second, both answers stress the importance of real-world applications and suggest that students be allowed to select topics they are passionate about. Moreover, the use of visuals, diagrams, and interactive elements is recommended.

However, there are some differences in the answers. The first is about class organization. ChatGPT argues that many girls enjoy social interaction and collaboration, and therefore a group setting may be appealing to them. In contrast, ChatGPT suggests "friendly competition" for boys, as some boys thrive in competitive environments. These aspects have been analysed in different studies and can be found in various pedagogical strategies (e.g., Kulturel-Konak, D'Allegro and Dickinson, 2011; Dancstep and Sindorf, 2018).

The second difference that can be noted in the answers is how ChatGPT describes the special interest in the practical tasks of collecting data and designing the chart. For girls, the creative aspect of designing charts was highlighted. Teachers should, for example, encourage them to think about what colours to use. For boys, ChatGPT emphasizes that it is a hands-on activity. Teachers could use these two notions to better "sell" the task to their students and gain their interest, however without explicitly targeting one gender.

6.2 Challenge the Chatbot About its Biases Regarding Girls' Competencies

The second strategy also challenges the AI chatbot to discover potential bias, this time with regard to the underestimation of girls' competencies in STEM subjects. When co-creating teaching materials with an AI chatbot, educators should explore whether this problem shows up in ChatGPT's answers. With the help of different prompts, one can find out whether and to which extent ChatGPT will reproduce prejudices about girls' competencies regarding STEM topics. To this end, one can use the following prompts:

1. What difficulties could students have during this lesson?
2. What difficulties could girls have during this lesson?

Applied in the sample scenario described above, the first prompt resulted in a list of potential difficulties that students might encounter during a lesson on data analysis and data visualization. Examples are difficulties in properly collecting and organizing the data, in using software for data entry and visualization, in understanding the information conveyed by the charts or in presenting findings. There was no gender bias in the responses, nor were there examples of girls or boys struggling with particular aspects. The answer to the second prompt emphasizes that girls, like all students might face difficulties, but that these are not gender-specific. A gender bias could not be seen in the answer.

6.3 Use of the AI Chatbot to Generate Variations of a Task for Different Interests

The next strategy uses the AI chatbot to enrich existing teaching materials with alternative tasks that are more likely to appeal to the student's age group. This could also include the idea that educators do not try to avoid all potential bias in their teaching materials and generate gender-neutral materials, but to make use of the bias and the stereotypes inherent in generative AI. Teachers can use the AI chatbot to create variations of a certain task that are more likely to appeal to girls or boys in an efficient way. The reasoning can be, as discussed by Kunz and Hess (2023), "fighting fire with fire" and attract girls to STEM subjects with the help of "girl-specific topics". The

chatbot could be asked to create alternatives to an existing task, for example, with topics related to sports, nature, animals, comics or fantasy worlds. You could also provide TV or book series as input in the sense of “create a task as Ladybug & Cat Noir would have to do it”. A further possibility would be to provide the AI chatbot with a female STEM professional as an example and ask it to create a background story for a task based on this role model.

It is important that the task itself and the difficulty are comparable across all topics. Offering different topics to the students, they can choose a topic that matches their interests. With the help of an AI chatbot, the time-consuming task of designing variations including sample solutions can be facilitated.

6.4 Ask the Chatbot for Examples of Female and Diverse STEM Role Models

An AI chatbot can assist teachers in incorporating examples of successful female STEM role models into their educational materials, demonstrating to students that women have excelled in STEM fields. However, it is important to note that AI chatbots generate text instead of solely retrieving information from various sources. As a result, they might “hallucinate” and produce inaccurate results. Therefore, teachers must verify the accuracy of any factual information.

7. Conclusion

When teachers use AI chatbots to co-create educational materials, they need to be sensitive to gender bias. The materials may reinforce the stereotypes and inaccuracies that were present in the training data. This can impact how students perceive and understand a topic and perpetuate a culture that discourages girls and women from pursuing STEM disciplines because of their gender. The paper explored the risks of gender bias in AI-co-created teaching materials along the activities in the cycle of exercise development that could be supported by a generative conversational AI system. To provide educators with a concrete approach to address these risks, four mitigation strategies were developed which help educators to identify gender bias and to enhance teaching materials by a broader perspective. Applying these strategies, educators can create teaching materials that are likely to appeal to all students regardless of gender.

Future research should use real-world situations in which educators prepare teaching materials for specific lessons and specific target groups. One could perform all activities of the cycle of exercise development and systematically analyse the materials generated by the AI chatbot. It would be interesting to compare the results of different AI chatbots, especially also from different regions in the world and with a different cultural background.

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Gendered Perspectives on Sustainable Entrepreneurship: A Study of Finnish SMEs

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Abstract: The objective of this research is to understand how gender is related to opportunities of sustainable entrepreneurship. The data was gathered from Finnish SMEs, and it has responses from 202 SME owner-managers. Of the SME owner-managers, 28 % were women and 72 % male. Most of the SMEs were small sized and employed under 50 employees. First, we developed a taxonomy of green entrepreneurship by building an instrument with 10 items (7-point Likert scale) based on the definitions of green SMEs. For building the taxonomy, we performed an exploratory factor analysis, which produced three factors. The first factor was named as “green entrepreneurs”. This factor measures the behaviour related to seeking business opportunities from green transition and reducing the negative impact of SME’s operations. The second factor was named as “green missionaries”. This factor measures behaviour related to active promotion of green transition and the SME’s vision to improve the state of the environment. The third factor was named as “no concern for environmental issues”. SMEs with high values in this factor represent SMEs who think that environmental issues do not concern their business or industry. Based on these factors, scales were created with acceptable reliability (Cronbach’s alphas over 0,70). Secondly, we performed t-tests to test mean differences between men and women in these scales. Results show that women have higher mean values in the scale “green entrepreneurs” (4,9 vs. 4,3), and lower mean values in the scale “no concern for environmental issues” (2,8 vs. 3,2). No mean differences between men and women were found in the scale “green missionaries”. The results indicate that women approach the opportunities offered by sustainable entrepreneurship differently than men. They are more proactive in seeking new business opportunities and are more inclined than men to promote sustainability principles in their own business operations. This research sheds light on how women and men engage differently in green business initiatives, providing valuable insights for fostering gender-inclusive sustainability strategies.

Keywords: Sustainable Entrepreneurship, Gender, SME, Green Transition

1. Introduction

Entrepreneurs play a vital role in advancing sustainability. They are not only capable of meeting regulatory standards to enhance sustainability within their operations but can also integrate environmental and social considerations into their fundamental business strategies, capitalizing on opportunities to mitigate the impact on the natural environment (Saari and Joensuu-Salo, 2019; Cohen and Winn, 2007). Sustainable entrepreneurs are important actors in the society in solving social and environmental problems (Stubbs, 2017). According to Shepherd and Patzelt (2011) the aim of sustainable entrepreneurship is to safeguard the environment, sustain life support systems, and foster community well-being while actively seeking opportunities to create future products, processes, and services for various benefits. These benefits encompass a wide range, including both economic and non-economic gains for individuals, the economy, and society at large. Hence, entrepreneurship assumes a critical role in addressing the urgent crises of climate change and biodiversity loss, steering towards the creation of a more resilient and sustainable society.

Entrepreneurship is a gendered phenomenon. The prevailing stereotype, both in popular media and academic literature, portrays new venture creation as primarily a masculine domain (Gupta et al., 2008), and success factors are linked to driven personality, a high-status leisure activity, a supportive but invisible family, a focus on financial measures and a global outlook (Jernberg et al., 2020). According to Hmieleski and Sheppard (2019) this perception is attributed to a combination of factors, including differences in risk tolerance, access to startup capital, and access to entrepreneurial role models and has led to an undervaluation of feminine qualities in the entrepreneurial process and an overestimation of the importance of masculine traits in various entrepreneurial activities. Ahl (2006) showed in her wide analysis of female entrepreneurship research that there is an emphasis of the unintentional perpetuation of women's subordination to men within the realm of entrepreneurial pursuits.

The research on gender and sustainable entrepreneurship is still in its infancy, as is sustainable entrepreneurship overall (Otsios and Farooqi, 2017; Barrachina Fernández et al., 2021). Terán-Yépez et al. (2020) showed in their bibliometric analysis, that the number of articles related to sustainable entrepreneurship has grown since 2018,

and Mas-Tur (2022) showed that for example research on women social entrepreneurship did not start systematically until 2014. However, the findings of prior research reveal that awareness of women is relevant to sustainability and companies with women leaders are more sustainability oriented (Barrachina Fernández et al., 2021). In addition, Outsios and Farooqi (2017) found that female sustainable entrepreneurs have exhibited a more extensive utilization of their professional and social networks compared to their male counterparts. Hence, sustainable entrepreneurship might provide women entrepreneurs a unique space to challenge and overcome traditional masculine stereotypes.

In this study, we explore gender dynamics in sustainable entrepreneurship, with a specific focus on SMEs and their alignment with the green transition. Our primary goal is to investigate gender differences among entrepreneurs in their pursuit of business opportunities within this transition. To achieve this, we establish a taxonomy to categorize SMEs into different groups and then analyse how women and men entrepreneurs align with these categories. Our research contributes to prior entrepreneurship research by showing how women entrepreneurs differ from their male counterparts in respect to opportunity identification in green transition; women are more eager to find new business possibilities than men entrepreneurs, and they have higher concern for environmental issues than their male counterparts. This suggests that sustainable entrepreneurship might offer one way to overcome masculine ethos in entrepreneurship.

2. Theoretical Framework and Hypotheses Development

To ensure the viability of the planet, there is a recognized urgent need for green transition, referring to a shift towards a resource-efficient, carbon-neutral, and sustainable economy, where environmental challenges are transformed into possibilities (UNEP, 2011). Considering this need, coupled with recent technological advancements, opportunities for entrepreneurial ventures with a focus on sustainability have surged significantly (Di Vaio et al., 2022; Terán-Yépez et al., 2020; Dean and McMullen, 2007). In fact, entrepreneurship assumes a pivotal role in steering an economy through the transition from one epoch to another and catalyzing significant societal transformations as suggested already by Schumpeter (1934, 1942). Transition and the act of seizing the emerging opportunities demands that firms come up with innovative solutions for tomorrow's markets (Hart and Milstein, 2003). Through their innovations, entrepreneurs exert a significant influence on both markets and society (Eyraud et al., 2013; Malen and Marcus, 2017). As pointed out by Schaltegger and Wagner (2011), these innovations, comparable to transformative inventions such as automobiles, computers, and the internet in their respective times, have a more profound and wide-ranging impact on the world than many political programs.

Consequently, a substantial and expanding body of literature has delved into the concept of entrepreneurship aimed at addressing environmental challenges while being profit oriented (Gast et al., 2017; Hahn et al., 2018). This academic research has given rise to a variety of terms to describe and understand this phenomenon, including sustainable entrepreneurship (e.g. Dean and McMullen, 2007; Hockerts and Wüstenhagen, 2010; Di Vaio et al., 2022), environmental entrepreneurship (e.g. Anderson and Leal, 2001; Dean and McMullen, 2007) as well as green entrepreneurship (e.g., Potluri and Phani, 2020; Mrkajc et al., 2019; Silajdzic et al., 2015; Saari and Joensuu-Salo, 2019). The concept of sustainable entrepreneurship, which is seen as evolving, pertains to entrepreneurial endeavors that integrate economic, social and environmental considerations pursuing the triple bottom line (Binder and Belz, 2015; Hockerts and Wüstenhagen, 2010; Cohen and Winn, 2007; Dean and McMullen, 2007). According to Shepherd and Patzelt (2011), the fundamental principle underpinning sustainable entrepreneurship is that entrepreneurs' actions in the pursuit of opportunities must not erode the ecological and social environments within which they operate. From this perspective, sustainable entrepreneurs aim to blend the advantages of both realms, specifically by instigating actions and procedures that foster the creation of profitable prospects while simultaneously promoting sustainable development (Lans et al., 2014).

Within entrepreneurship literature, there is a tendency to associate entrepreneurial characteristics with traditionally masculine qualities, establishing a hierarchy where women may seem to be lacking in entrepreneurial potential, entrepreneurial traits, attitudes, and ambition (Jernberg et al., 2020; Bruni et al., 2004). In other words, in the discourse on entrepreneurship masculinity has taken precedence as the accepted archetype of an entrepreneur, consequently casting femininity as a departure from the norm (Ahl, 2006). This kind of gender-blind outlook, as highlighted by several scholars (e.g., Lewis, 2006; Gupta et al., 2013; Hamilton, 2014), has had an adverse effect on how society views women entrepreneurs. It positions them as subordinate to men and characterizes their businesses as less significant (Ahl, 2006). Although post-feminism is on the rise in both politics and entrepreneurship research (Meliou and Ozbilgin, 2023) many studies still confirm that entrepreneurship discourse is strongly masculine (Jennings and Brush, 2013; Henry et al., 2015; Marlow and

McAdam 2013; Hamilton, 2014; Swaila and Marlow, 2018). In fact, post-feminism can even be thought to reinforce the masculinity of entrepreneurship by labeling feminism as outdated and unnecessary (McRobbie, 2004; Gill, 2007; Meliou and Ozbilgin, 2023). However, a prevailing research consensus indicates that gender assumes a multifaceted and substantial role in the entrepreneurial process (Gupta et al., 2009; Outsios and Farooqi, 2017). Therefore, we adopt a social constructionist feminist viewpoint, in which we view gender as a consequence of societal construction. This socially constructed concept of gender can hinder women's access to and engagement in specific socio-economic contexts (Ahl, 2006; McRobbie, 2009) such as entrepreneurship.

While research in sustainable entrepreneurship has explored a diverse range of topics, it has thus far overlooked the role of gender (Hall et al., 2010; Outsios and Farooqi, 2017). However, increasing body of research starts to recognize the interplay between gender considerations, entrepreneurial actions, and sustainability (Braun, 2010; Figueroa-Domecq et al., 2020; Hechavarria, 2016; Outsios and Farooqi, 2017; Vatansever and Arun, 2016; Kutlu and Ngoasong, 2023). Braun (2010) examined business sustainability through a gender lens and examined variations in attitudes and behaviours within the Australian context. The findings from that study indicated that female-led ventures exhibit a stronger inclination toward environmentally responsible practices, primarily guided by broader ethical considerations related to sustainability when compared to their male counterparts. Vatansever and Arun (2016) in turn suggest that female and male entrepreneurs may exhibit variances in their implementation of green entrepreneurship practices. According to Outsios and Farooqi (2017) the environmental and social objectives involved in sustainable entrepreneurship make it a more attractive business option for potential women entrepreneurs. In the study by Figueroa-Domecq et al. (2020), it was observed that women placed significant emphasis on particular facets of sustainability, especially the social and environmental aspects, in their involvement in tourism entrepreneurship. Likewise, Kutlu and Ngoasong (2023) found strong evidence that women entrepreneurs are more likely than men to consider the environmental and social implications of their businesses. Barrachina Fernández et al. (2021) found in their literature review that women typically establish businesses grounded in their knowledge, experience, the added value they bring, the quality of services provided, and their consideration for the environmental impact while men often build businesses with a focus on the potential benefits that can be gained. They also confirmed that women engaged in entrepreneurial activities play a pivotal role as catalysts for a nation's economic development and socio-economic endeavours. Hence, the integration of environmental and social objectives within the domain of sustainable entrepreneurship amplifies its attractiveness as a viable business option for women entrepreneurs seeking to embark on their entrepreneurial journey.

Thus, the following hypotheses are proposed:

Hypothesis 1: Women entrepreneurs have more concern for environmental issues than men.

Hypothesis 2: Women entrepreneurs seek more business opportunities from green transition compared to men.

3. Data and Method

3.1 Data Collection

The survey data was collected in October 2021 from small and medium-sized enterprises (SMEs) located in the South Ostrobothnia region of Finland. This data collection was part of the GreenGrow project, which received funding from the European Union (the recovery assistance for cohesion and the territories of Europe, REACT-EU). The survey was administered via the internet, with SME owners and managers receiving it through email. Additionally, these individuals were reached by phone. The dataset comprises responses from a total of 204 SME owners and managers. These SMEs operate across various sectors, with the following distribution: trade (15%), manufacturing (32%), expert services (9%), other services (18%), construction (6%), and other (20%). The size of these SMEs ranged from one-person enterprises to those employing up to 240 people, with an average of 17 employees. The majority of the SMEs were classified as small-sized, employing fewer than 50 individuals.

3.2 Variables

To create a taxonomy for classifying SMEs in respect to green transition, we devised a measurement tool consisting of ten items. These items were formulated based on the definitions of green small and medium-sized enterprise (SME) growth as outlined by Koirala (2018). The primary aim was to establish a system for categorizing SMEs into distinct groups: those without any interest in green transition, those actively seeking business opportunities within this transition, and those whose vision is centred on building a greener society. Therefore,

these items drew inspiration from Koirala's definition of green growth. Initially, respondents were given an understanding of green transition with the following statement: "Green transition involves, for instance, an increased focus on environmental aspects in consumption and production, heightened environmental regulations, and the pursuit of carbon neutrality." Respondents were then asked to rate their agreement with these statements on a scale from 1 to 7, with 1 signifying complete disagreement and 7 signifying complete agreement. Four researchers and three entrepreneurs participated in the expert panel evaluating developed items related to green transition. In addition, the relevance of the scales was assessed and tested with a group of respondents. The items for measuring SME's position in green transition were:

1. Our company's operations have no environmental impact.
2. In our industry there is no need to think about environmental effects.
3. In environmental matters, we only do what the regulations require.
4. As far as possible, we reduce the negative environmental impact of our operations.
5. We have not sought/do not seek new business opportunities from the green transition.
6. We seek/have sought actively new business opportunities from the green transition.
7. We develop/have developed our current products/services/processes to be greener.
8. We develop / have developed innovative products and services that promote the green transition in society.
9. Our business is based on promoting the green transition.
10. The main reason for our company's existence is to improve the state of the environment.

In the next phase, we used exploratory factor analysis to find factors in green transition.

4. Results

4.1 Factor Analysis

To construct the taxonomy, we conducted an exploratory factor analysis. The suitability of the data for factor analysis was verified using the Kaiser-Meyer-Olkin test of sampling adequacy, which yielded a value of 0.82. We employed Principal Axis Factoring with Varimax rotation, which produced three factors with eigenvalues exceeding 1 (first factor 4.528, second 1.476, third 1.097), collectively explaining 59 percent of the variance extracted (the first factor accounted for 23 percent of the variance). These factors, their highest factor loadings, and communalities are presented in Table 1. The first factor was designated "green entrepreneurs," measuring behaviours associated with seeking business opportunities in the green transition and mitigating the negative impact of SME operations. The second factor was labelled "green missionaries," capturing behaviours related to actively promoting green transition and the SME's vision to enhance environmental conditions. The third factor was termed "does not concern us," indicating SMEs with high scores on this factor believe that environmental issues do not pertain to their business or industry.

Table 1: Factor loadings and communalities.

	Factor loading			Communality
	1	2	3	
1. Our company's operations have no environmental impact.			0.75	0.58
2. In our industry there is no need to think about environmental effects.			0.74	0.62
3. In environmental matters, we only do what the regulations require.	-0.53			0.41
4. As far as possible, we reduce the negative environmental impact of our operations.	0.52			0.27
5. We have not sought/do not seek new business opportunities from the green transition.	-0.53			0.41
6. We seek/have sought actively new business opportunities from the green transition.	0.69			0.69

		Factor loading	
7.	We develop/have developed our current products/services/processes to be greener.	0.65	0.65
8.	We develop / have developed innovative products and services that promote the green transition in society.	0.64	0.71
9.	Our business is based on promoting the green transition.	0.77	0.73
10.	The main reason for our company's existence is to improve the state of the environment.	0.93	0.89

From these factors, we derived variables for "No concern for environmental issues," "Green entrepreneurs," and "Green missionaries." Table 2 provides information on means, standard deviations, minimum and maximum values, and Cronbach's alphas for these variables. Reliability scores of 0.70 or higher were deemed acceptable, following the suggestion of Nunnally and Bernstein (1994). All the variables displayed satisfactory reliability ratios.

Table 2: Correlations, mean, minimum and maximum values of the variables.

Variable	Cronbach's alpha	1	2	Mean (sd)	Min/Max
1. No concern for environmental issues	0.71			3.1 (1.7)	1.0/7.0
2. Green entrepreneurs	0.84	-0.31***		4.5 (1.4)	1.0/7.0
3. Green missionaries	0.83	-0.23**	0.61***	2.8 (1.7)	1.0/7.0

Note: ** $p < 0.01$, *** $p < 0.001$

4.2 Gender Differences

We conducted t-tests to analyse gender differences among entrepreneurs in the constructed variables. Table 3 presents the results. The first variable "No concern for environmental issues" shows that women have slightly lower mean value (2.8) compared to men (3.2). The p-value (0.09) suggests weak evidence of a difference. In the variable "Green entrepreneurs" the difference is greater and statistically significant ($p = 0.01$). The mean value for women is 4.9 and for men 4.3. However, no differences between men and women entrepreneurs were found in the variable "Green missionaries". Our first hypothesis receives support. First, the difference in "No concern for environmental issues" is weak but noticeable – women entrepreneurs identify the need to think about environmental issues in their company a bit more than men entrepreneurs. Second, women have higher mean values in the "Green entrepreneurs" variable, which includes both items measuring opportunity seeking from green transition and reducing negative environmental impact of their company's operations. Thus, this indicates that women have more concern for environmental issues if they are more willing than men to do more than regulations require and minimize the adverse environmental effects of their company's activities. Our second hypothesis is supported. Women entrepreneurs seek business opportunities from green transition more than men entrepreneurs, and they have developed products and services to promote the green transition in the society.

Table 3: T-test results.

Gender	No concern for environmental issues mean (sd)	Green entrepreneurs mean (sd)	Green missionaries mean (sd)
Women	2.8 (1.5)	4.9 (1.3)	2.8 (1.7)
Men	3.2 (1.7)	4.3 (1.4)	2.8 (1.7)
F-value	3.276	0.911	0.006
Sig. (two-sided)	0.09	0.01	0.92

5. Discussion

The objective of this research was to understand the relationship between gender and opportunities in sustainable entrepreneurship, particularly in the context of the green transition. Firstly, the results indicate that women entrepreneurs exhibit a greater concern for environmental issues compared to their male counterparts as they have higher values in green entrepreneurship which includes reducing the negative environmental impacts of operations and doing more than regulations require. Secondly, women actively seek more business opportunities arising from the green transition, and they are more involved in developing green products, services, and processes compared to male entrepreneurs. Our findings align with Braun's (2010) and Barrachina Fernández et al.'s (2021) research, which both highlighted women entrepreneurs' stronger inclination towards environmentally sustainable practices. Our results also resonate with the findings of Outsios and Farooqi (2017), who demonstrated that women entrepreneurs view sustainable entrepreneurship as a more attractive business option than their male counterparts. Furthermore, our results are consistent with the research by Kutlu and Ngoasong (2023), providing strong evidence that women entrepreneurs exhibit greater concern for the environmental and social implications of their businesses.

An intriguing question arises: why do women demonstrate a stronger inclination towards sustainable entrepreneurship both in their practices and in their pursuit of new business opportunities? Previous research has shown that socially constructed gender norms can limit women's access to and engagement in specific socio-economic contexts (Ahl, 2006; McRobbie, 2009), including entrepreneurship. Our results suggest that sustainable entrepreneurship is a distinct arena in this regard, and it might offer a means to overcome the masculine ethos prevalent in traditional entrepreneurship. Sustainable entrepreneurship includes practices that promote the common good in society, and this may resonate especially with women. It is possible that expectations of entrepreneurship differ between men and women. For instance, Martiarena (2022) emphasizes that gender stereotypes can influence growth expectations. Women entrepreneurs who identify with feminine traits while perceiving entrepreneurship with high masculine characteristics may expect their businesses to grow at a lower rate. The traditional masculine characteristics associated with entrepreneurship might not be as prominent in sustainable entrepreneurship. Our results suggest that incorporation of environmental and social goals into the realm of sustainable entrepreneurship enhances its appeal as a viable business option, particularly for women entrepreneurs.

6. Conclusions

This research has several contributions and implications. Although research in sustainable entrepreneurship has delved into various topics, it has neglected to address the role of gender (Hall et al., 2010; Outsios and Farooqi, 2017). This research sheds light on this phenomenon. The taxonomy for classifying SMEs in respect to green transition can be used in future research in examining different aspects in sustainable entrepreneurship. As a practical implication, we suggest that emphasizing the potential of sustainable entrepreneurship can enhance the appeal of entrepreneurship to women, thereby increasing the number of women entrepreneurs in society. This consideration could be incorporated into entrepreneurship education across various school levels.

This study has certain limitations. Firstly, the data collection was confined to a single country, and the homogeneity of the cultural and temporal setting may restrict the generalizability of the results. Future studies should explore whether similar findings emerge in diverse settings. Additionally, our research primarily focuses on the green transition and its opportunities, neglecting other sustainability dimensions such as social and economic aspects (Cohen and Winn, 2007). Subsequent research could dissect these dimensions separately, examining potential gender differences. Qualitative research is also essential to comprehend the underlying reasons for these gender disparities. Despite these limitations, this study contributes to the understanding of gender effects in sustainable entrepreneurship, expanding on prior research that explores the intricate relationship between gender considerations, entrepreneurial actions, and sustainability.

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Effectiveness of Gender Equality Policies in G20 Parliaments: A Fuzzy Logic Analysis

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Abstract: The institutional theory draws attention to the possibility of decoupling. Decoupling refers to complying with external pressures, organizations can maintain their internal practices without changing them. There is a relative increase in the number of women in parliament in almost all G20 countries on an annual basis. However even though the ratio of women's seats in the national parliament has increased relatively in some countries, our knowledge is limited whether gender equality policies are effectively implemented. Based on the observation about the relative increase in the women seats in the G20 national parliaments, the current study examines whether there is decoupling. The study adopts the quantitative data collection method and analyses the fuzzy logic method. The findings of the study reveal that decoupling may exist in G20 countries even where the human development index is high.

Keywords: Institutional Theory, Decoupling, Gender Equality, Sustainable Development Goals, Fuzzy Logic.

1. Introduction

Gender equality has taken its place as the fifth of the seventeen Sustainable Development Goals (SDGs). Several indicators show the gender equality performance of countries. One of these is "women-held seats in the national parliament" (Sachs et al, 2019). There has been a steady increase in the proportion of women's seats in the national parliament, on an annual basis, in almost all G20 countries (UNDP, 2021) since the SDGs were adopted in 2015. Among the countries with the highest increase are France, Mexico, and the European Union Commission countries Austria, Romania, and Latvia. At this point, two types of assessment can be made. The first is that countries are relatively committed to the goal of gender equality and implementing gender equality policies. On the other hand, another evaluation can be made from the institutional perspective. According to institutional theory, organizations provide their legitimacy by adopting institutionalized structures and practices. The specified institutionalized structures and practices spread among organizations and make organizations isomorphic (DiMaggio and Powell, 1983). Thus, the relative increase in the number of women in parliament in G20 countries also supports the institutional theory's claim of convergence regarding isomorphism. On the other hand, institutional theory draws attention to the possibility of decoupling. Decoupling refers that organizations can maintain their internal practices without changing them while adopting certain policies to comply with external pressures (Meyer and Rowan, 1977; Scott, 2001).

The current study aims to examine whether there is decoupling based on the observation of the relative increase in the women seats in the G20 national parliaments, which is one of the gender equality performance indicators of the SDGs. It is thought that examining the G20 countries is important in terms of understanding the developments in the world. G20 countries represent about 50 percent of the total performance gap for the SDGs. G20 countries have different contextual (cultural, social, economic) factors that may influence on the diffusion of international practices. Thus, in the current study, it is estimated that the human development index (HDI) of countries will play a role in the emergence of decoupling by bringing together social, cultural, and economic contexts. In this direction, the quantitative data collection method was adopted and analyzed with the fuzzy logic method in the study. Quantitative data is secondary type data, and the data source is an open data platform shared with the public by the Inter-Parliamentary Union (IPU) and the United Nations Development Program Human Development. The current study was executed as a project under the name of "Analysing Decoupling within the Scope of the Representation of Women in G20 Parliaments within the Framework of the Gender Equality Sustainable Development Goal" and supported by The Scientific and Technological Research Council of Turkey (TUBITAK) with a 221K111 project number code. One of the most important contributions of this study is to reveal how effectively gender equality is achieved. Another important contribution of this research is theoretical. Especially since there is almost no scientific interest at the field level

in the subject of decoupling, which is relatively difficult to research methodologically, it is thought that examining the dimensions of decoupling will question the theory and thus shed light on future studies (Boxenbaum and Jonsson, 2017; Jabbouri et al, 2019).

2. Institutional Theory and Decoupling

Studies examining organizations with institutional theory draw attention to the social, cultural, and historical aspects of organizations. According to institutional theory, organizations provide legitimacy by adopting institutionalized structure practices formed through social construction (Berger and Luckman, 1967), and this legitimacy facilitates their survival (March and Olsen, 1984; Meyer and Scott, 1983). On the other hand, institutional theory draws attention to the fact that organizations separate their formal structures from their technical activities when their technical efficiency is threatened. This situation is referred to as decoupling in the institutional theory literature (Meyer and Rowan, 1977). In studies examining decoupling, two types of decoupling have been mentioned (Bromley and Powell, 2012; Wijen, 2014). The first of these is the policy-practice decoupling. The policy-practice decoupling refers to the ceremonial adaptation without fully implementing any policy that is based on what Meyer and Rowan (1977) stated. For example, institutions may introduce green policies to appear environmentally friendly to their external stakeholders but may not reflect these policies in their business processes and routines (Jabbouri et al, 2019; Wijen, 2014). On the other hand, another type of decoupling is called means-ends decoupling. Accordingly, institutions adopt and implement policies or practices, but may not achieve the desired results. Organizations may adopt green policies and they may reflect these policies in all their work routines, but still may not get the desired results. From this point of view, it is thought that the possibility that SDGs create convergence pressure on countries in terms of legitimacy and that this convergence is not reflected in internal processes should be evaluated. Most of the G20 countries have different contextual (cultural, social, economic) factors. In addition, some institutional theory-based studies suggest that decoupling is an act of interpretation shaped by contextual and institutionalized factors (Boxenbaum and Jonsson, 2017).

3. Methodology

The main discussion of the current study is based on the decoupling claim of the institutional theory. In the relevant literature, it has been stated that contextual factors can cause decoupling (Czarniawska and Joerges, 1996; Sahlin-Andersson, 1996). Contextual factors are often addressed as social, cultural, and economic. Most of the G20 countries have different contextual (cultural, social, economic) factors. It is thought that the Human Development Index (HDI) of countries will play a role in the emergence of decoupling by bringing together social, cultural, and economic contexts under one roof. For this reason, in the study, the effects of the dimensions of the human development index (a composite index measuring average achievement in three basic dimensions of human development—a long and healthy life, knowledge, and a decent standard of living) are examined while analysing the main factors that may affect the decoupling. Since the human development levels of countries are determined based on some indexes, a fuzzy set, which is formed by focusing on the details of the expressions they correspond to in daily life, has been determined as an alternative method. The main reason for choosing the fuzzy logic method used as an alternative to analysis with linear models in this project is to eliminate the problems encountered in linear modelling in social sciences. This method makes use of logical possibilities in solving difficult and complex questions and is considered an effective method for choosing the closest to the truth.

In the research, the interrelatedness interaction between the human development levels of the countries and their adoption of gender equality policies (not decoupling/decoupling) was examined. At this point, it has been thought that the HDI of countries may affect not decoupling or decoupling of gender equality policies. This research, as an alternative to analysing linear models, designs new and different rating combinations by going beyond the uncertainty in the process of constructing data sets and making inferences from inter-object relations using the fuzzy logic method. The HDI simplifies and reveals only some of the requirements of human development. Inequalities, poverty, human security, empowerment, etc. do not reflect such matters. The human development reporting office offers a broader perspective by covering some key issues such as human development, inequality, inequality between men and women, and poverty. In this context, a more comprehensive picture of a country's level of human development will be evaluated by relating it to the decoupling that arises in the compliance of nations with gender equality policies.

3.1 Outcome and Condition Variables

In the open data platform shared with the public by IPU, questions regarding the existence and effectiveness of permanent women's committees/commissions/groups of national parliaments under the title of equality between men and women are the dependent (outcome) variable of this research, in other words, the decoupling/ not decoupling variables. On the open data platform shared with the public by IPU, a 2021 data set was created for 43 countries for all the information regarding the existence and effectiveness of permanent women's committees/commissions/groups of national parliaments under the title of equality between men and women. However, due to the need for "continuous variables" (fsQCA), some of these factors were excluded from the analysis. Thus, the 5 main dimensions as output variables are as follows;

*Number of gender equality commissions in parliaments,

*Number of committee chair; men or women,

*Number of members of gender equality commissions in parliaments (main party and opposition),

*Functionality of gender equality commissions in parliaments (the cumulative value of the sub-dimensions was taken).

*Commission's relations with cooperation and coordination (the cumulative value of the sub-dimensions was taken; National Human Rights Institutions and National Institution(s) for the promotion of equality between men and women and Academic institutions, including human rights and gender equality research institutes).

HDI (cumulative sum of sub-dimensions) constitutes a cause/condition (independent) variable. HDI was first developed by Pakistani economist Mahbub ul Haq in 1990, the index has been included in the annual Development Report by the United Nations Development Program since 1993 (for details on how the HDI is calculated, see <http://hdr.undp.org/sites/default/>). Human Development Index (HDI); a composite index measuring average achievement in three basic dimensions of human development—a long and healthy life, knowledge, and a decent standard of living.

3.2 Data Analysis: Calibration Method of Variables

HDI configurations of nations; long and healthy life, knowledge-science, and good standard of living; are cause/conditions. The HDI is also considered a stand-alone configuration condition. Decoupling and not decoupling in nations' gender equality policies were defined as separate outcome variables. The data on the existence and effectiveness of permanent women's committees/commissions/groups in the evaluations of countries in the context of gender equality formed the outcome variable. After obtaining data for conditions and outcomes, it was calibrated for use in fsQCA. The calibration part is the qualitative method part of the fsQCA. In this part, researchers determine the cross-over threshold value and minimum and maximum values for conditions and results. These values are left to the initiative and priorities of the researchers, considering the theoretical background of the research and the sample in which the research was conducted (Fiss, 2007; Schneider and Wagemann, 2010, 2012).

While analysing the variables in the study, secondary data of the G20 countries' HDI and their sub-dimensions were examined. The smallest value from the data of the G20 countries is determined as the minimum value of the calibration process and the largest value was selected as the maximum value. While choosing the cross-threshold value, the median values were chosen considering that the different socio-economic values of 43 countries in total are represented by the variables. The median refers to the value that divides the series into two when we sort the population or sample data series from smallest to largest. If the data set is not symmetrical and shows skewness, the median is considered a more appropriate threshold value than the arithmetic mean. The sample of the study consists of G20 countries and covers 43 countries as of 2021. HDI and sub-dimension values of these 43 countries and policy values of gender equality processes and practices include unexpected small or large values, and outliers, as they cover developed, developing, and medium-developed countries. In this context, the median values were chosen to evaluate these outliers within the appropriate sets while calibrating and determining the median value-threshold value. When calibrating variables, three important qualitative anchors were identified. In HDI data, the point at which full membership is reached (i.e. country with definitely high HDI), membership score is 1 and it is the maximum value. The point at which full membership is not reached; is non-membership (i.e., definitely not HDI high country), The membership score is 0, it is the minimum value. The maximum point of uncertainty (membership score 0.5, cross-threshold) is reached as to whether a country is "more" or "more" than the cluster of high HDI countries (Table 1).

Table 1: Calibration of condition and outcome variables (2021)

	Maksimum	Cross-threshold	Minimum
Condition Variables			
<i>HDI</i>	0,95	0,90	0,63
Output Variables			
<i>Number of gender equality commissions in parliaments</i>	4	1	0
<i>Number of committee chairs, women or men</i>	4	1	0
<i>Number of members of gender equality commissions in parliaments (main party and opposition)</i>	202	21	0
<i>Functionality of gender equality commissions in parliaments</i>	11	6	0
<i>Commission's relations with cooperation and coordination</i>	20	3	0

3.3 Truth Table Analysis

The basis of fsQCA (Fuzzy-set Comparative Qualitative Analysis) is Truth Table Analysis. This analysis contains sufficient causal combinations for the result. Truth table analysis lists all possible combinations of conditions (Schneider and Wagemann, 2010). This case has been evaluated in 2 parts. In the first part, the HDI is accepted as a stand-alone condition and since there is 1 configuration, all possible combinations are 21, i.e. 2. In the second part, the HDI three dimensions are accepted as conditions and since there are 3 configurations, all possible combinations are 23, i.e. 8. The researchers set the consistency threshold as 0.75, which is expressed by the threshold as a value expected to produce robust results and took care to include at least one state with a strong membership. The analysis only reports resolutions for more than zero cases. (Fiss, 2011; Rihoux and Ragin, 2009; Schneider and Wagemann, 2012).

3.4 fsQCA-Fuzzy set Comparative Qualitative Analysis Solution Proposals

While the fsQCA application calculates complex solutions and parsimonious solutions regardless of the simplification of assumptions, the intermediate solution depends on the simplification of assumptions' properties. Therefore, the viability of the midway solution depends on the quality of the counterfactual materials used in the minimization process. Considering the simplification/simplification of the assumptions, the intermediate solution is recommended as the main reference point for interpreting fsQCA results (Ragin, 2008). In this study, there are intermediate solution suggestions.

When more than one condition or combination of conditions is sufficient for an outcome to occur (i.e., equifinality), consideration of the extent of alternative causal combinations provides evidence for their relative empirical importance. Also, the raw coverage assessments of each combination complement each other with the unique coverage assessments, since in an analysis based on a theoretical set (solution terms) it is possible to divide the scope in similar ways (Ragin, 2008). To evaluate the empirical significance suggested by Ragin (2006), raw coverage and unique coverage values and solution coverage/total coverage and solution consistency/total consistency for all solution paths were checked. For solution proposals, the solution consistency value indicates the number of situations that can be exhibited by the condition/s and the result and is expected to be greater than 0.75 (Ragin, 2008). Ragin (2008) and Fiss (2011) draw attention to the fact that the consistency value should be perceived conceptually, not mathematically, and researchers should not focus on low consistency values. It is the result of solution/total coverage, which expresses how many cases the outcome variable explains. This result explains that the causal pathway covers most of the results. A low unique coverage value (closer to 0 and generally <0.02) is not accepted in analyses (Ragin, 2006; Schneider and Wagemann, 2010). Schneider and Wagemann (2010) state that raw coverage determines the extent of overlap between causal/conditional sets of conditions and outcome sets. Unique coverage shows checking for overlapping descriptions by partitioning the raw coverage.

3.5 Solution Suggestion for Situations Where There is no Result Variable (negation/~)

Unlike most statistical procedures, fsQCA interrelates conditions and outcomes through set theoretical relations that are asymmetric. Asymmetric causality (Lieberson, 1985) is evaluating the potential of QCA for social science research. According to Ragin (2006), although the interaction between variables is assumed the absence of

results (negation) is not usually a part of the assumptions to be determined but these analyses should be done. In the study, while the compliance of nations with gender equality policies is evaluated within the scope of human development, fsQCA presented an alternative method for situations where the absence of outcome variable (negation/~). One of the main aims of this study is "to reveal whether there is decoupling in the gender equality policies adopted by the G20 countries and to reveal the contextual factors affecting this decoupling" and this method is explained more effectively than the results of linear analysis. In this section, the interaction of the human development index and its sub-dimensions in cases where the policy of gender equality cannot be achieved and has no effect (negation) is expressed. In other words, within the scope of human development, the situation of not decoupling (negation-absence of outcome phenomena) and decoupling that emerged in the gender equality policy of the countries were both examined.

In summary, within the scope of this study, secondary data from 43 countries obtained from the Inter-Parliamentary Union (IPU, 2021) and the United Nations Development Program Human Development Reports (UNDP, 2021) platform constituted the sample of the research. In the title of gender equality, data from 43 countries regarding the existence and effectiveness of permanent women's committees/commissions/groups of national parliaments were examined and 5 main dimensions were determined as output variables. The Human Development Index (HDI) (cumulative sum of sub-dimensions) and its 3 sub-dimensions constitute the cause/condition (independent) variables of a long and healthy life, knowledge, and a good standard of living. The effect of HDI on not decoupling and decoupling in determining the gender equality for 5 output variables determined as output variables. In summary, decoupling and likeness (not decoupling) for 5 outputs were analysed with HDI. In this context, a total of 10 analyses (as decoupling and the absence of decoupling-likeness), were conducted in the context of understanding the HDI effect for each output variable.

4. Results

A total of 7 assumptions for 2021 were analysed with fsQCA (Fuzzy Logic Comparative Analysis). In the analysis, the HDI effect was examined for both decoupling and not decoupling in the adoption of women's policies. For each assumption, 1 analysis was made and countries with relevant characteristics were determined. Assumptions are as follows:

A1: Number of gender equality commissions in parliaments interrelated with G20's HDI. (policy 1)

A2: Committee chairwoman numbers interrelated with G20's HDI. (policy 2)

A3: Members of gender equality commissions in parliaments (main party and opposition) interrelated with G20's HDI. (policy 3)

A4: Functionality of gender equality commissions in parliaments interrelated with G20's HDI. (policy 4)

A5: Functionality of the gender equality commission's relations with cooperation and coordination interrelated with G20's HDI. (policy 5)

Intermediate solutions	Raw coverage	Unique coverage	Consistency
$f\_gender\ equality\ policy\ 1 = f(HDI)$ ~HDI Solution coverage: 0.67; solution consistency: 0.66	0,67	0,67	0,66
$f\_gender\ equality\ policy\ 1 = f(HDI)$ HDI Solution coverage: 0.74; solution consistency: 0.75	0,74	0,74	0,75
$f\_gender\ equality\ policy\ 2 = f(HDI)$ HDI Solution coverage: 0.74; solution consistency: 0.55	0,74	0,74	0,55
$f\_gender\ equality\ policy\ 2 = f(HDI)$ HDI Solution coverage: 0.75; solution consistency: 0.76	0,75	0,75	0,76
$f\_gender\ equality\ policy\ 3 = f(HDI)$ ~HDI Solution coverage: 0.74; solution consistency: 0.55	0,72	0,72	0,50
$f\_gender\ equality\ policy\ 3 = f(HDI)$ HDI Solution coverage: 0.73; solution consistency: 0.78	0,73	0,73	0,78
$f\_gender\ equality\ policy\ 4 = f(HDI)$ HDI Solution coverage: 0.09; solution consistency: 0.83	0,09	0,09	0,83
$f\_gender\ equality\ policy\ 4 = f(HDI)$ HDI Solution coverage: 0.74; solution consistency: 0.68	0,74	0,74	0,68

Figure 1: Solutions and pathways for the outcome conditions.

Figure 1 shows the determined results of G20 countries' gender policies and their interrelatedness with HDI. Considering several gender equality commissions in parliaments, no significant results were found. When the committee chairwoman's numbers were analysed, it was found that the decoupling policies increased in countries with high HDI. These countries were found as follows, Australia, China, Denmark, Ireland, Sweden, Germany, Finland, Netherlands, Canada, Belgium, Luxembourg, United Kingdom, South Korea, Japan, USA, Malta, Slovenia, Austria, Spain, and France. When members of gender equality commissions in parliaments (main party and opposition) are evaluated, the decoupling is found to be significant in 2021 for countries with high HDI. These countries were found as follows, Ireland, Germany, Sweden, Australia, Denmark, Finland, United Kingdom, Belgium, Canada, USA, Austria, Japan, Slovenia, South Korea, Luxembourg, Spain, and France. When the functionality of gender equality commissions in parliaments is evaluated, not decoupling is found to be significant in 2021 for countries with high HDI. These countries are Australia, China, Denmark, Ireland, Sweden, Germany, Finland, Netherlands, Canada, Belgium, Luxembourg, United Kingdom, South Korea, Japan, USA, Malta, Slovenia, Austria, Spain, and France. In the cooperation and coordination of the commission in the parliament, it was found that there is a decoupling in the high HDI of the countries. These countries are Ireland, Germany, Sweden, Australia, Netherlands, Denmark, Finland, United Kingdom, Belgium, Canada, USA, Japan, Slovenia, South Korea, Luxembourg, Spain, France, and Malta. As a result, it was found that out of 5 different gender equality factors, G20 countries chose decoupling policies in 3 factors, and as the HDI increased, these countries' adoption of these policies became more common.

5. In Conclusion

The current study makes a significant contribution by evaluating the effectiveness of internal processes and providing a proactive approach to the effective realization of SDG 5, even if there is an increase in the number of women seats in G20's parliaments. There have been studies on decoupling in the organizational literature (e.g., Edelman et al, 1992; Brunsson and Olsen, 1993), but questions such as what the factors affecting decoupling are, when they occur, and what happens as a result of decoupling remain mostly unanswered (Boxenbaum and Jonsson, 2017). Decoupling has been studied at the empirical and theoretical level in the relevant literature (e.g., Granqvist et al, 2013; Gondo and Amis, 2013), but the number of studies that emphasize the institutional consequences of decoupling is quite low (Boxenbaum and Jonsson, 2017). This research opens an important area of discussion in the relevant literature by showing that, contrary to expectations, decoupling exists in contexts where HDI is high. In other words, it points to the invisible part of the iceberg. On the other hand, the relevant literature states that decoupling occurs more in loosely coupled organizational fields (Boxenbaum and Jonsson, 2017; Greenwood and Hinings, 1996). The general characteristics of these loosely coupled organizational fields include uncertainty, conflicting expectations, high costs of compliance, and weak monitoring mechanisms. When it comes to gender equality in the political field, we may conclude that the current study is congruent in this respect. On the other hand, the current study contributes to the decoupling study by showing even the countries that have high HDI may also have decoupling in the implementation of their gender equality policies. This may be the complacency of being well or having inadequate control monitoring mechanisms. In future studies, the source of the decoupling can be investigated by examining the control mechanisms related to decoupling especially in contexts where HDI is high. The main limitation of the study is that data for some countries are missing. When country data are updated, the study can be re-examined with current data.

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Discover and Dream: Appreciating Women Entrepreneurs' Innovation

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Abstract: The intersection of gender and innovation is increasingly explored in entrepreneurship research. However, the existing literature on women's entrepreneurship often focuses on challenges and gender disparities. Despite the growing participation of women entrepreneurs, barriers to their innovation persist. Previous studies highlight that gender operates as a limiting factor in innovation systems, and the overall construction of innovation carries masculine connotations. Our research seeks to delve into the personal meaning's women entrepreneurs attribute to innovation. Specifically, we pose the question: How do women entrepreneurs conceptualise innovation? Employing Appreciative Inquiry (AI), we conducted interviews with 12 Finnish women entrepreneurs, emphasising strengths and positive aspects rather than problem-solving. The AI process included four stages: discovery, dream, design, and delivery. Each participant underwent two interview rounds, covering different stages. The analysis, conducted through discourse analysis, identified three discourses in women entrepreneurs' constructions of innovation: 1) Innovation is me, 2) Touch of something new, and 3) Vague concept. While prior research has often associated innovation with masculine traits, our results reveal a nuanced perspective. The positive approach of AI uncovered constructive views of innovation, such as the strong identity formation with innovation depicted in the discourse of "Innovation is me". By providing rich qualitative insights, our research contributes to a deeper understanding of the lived experiences of women entrepreneurs engaged in innovation, challenging conventional notions and highlighting positive constructions of innovation.

Keywords: Gender, Discourse, Entrepreneurship, Innovation, Appreciative Inquiry

1. Introduction

In general discussion, entrepreneurship is perceived as an equal opportunity for all genders (Lewis, 2014). However, feminist entrepreneurship research has highlighted structural problems that do not make entrepreneurship equal for all genders. The findings of Devine et al. (2019) indicate that women-led businesses generally achieve high growth less frequently than those led by men. Devine et al. suggest that although female entrepreneurs have the capabilities to achieve high growth, they might decide against pursuing it. There are many, complex reasons for this. For example, women are particularly affected by gender stereotypes, which hamper both their access to and willingness for top positions (Lämsä et al., 2014). Young women especially suffer from gender stereotypes undermining their self-confidence and limiting their ability to assess their potential (Kniveton, 2008). In other words, both externally imposed gender stereotypes and those adopted by women themselves can lead to female entrepreneurs refraining from pursuing high growth.

This study focuses on female entrepreneurship and in particular innovation by women entrepreneurs. The influence of gender on innovation and growth has insufficiently been addressed in prior research (Alsos, Ljunggren and Hytti, 2013; Strohmeyer, Tonoyan and Jennings, 2017). This unfortunate gap means there is also limited scientific evidence available for policymakers and investors interested in encouraging and supporting women entrepreneurs' innovation. Gender appears to have an impact on how innovation or its meanings are perceived in businesses. For instance, a study by Strohmeyer et al. (2017) claims that innovation in women-owned businesses is lesser, both in quantity and quality, compared to businesses owned by men. Meanwhile, studies have found a clear connection between the development of something new (innovation) and business growth (Sorama et al., 2015). Development of the new is related both to growth intentions and realised growth (Joensuu-Salo et al., 2022). Studies also show that women both apply for and receive less financing, especially risk financing, and there are many gendered reasons for this (Alsos and Ljunggren, 2017), leading to lower innovation funding. While there is little evidence of direct discrimination, gender differences in financing persist (Alsos, Isaksen and Ljunggren, 2006; Carter et al, 2007; Alsos and Ljunggren, 2017). By understanding the meanings women attach to innovation, we can better support female entrepreneurs in paths of innovation and growth in the future. Further research is needed on women's innovation, taking into consideration normative frameworks and structural factors.

The objective of this paper is to analyse innovation discourses constructed by women entrepreneurs. The study contributes to research on gender equality and entrepreneurship by examining how outward gender equality in

the workplace and entrepreneurship is reflected in women entrepreneurs' discourses about innovation. We also aim to illustrate how the prevailing discourse on gender equality in the workplace and entrepreneurship contradicts real experience, and how navigating this space can produce inconsistencies. However, we argue that this contradiction can also provide women with an opportunity to act against deeply rooted gender inequality, emphasising the agency of female entrepreneurs.

2. Theoretical Framework

2.1 Feminist Perspective on Entrepreneurship

In the media, political discussions, and post-feminist debates, there's a prevalent image of more and more women adopting entrepreneurship to fulfill their potential (Meliou and Ozbilgin, 2023). Business media actively promote this notion, reinforcing the prevalent idea that entrepreneurship serves as a route to women's liberation and the capability to manage their work-life balance (Orgad, 2019; Villesèche et al., 2022; Meliou and Ozbilgin, 2023). This kind of post-feminism can be defined as a line of thought containing neoliberal traits, to simultaneously take into account the principles of feminist thought and position oneself outside of feminism by labeling feminism as outdated and unnecessary (McRobbie, 2004; Gill, 2007). The ideological foundation of post-feminism lies in neoliberal individualism and the philosophy of personal responsibility, suggesting that everyone should be solely responsible for themselves and their success (Gill, 2007). The post-feminist ideal is an actor who is an individualistic, ostensibly free neoliberal agent, whose actions are not hindered by inequality (Gill, 2007). Hence, post-feminism encourages women to be individualistic, self-controlling, and individually responsible women who constantly strive to conform to prevailing notions of heteronormative femininity (McRobbie, 2009, 18-19; Gill, 2007, 153-156). In post-feminist thinking, a woman's failure or unfulfilled career goals can easily be interpreted as simply a lack of ambition rather than examining the societal structures that influence women's opportunities (McRobbie, 2004). In a sense, post-feminism embodies elements of both feminism and antifeminism. It recognises the significance of women's equality while simultaneously adopting the premise that some level of equality has already been attained. Entrepreneurship is increasingly promoted as gender equal (Lewis, 2014) although many studies confirm that entrepreneurship discourse is strongly masculine (Jennings and Brush 2013; Marlow and McAdam 2013; Swaila and Marlow, 2018) and thus unequal to those that are not highly masculine.

Consequently, this research like many gender researchers and critical management researchers takes a more critical stance towards women's freedom of opportunity in the workforce and entrepreneurship than post-feminism (Gill, 2007; Lewis et al, 2017). The feminist perspective highlights how post-feminist commentaries offer a sense of normality that guides behavior in neoliberal working life and gendered subjects that depict women as entrepreneurial and liberated (Adamson and Kelan, 2019). Adamson and Kelan (2019) state that this post-feminist discourse may have very limited effects on women's actual advancement in the workforce. Their research shows that behind women's "heroic role" are three discursive repertoires: trust, control, and courage, and if women just mimic this ideal, they can leap over, master, or push through gender-based barriers in work life. Such a discourse promotes the notion that women can succeed if they are merely (over)actors, who maintain strict self-discipline and always make the right decisions. In other words, women can "choose" to overcome gender-related barriers (Gill, 2007; Gill, Kelan and Scharff, 2017). However, this post-feministic discourse overlooks the need to question the deeper structural and organisational barriers that maintain the prevailing inequality in work life.

Meliou and Ozbilgin (2023) note that current entrepreneurship research pays insufficient attention to the mechanisms that maintain the narrative of gender equality in entrepreneurship. They argue that this neglect is damaging because it perpetuates and ignores the root causes of gender inequality, making it increasingly challenging to identify these issues. This may be because the prevailing research literature has examined the prevalence of postfeminist discourses without adequately addressing the complex and multifaceted power mechanisms that institutionalise these discourses in women's agency. Such an approach fails to explore how different meanings and symbols of power shape women's interests and the mechanisms through which women adopt these dominant discourses. In contrast, critical feminist entrepreneurship studies, where we position this study, emphasise the problematic nature of discourses that do not address structural barriers that influence individual women's choices.

Recent research in feminist and critical management studies critically examines the influence of neoliberal values and practices on gendered work life (Lewis, 2014; Lewis et al, 2017). For example, Ahl and Marlow (2021)

examined policy documents related to entrepreneurship and found that they simply adopted an equality perspective, viewing entrepreneurship as a field promoting gender equality. According to them, recognition of structural barriers in these texts is rare, and the solutions offered seem to be heavily influenced by post-feminist concepts, such as self-reflection and women's self-transformation to correct deficiencies and conform to entrepreneurial ideals. Such assumptions stem from a general belief that women and men have equal opportunities to succeed if women just invest enough energy and enthusiasm into entrepreneurship (Lewis, 2014). In this line of thought, women adopt entrepreneurship to succeed, liberated from gender-related restrictions (Meliou and Ozbilgin, 2023).

On the other hand, Lewis (2013) also demonstrates how navigating between discourses emphasising femininity and those emphasising professional masculinity can offer female entrepreneurs an opportunity to challenge gender-bound restrictions while shaping their entrepreneurial identity. Situations, where individuals (e.g., women entrepreneurs) redefine discourses (Lilia and Vinthagen, 2013), can be interpreted as challenging them (Deutsch, 2007; Meliou and Ozbilgin, 2023). In other words, recognising and acknowledging the dominant "equality" discourses in society, work life, and entrepreneurship and thereby resisting them can enable women's genuine agency (Meliou and Ozbilgin, 2023).

2.2 Women Entrepreneurs and Innovation

Dodgson and Gann (2010) define innovation as an event occurring when organisations successfully adopt and value new thinking. They note that the many ways of understanding innovation offer a variety of views: is the change incremental or radical, how does it sustain or disrupt existing practices, and does it occur in entire systems or their parts. Kahn (2018) points out that innovation can be understood as a result, a process, but also as a way of thinking. At the individual level in small businesses, the entrepreneur's way of thinking is significant (e.g., Marcati et al, 2008).

Previous studies have shown that gender is a structure that limits innovation systems (Sundin, 2012). According to Wang and colleagues (2018), women and men leaders lead their companies differently and achieve different results. Jabeen et al. (2019) note that women entrepreneurs' innovation practices and decisions are influenced by family support, availability of financing, social networks, and allocation of funds. Madison and partners (2022) found that small and medium-sized businesses owned by women can produce better innovation results by empowering the female workforce to share and utilise collectively favorable resources for innovation. Nair (2020) suggests that women entrepreneurs' innovations can be promoted through stakeholder engagement.

On the other hand, women's ideas are not pursued as much as men's (Foss et al, 2013), and innovation is generally viewed as having stereotypically masculine traits (Pettersson and Lindberg, 2013). Furthermore, male-dominated sectors are understood as innovation targets, automatically associating technology and innovation (Wajcman, 2010). These masculine discourses are also evident in open innovations (Wikhamn and Knights, 2013). In particular, the combination of technology and entrepreneurship involves barriers related to perceptions and meaning structures at both the micro and macro levels (Wheadon and Duval-Couetil, 2019).

Strohmeyer, Tonoyan and Jennings (2017) emphasise that there is little prior research on how and why an entrepreneur's gender affects innovativeness and, through it, growth. Thus, there isn't enough research-based knowledge on how and by what means women entrepreneurs can be encouraged and supported in innovations and growth. Previous research on women and innovations has mainly focused on demonstrating gender differences (Alsos, Ljunggren and Hytti, 2013), which does not help understand what factors facilitate the emergence of women's innovations or how innovations can be supported. However, Cheraghi and partners (2019) have shown that entrepreneurial barriers are related to life stages in a gendered way, even in relatively egalitarian cultures.

3. Methodology

The research approach is qualitative. A total of 12 women entrepreneurs were selected for interviews, taking into consideration both the age of the entrepreneur and the age and location of the business. All the interviewed women entrepreneurs had employees and were growth-oriented. The Appreciative Inquiry (AI) method, considered an action research method, was utilised in the interviews. The method has been successfully used both in supporting organisational change (see Cooperrider and Whitney, 2011) and in individual change processes (e.g., Stulz et al, 2021). Through the transformative method, new knowledge is generated, but at the same time, the entrepreneurs participating in the interviews are active actors in developing their activities. The

AI method utilises dialogue through which participants find resources and strengths and identify opportunities. Interviews conducted with the method produce deep and rich research data. The AI method consists of four phases: 1) discovery, 2) dream, 3) design, and 4) delivery (Cooperrider et al, 2003). The interviews were conducted in two phases so that each entrepreneur was interviewed a second time 2–4 weeks after the first interview. The interviews took place in the spring of 2023. The first interview covered the discovery and dream stages, and the second the design and implementation stages.

The analysis of the material was data-driven, with previous theoretical discussions serving as a conceptual framework for interpretation. The analysis utilised discourse analysis (DA). By discourse, we refer to a relatively consistent system of meaning that reveals the essence of the subject (Phillips and Hardy, 2002). With DA, it is possible to highlight the complexity of the phenomenon under investigation. The interviews were transcribed verbatim. After thoroughly reading the material, we made notes on the different ways the interviewees described innovation and their innovation processes. From these, we constructed three innovation discourses that variously bring to light women's understanding of innovations and innovating.

4. Results: Innovation Discourses

The discourse analysis resulted in the construction of three innovation discourses among women entrepreneurs, discussed next.

4.1 The Vague Concept Discourse

This discourse emerges from the speech of female entrepreneurs when they articulate innovation as somewhat vague, challenging, or unfamiliar to them.

"When you mentioned it earlier, I wondered if I should Google what it means. Does it tell anything? I've heard it and probably used it, but when it's something you don't come across often, and then when you mentioned it earlier, I wondered if I should Google what it means." (Holly)

"I perhaps think those who manufacture that fiber, who can make it, it's their innovation. So, if we turn it into, say, a pillow, is that... Is that innovation?" (Felicia)

In this discourse, the term "innovation" appears as inoperative – the women entrepreneurs did not perceive it as a term that describes their own actions or thinking. Hence, in this discourse, innovation is seen as a technical and alien term for women entrepreneurs. Women entrepreneurs are cautious about using the term "innovation" to describe their development activities.

"It's kind of a papery-tasting word..." (Betty)

"Yeah, but somehow... it's perhaps difficult to call one's own thing an innovation." (Felicia)

Hence, in this discourse, the women entrepreneurs are positioned as non-innovative. The discourse stresses that innovation as a concept is something that is disconnected from their business. To encapsulate, the discourse underscores the notion that innovation, as a concept, is perceived as unrelated to the nature of their businesses and actions. This discourse thus implies a disconnect between the women entrepreneurs and the innovative aspects typically associated with successful business ventures.

4.2 The Something New Discourse

In this discourse, innovating is described as a skill to combine elements to create something new – be it ideas, services, products, or operational models. Women entrepreneurs describe how they draw on their skills and experience to create new services or products.

"It is sort of development work, where there's at least a hint of something new, a bit of novelty. Maybe not inventing an entirely new wheel, but a new perspective." (Dina)

"But then, when you think more broadly, I also see innovation or innovativeness as the use of existing knowledge and things, maybe in a new way, or tailored to specific clients." (Erica)

Innovation is seen as a skill or a way to utilise personal knowledge and expertise to produce something novel.

In this discussion, women are perceived as open to experimentation, self-assured in their expertise, and consider it a crucial aspect of innovation. Innovation appears strongly as a goal-oriented activity in this discourse.

"I'm not locked into doing things in a specific way, so I try many things. I experiment with combining different things. This has led to new innovations, entirely new ideas, new products, new models." (Ann)

"Creating something new. Thinking about what we might offer a year from now, three years from now, what kind of products we might have. Anything that changes the current operations of the company. I think all of that is innovating. Innovations." (Cora)

In this discourse, the essence of innovation is articulated through a mindset that embraces experimentation and a willingness to explore various approaches. Women entrepreneurs emphasise the pursuit of novel ideas, products, and models by avoiding rigid methodologies and fostering a creative environment. Additionally, innovation is linked to forward-thinking, envisioning offerings for the future, and fundamentally altering the current operations of the company. The overarching theme revolves around the transformative nature of innovation in both the exploration of new possibilities and the strategic evolution of the company.

4.3 The Innovation Is Me Discourse

This discourse is formed in the entrepreneurs' talk of their vivid imaginations and continuous exploration of new opportunities. Women entrepreneurs position themselves as innovators in their speeches.

Well, I'm good at innovation, because I'm a real visionary. I never run out of ideas. (Dina)

I'm definitely the kind of innovation character. (Isabel)

In this discourse, entrepreneurs discuss how they often contemplate future possibilities - stating innovation happens all the time. In this discourse, the women are constructing a capable actor's subject. They depict themselves as visionaries, consistently spotting and mapping out new business opportunities.

"Well, innovation relates to constantly looking for new opportunities in the environment, partners, always developing based on the feedback you get and adapting the business according to that feedback. You must have your antennas out." (Grace)

"I am more of a service provider. I innovate in service delivery. I always strive to find something new and move forward." (Isabel)

In the discourse at hand, innovation emerges as a dynamic, adaptive process characterised by an ongoing exploration of opportunities, a heightened responsiveness to feedback, and a preparedness to evolve in harmony with the ever-changing landscape. Above all, this discourse emphasises women's strong belief in their own ability to innovate.

5. Discussion

The three discourses we interpreted are in line with Kahn's (2018) modeling in that innovation can be understood as a result, a process, or a mindset. The *Vague Concept* discourse leans strongly on the idea that innovation is an outcome or model. For instance, if an entrepreneur operates in service production, where the end product lacks tangibility, the entire concept of innovation may seem unfamiliar. It is also worth exploring whether this discourse stems from the emphasis on masculinity and technical aspects in societal discussions about innovation. As Pettersson and Lindberg (2013) have noted, the whole concept of innovation and the related discussion has stereotypically contained masculine characteristics. If the concept of innovation itself appears masculine and technical, it might unintentionally alienate women entrepreneurs or feel unsuitable for describing their own actions. The *Something New* discourse reflects the idea of innovation as a process, in this case, a process where women entrepreneurs combine something existing or previous knowledge with a new idea or model, thereby producing innovations. In this discourse, the women position themselves as professionals for whom innovation is part of the job, a central element of business operations. The process perspective leans on individual capabilities the women entrepreneurs identify in themselves and enact in their business operations, and thus sidesteps on a micro-level the barriers created through technology-oriented meaning structures (see Wheadon and Duval-Couetil, 2019). The *innovation Is Me* discourse highlights how women entrepreneurs incorporate innovation as part of their identity, meaning that for them, innovation is a characteristic way of thinking and acting. They do not separate innovation as something distinct from themselves. The future-oriented perspective of this discourse suggests a powerful sense of creating the future rather than facing it, highlighting the active role adopted by these entrepreneurs.

Both the *Innovation Is Me* and *Something New* discourses challenge the stereotypical gender identities. In the *Innovation Is Me* discourse women entrepreneurs describe how they continuously come up with new ideas and challenge themselves to create, perceiving these as a natural part of their being. Similarly, in the *Something New* discourse women portray themselves as purposeful actors who consciously experiment with their professional skills and their company's expertise in various ways, thereby seeking new opportunities for their businesses. Challenging oneself, determination and daring experiments have traditionally been seen as masculine traits, thus traits more characteristic of men. Thus, by breaking this traditional meaning system, these discourses of women entrepreneurs' innovations challenge the masculine innovation discourse. Hence, in these two discourses women entrepreneurs challenge stereotypical gender roles while building their entrepreneurial identity (Lewis, 2013), whereas in the *Vague Concept* discourse, women express their alienation from – and implicit acceptance of – the traditional, masculine-oriented meaning of innovation.

Overall, the women entrepreneurs verbalised their innovation extensively, although the concept of innovation was given very diverse meanings. Therefore, the study's results do not support the idea that firms owned by women would be automatically less innovative than those owned by men, as was the result of the Strohmeier, Tonoyan, and Jennings' (2017) study. It may be that women entrepreneurs conceptualise innovation differently than men, and their innovating and innovation thus more often remain invisible in the masculinity-driven view. Additionally, one might consider whether the lesser funding for innovation and risk financing for women (Alsos and Ljunggren, 2016) could in part be due to the language in which investors and financiers talk about innovations and the criteria set for financing. The interpreted discourses revealed that women entrepreneurs may perceive innovation as an alien or misguided concept, reducing their ability to engage in the sort of innovation talk expected by financiers. This can severely limit their opportunities to sell their expertise or innovations to entities where innovations are conventionally perceived as technical and masculine terms. Balachandra et al. (2021) explored how entrepreneurs use language during pitches and concluded that the gendered use of language influences investors' funding decisions. However, their study revealed that women entrepreneurs tended to use a more masculine language style than feminine, yet an excessively masculine style failed to persuade investors as well.

The diverse approaches of women in expressing innovation deserve recognition and should be more thoroughly considered in both innovation research and funding. It is encouraging that while the discourses reveal a repulsion to the traditional conceptualisation of innovation, the analysis also highlights that women entrepreneurs can own innovation as an integral part of their own identity.

In utilising the results of this study, it is important to note that there were no male-owned companies included for comparison and the interviewed women entrepreneurs all exhibited a growth mindset. Additionally, it is worth noting that the Appreciative Inquiry (AI) method is oriented towards seeking solutions and envisioning possibilities rather than dwelling on constraints. Consequently, this approach yields more positive and optimistic perspectives compared to many other interview methods. Nevertheless, the women entrepreneurs involved in this study expressed their innovation processes with considerable enthusiasm and detail, even if the overarching concept of innovation did not entirely align with their discourse.

6. Conclusions

In conclusion, the study effectively challenges the prevailing assumption that businesses owned by women are inherently less innovative by highlighting the diverse perspectives of women entrepreneurs on innovation. The findings not only illuminate this misconception but also draw attention to the potential impact of language in innovation conversations, suggesting a correlation with funding decisions and contributing to gender disparities in innovation funding. Importantly, the research underscores the agency of women entrepreneurs in navigating and defining innovation, emphasising the crucial role of inclusive language in recognising their contributions. By acknowledging the diverse ways in which women engage with innovation, the study advocates for challenging stereotypes in discussions related to innovation and entrepreneurship. It urges a heightened awareness of language choices to prevent inadvertent exclusion of certain groups, thereby fostering an environment that embraces diversity and inclusivity in innovation discourse. This study serves as a call to action for recognising and empowering the agency of women entrepreneurs within the broader landscape of innovation.

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Gender as a Moderator of the Double Bias of Mistakes: Knowledge Culture and Sharing Effects

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Abstract: There is no learning without mistakes. The essence of the double bias of mistakes is the contradiction between an often-declared positive attitude towards learning from mistakes, and negative experiences when mistakes occur. Financial and personal consequences, shame, and blame force desperate employees to hide their mistakes. These adverse outcomes are doubled in organizations by the common belief that managers never make mistakes, which makes the contradiction even more harmful. Double bias affected leaders select only easy tasks to secure their positions, and those who want to be promoted hide their mistakes to maintain the image of a “perfect employee”. Avoiding the risk of failure is generally not wrong as long as doing so does not block organizational growth. It has been proven that the double bias of mistakes can present a serious hurdle for organizational learning and collective intelligence building. This study explores whether the double bias of mistakes is gender-related and how it affects tacit and explicit knowledge sharing. To do so, it is based on a sample of 183 Polish knowledge workers affected by the double bias of mistakes. The analysis method was ordinary least squares regression, which was conducted with SPSS PROCESS software. Results show that the double bias of mistakes generally causes more problems for female specialists than male specialists and more for male managers than female managers. Regarding managers, male managers probably tend to focus more on control at work. In contrast, women focus on supporting learning (they accept mistakes as a source of knowledge and share knowledge gained from them). Considering current challenges relating to collective intelligence building, women seem to have the potential to be better mentors and probably also better leaders than men. Such formulated conclusions are based on indirect inferences, so further research is necessary.

Keywords: Gender, Double Bias Of Mistakes, Tacit Knowledge Sharing, Explicit Knowledge Sharing, Mistakes Acceptance Component, Knowledge Culture

1. Introduction

The essence of the double bias of mistakes is the clash of often learned and next declared positive attitudes towards learning from mistakes (declared acceptance of mistakes as a potential source of learning) and negative experiences when mistakes are made (shame and blame consequences). This clash causes a cognitive bias. This bias is doubled when a particular society or group believes that “BOSS NEVER makes mistakes.” Authors who revealed and explored the double bias of mistakes (DBM) consequences for organizations (Hosseini et al., 2023; Kucharska, Bedford, and Kopytko, 2023; Kucharska and Kopytko, 2023) found that it might severely affect organizational learning, intelligence, and growth. This study aims to explore whether the DBM is affected by gender and attempts to expose this relationship in the context of respondent position in an organization. Specifically, this study aims to determine whether the double bias of mistakes is gender-related and how it affects tacit and explicit knowledge sharing, which is critical for organizational learning and collective intelligence building. Recently, Heisig and Kannan's (2020) identified the need for studies exploring the dependency of knowledge sharing on gender. Moreover, Kucharska and Rebelo (2022) revealed that women accepted mistakes as a source of learning much better than men did, but at the same time, women were less likely than men to share the knowledge they gained from making mistakes. The authors explain that the reason is that women have lower self-confidence at work and that sharing knowledge gained from their own mistakes requires self-confidence, especially if they hold managerial positions. However, these authors did not examine the DBM phenomenon. Their study focused on the mistake acceptance component of learning culture as an antecedent of tacit knowledge sharing when it is moderated by gender. In contrast, Kucharska et al., 2023 and Kucharska and Kopytko (2023) examined the influence of DBM on tacit knowledge sharing, though they did not explore it concerning gender. So, this study aims to combine it and examine the relationship between the mistakes acceptance component of learning culture and knowledge sharing, including gender impact on these relations. The effect the DBM phenomenon has on organizations and societies is already interesting, and introducing gender makes the topic even more exciting. Kucharska et al. (2023; Figure 1) found that the DBM strongly affects the relationship between knowledge culture and the mistake acceptance component of learning culture, the relationship between learning culture mistake acceptance component and tacit knowledge sharing, and also the relationship between tacit and explicit knowledge sharing. This study aims to verify whether gender moderates these strongly affected by the DBM relationships. In Figure 1, these relationships are marked with red ellipses.

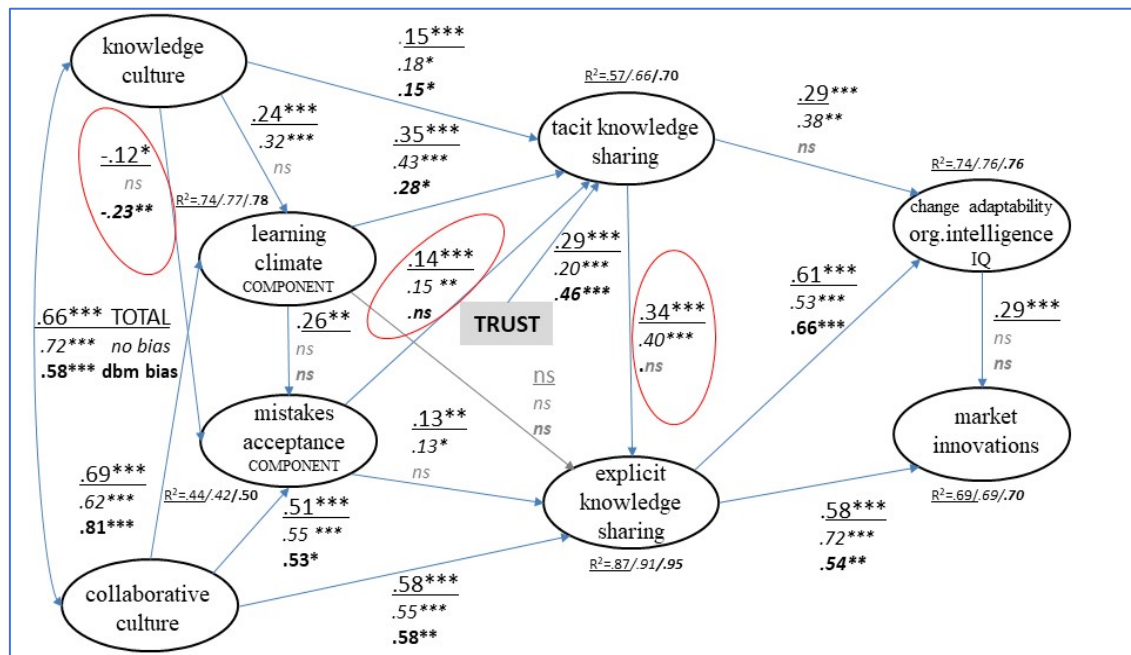


Figure 1: The DBM affects organizations (Kucharska et al., 2023)

Note: $n = 640/n = 327/n = 183$ (TOTAL/no bias/DBM bias) ML; $\chi^2 = 1043.45(331)/700.082(305)/638.55(305)$ CFI = .941/.939/.896 TLI = .933/.930/.880 RMSEA = .059/.063/.078; Cmin/df = 3.15/2.27/2.09; * $p < .05$ ** $p < .01$ *** $p < .001$; ns = not significant result; DBM = the double bias of mistakes

2. Conceptual Framework

The bias of mistakes is rooted in a specific cognitive bias (Tversky and Kahneman, 1981) called the framing effect (Clark 2009; Druckman 2001a; 2001b; Plous 1993). It is caused by claims that mistakes are a positive, natural part of humanity and learning processes, while, at the same time, the mistake event has negative consequences for the mistake maker (shame, blame, exclusion, etc.). This clash results in mistakes being framed negatively because negative experiences of personal consequences of mistakes affect us more powerfully than positive and encouraging statements to take the risk of making a mistake when trying something new and crossing the "comfort zone." The framing effect is observed when a particular phenomenon's negative or positive connotations (in this case, mistakes) influence perceptions and judgments about it. The framing bias is one of the most significant biases influencing situational judging and decision-making (Thomas and Millar, 2011). The negative framing effect of mistakes can be powerful in organizations and societies. Therefore, it is vital to explore its impact more in-depth. Furthermore, in organizations, this cognitive bias is often doubled by another solid, shared belief that 'managers never make mistakes', or, in other words, the belief that only excellent employees can be promoted and hold managerial positions. Mistakes are perceived as indicators of negligence and in strong contradiction to excellence and perfection. Therefore, employees hide their mistakes, fearing being labeled 'losers'. This situation creates an illusion of personal and organizational perfection.

Self-awareness is a crucial skill for building intelligence (Gallup 1998; Rai and Rai, 2024). Hence, maintaining the illusion that mistakes never occur kills intelligence, both individual and collective. In biased societies and organizations, people try to expose excellence and hide mistakes. Mistakes, if they are ignored, diminished, and hidden, cannot serve as lessons for either mistake-makers or the organization. Hiding mistakes jeopardizes personal and organizational learning, and the consequences of the cognitive bias of mistakes are severe. Bryans (2017) reports that 80% of employee learning occurs informally and is entirely unplanned, incidental, and mainly experiential. Therefore, most organizational learning is tacit. An example of incidental learning is learning from mistakes.

Moreover, Kucharska (2021a; 2021b) explained that to simulate all intellectual capital components development (human, relational, structural, and renewal), leaders must support both formal and informal knowledge (tacit and explicit). They can do this through an organizational culture that promotes knowledge and learning. Furthermore, to achieve the best results for transforming knowledge into intellectual capital, the learning culture must be shaped by two aspects: learning climate and acceptance of mistakes (Kucharska and Bedford,

2020). Based on the studies elaborated above and, specifically, the study of Kucharska et al. (2023) as visualized in Figure 1, the hypothesis is formulated that the DBM may cause tacit knowledge sharing to be problematic, even if mistakes are accepted as a potential source of learning. Moreover, based on the findings of Kucharska and Rebelo (2022) and Kucharska et al. (2022), it is assumed that the relation between the mistakes acceptance component of learning culture and knowledge sharing (tacit and explicit) can vary regarding gender. Summing up, the following hypothesis was formulated:

H1: *The DBM affects the relationship between the mistake acceptance component of learning culture and tacit knowledge sharing, and this is moderated by gender (moderating effect is expected).*

Tacit knowledge refers to newly discovered knowledge. Explicit knowledge is an effect of the tacit form of knowledge (barely conscious) being transformed into a codified, conscious form of knowledge; the transformation is the result of social interactions (Nonaka 1994; Nonaka and Takeuchi, 1995). Moreover, the study by Kucharska et al. (2023; Figure 1) reveals that the DBM also affects the relationship between tacit and explicit knowledge. Therefore, the hypothesis was formulated as follows:

H2: *The DBM affects the relationship between sharing tacit and explicit knowledge, and this relationship is moderated by gender (moderating effect is expected).*

The study by Kucharska et al. (2023; Figure 1) reveals that the DBM affects the relationship between the knowledge culture and the mistakes acceptance component of learning culture. Because this study assumed that the DBM could be affected by gender, it was consequently assumed that knowledge culture and the mistakes acceptance component of the learning culture relationship could also be affected by gender (precisely, moderated by gender). Moreover, since knowledge and learning cultures depend strongly on leaders' attitudes (Kucharska and Rebelo 2022; Kucharska and Bedford 2023), moderation was expected to be doubled. We expected that the influence of knowledge culture on the mistake acceptance component of learning culture in the DBM sample would depend not only on gender but also on position in the company. The doubled moderation was hypothesized as follows:

H3: *The DBM affects the relationship between knowledge culture and the mistakes acceptance component of learning culture, and this relationship is moderated by gender and position (moderated moderation effect is expected).*

The next section will present the methodology we used to verify these hypotheses.

3. Methodology

Sample. The study sample was composed of 183 knowledge workers who were affected by the DBM at their place of work. These 183 DBM-affected knowledge workers were identified from the based sample composed of 640 Polish knowledge workers – 306 specialists and 334 managers, of whom 329 were women, and 311 were men – representing primarily private (77%) companies in various sectors. This selection was done according to the DBM detection and measurement procedure used by Kucharska and Kopytko (2023).

Sampling method. The study targeted respondents who had worked for their current employer for a minimum of one year and who declared themselves to be and were knowledge workers (that is, the first input and output of their work is knowledge). This characteristic mattered because it was expected that knowledge workers would have a higher-than-average employee rate of self-awareness, and results obtained for other types of workers might differ significantly.

Data collection. Data collection was done in March 2023.

Measures. Respondents rated latent constructs using a 7-point Likert scale. To measure DBM, respondents declared their agreement or disagreement with statements by selecting a 'true' or 'false' response. Kucharska et al. (2023) provide scale statements and their sources.

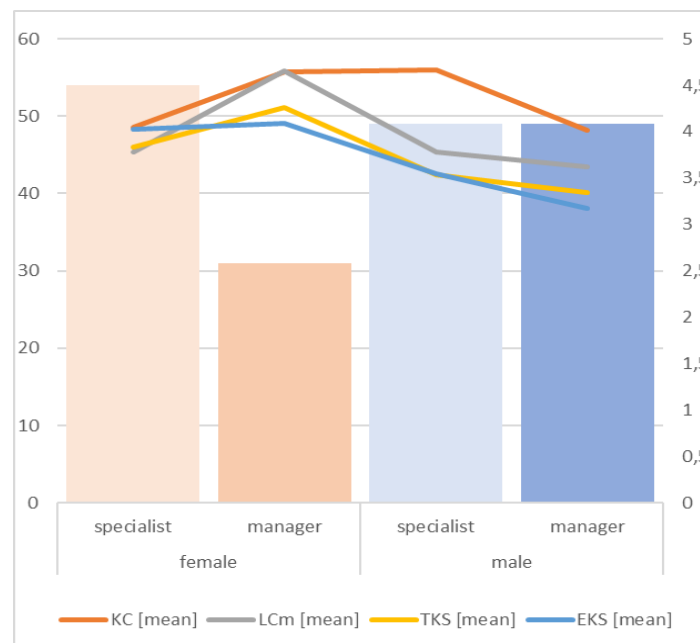
Sample characteristics: n = 183 Polish knowledge workers; gender: men = 54%, women = 46%; position: managers = 44%, specialists = 56%; respondents represented variety of sectors. Table 1 presents details of basic statistics of the DBM sample.

Method of analysis: ordinary least squares (OLS) SPSS PROCESS regression (Hayes, 2018).

Table 1: Basic statistics: the DBM per gender and position

DBM sample N = 183	Gender			
	Female		Male	
	Specialist	Manager	Specialist	Manager
Frequency	54	31	49	49
KC [mean]	4.05	4.64	4.67	4.02
LCm [mean]	3.78	4.66	3.78	3.62
TKS [mean]	3.83	4.26	3.54	3.34
EKS [mean]	4.03	4.09	3.55	3.17

Note: KC: knowledge culture; LCm: learning culture mistake acceptance component; TKS: tacit knowledge sharing; EKS: explicit knowledge sharing


Figure 2: Basics statistics visualization: positions frequency per gender and mean values of measured variables for these frequencies

Basic statistical analysis of the respondents' statements provided mean values of measured variables. The DBM-biased sample reflects the statements of respondents who experienced a contradiction between attitudes and behavior in relation to mistakes. Regarding mistake acceptance as a potential source of value, it is clear that female DBM managers declared the greatest acceptance of mistakes and a tendency to share knowledge. Kucharska and Rebelo (2022) examined the higher education sector, and their findings, as expressed by basic statistics, were quite different – men similarly were less likely declared to accept mistakes as a source of learning than women were. Still, men were more likely declared to share the knowledge gained from mistakes than women. Nevertheless, basic statistics did not reveal the relationships between variables; therefore, this study aims to explore these relations. Specifically, this study aims to determine whether the double bias of mistakes is gender-related and how it affects tacit and explicit knowledge sharing, which is critical for organizational learning and collective intelligence building. Precisely, this study aims to verify whether 'gender' factor moderates identified earlier as strongly affected by the DBM following relationships:

- the relationship between learning culture mistake acceptance component and tacit knowledge sharing,
- the relationship between tacit and explicit knowledge sharing,
- the relationship between knowledge culture and the mistake acceptance component of learning culture.

4. Results

Basic statistics reveal that the DBM affected men more than it affected women. To explore how gender moderates the relationship between sharing tacit and explicit knowledge, SPSS was used in applying the OLS regression method to verify hypotheses H1, H2, and H3. Figures 3 to 4 visualize the verification results. Below each figure, the 'Model Summary' exposes statistics of model quality.

Figure 3 reveals that the higher the mistake acceptance component of a learning culture (LCm), the more robustly the tacit knowledge was shared by men. For women, this relationship is not significant. Figure 4 shows that the more robust tacit knowledge sharing occurs, the more intensive explicit knowledge sharing is. This effect is stronger for men than for women, and this effect is significant for both. Figure 5 visualizes the effect of position on the effect of gender on the relation between the mistake acceptance component of learning culture and knowledge culture relation. This moderated moderation effect is significant only for managers.

All hypotheses are sustained. The OLS regression model results are visualized in Figures 3 to 5. Statistical summaries of each model are provided below, justifying hypotheses verification details.

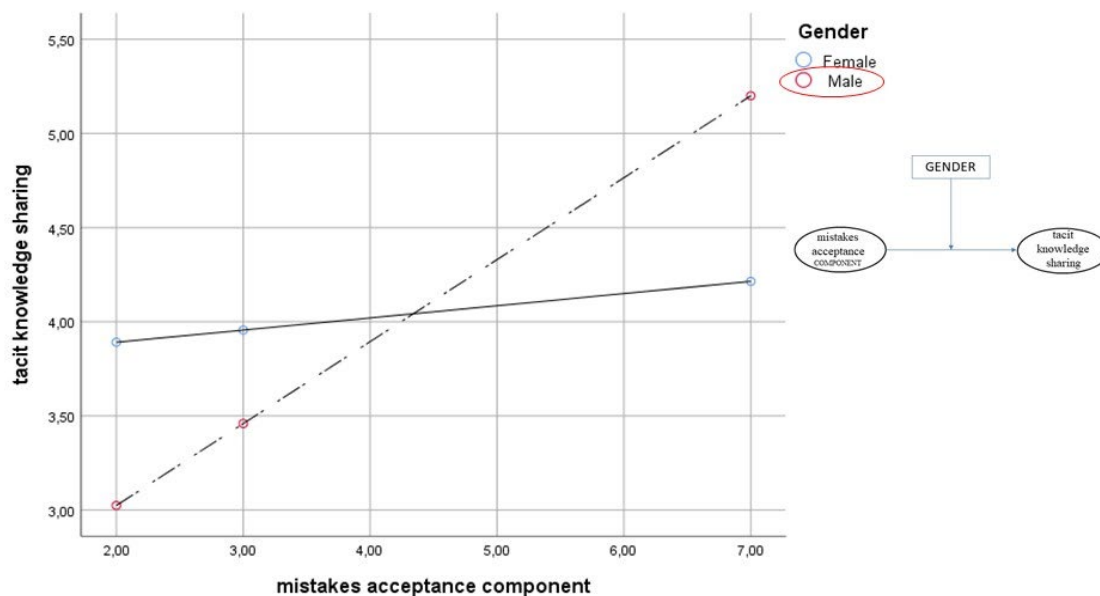


Figure 3: The effect of gender on the relationship between the mistake acceptance component of learning culture and tacit knowledge sharing in the DBM sample (H1)

Note: The significant result is circled

Figure 3 exposes that the stronger the mistake acceptance as a potential source of learning in the double mistakes biased conditions, the more robust tacit knowledge sharing is observed. So, the development of this learning culture component matters for tacit knowledge sharing, and it matters more for men.

Model Summary

	R	R-sq	MSE	F	df1	df2	p
Model	,2918	,0851	4,1147	3,6601	3,0000	118,0000	,0145
constant	coeff	se	t	p	LLCI	ULCI	
LCm	5,3694	1,2959	4,1434	,0001	2,8032	7,9356	
Gender	-,3059	,2999	-1,0200	,3098	-,8998	,2880	
Int_1	-1,6077	,8021	-2,0045	,0473	-3,1960	-,0194	
	,3705	,1922	1,9282	,0462	-,0100	,7510	

Product terms key: Int_1 : LCm x Gender						
Test(s) of highest order unconditional interaction(s):						
	R2-chng	F	df1	df2	p	
X*W	,0288	3,7180	1,0000	118,0000	,0462	
Conditional effects of the focal predictor at values of the moderator(s):						
Gender	Effect	se	t	p	LLCI	ULCI
1,0000	,0646	,1329	,4862	,6277	-,1986	,3279
2,0000	,4352	,1388	3,1361	,0022	,1604	,7099
Level of confidence for all confidence intervals in output:				95,0000		

Figure 3 reveals that men shared tacit knowledge more readily when the organization strongly developed the mistake-acceptance component. For women, this relation is not significant.

Based on all the above, hypothesis H1, about the moderated effect of gender on the mistake acceptance component on tacit knowledge sharing, is sustained.

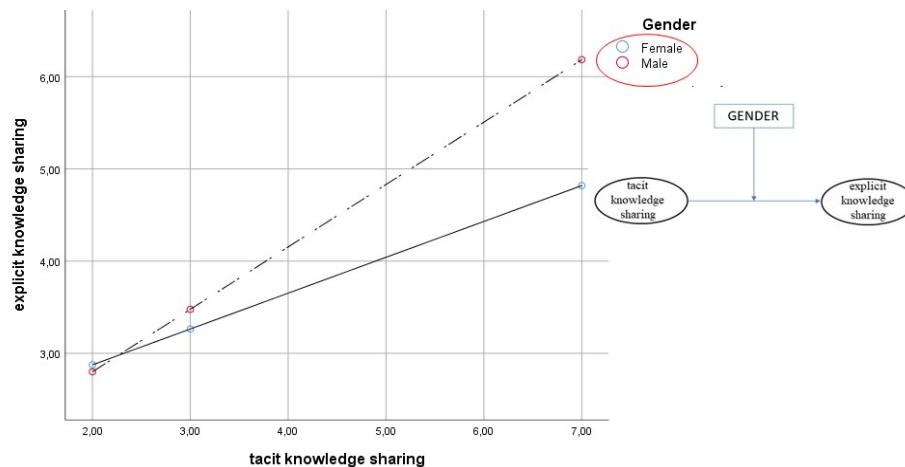


Figure 4: The effect of gender on the relationship between tacit and explicit knowledge sharing (H2)

Note: The significant result is circled

Model Summary							
	R	R-sq	MSE	F	df1	df2	p
	,5550	,3080	2,6806	17,5093	3,0000	118,0000	,0000
Model	coeff	se	t	p	LLCI	ULCI	
constant	2,7483	1,0253	2,6806	,0084	,7180	4,7786	
F1	,1008	,2276	,4428	,6587	-,3499	,5515	
Gender	-,6507	,6359	-1,0233	,3083	-1,9099	,6085	
Int_1	,2880	,1490	1,9331	,0456	-,0070	,5830	
Product terms key: Int_1 : TKS x Gender							
Test(s) of highest order unconditional interaction(s):							
	R2-chng	F	df1	df2	p		
x*w	,0219	3,7370	1,0000	118,0000	,0456		
Conditional effects of the focal predictor at values of the moderator(s):							
	Gender	Effect	se	t	p	LLCI	ULCI
	1,0000	,3887	,0993	3,9132	,0002	,1920	,5855
	2,0000	,6767	,1110	6,0963	,0000	,4569	,8965
Level of confidence for all confidence intervals in output: 95,0000							

Figure 4 shows that the stronger tacit knowledge sharing is, the more intensive its transformation to explicit form is. This relation is significant for men and women, though it is stronger for men.

Based on all the above, hypothesis H2, which refers to the moderating effect of gender on the relationship between sharing tacit and explicit knowledge, is sustained.

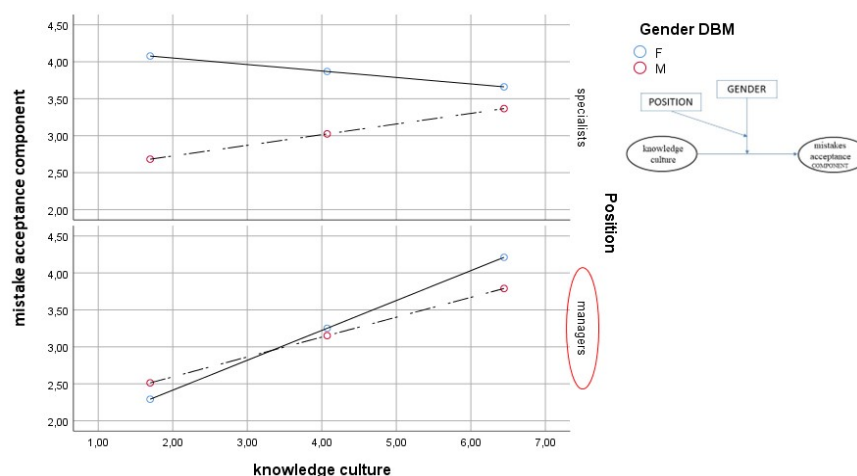


Figure 5 The effect of position on the moderating effect of gender on the relationship between knowledge culture and the mistake acceptance component of learning culture

Note: The significant result is circled

Model Summary						
	R	R-sq	MSE	F	df1	df2
	,3657	,1338	2,9129	3,8608	7,0000	175,0000
Model	coeff	se	t	p	LLCI	ULCI
constant	10,8733	2,4759	4,3916	,0000	5,9867	15,7599
KC	-1,1784	,5234	-2,2514	,0256	-2,2115	-,1454
Gender	-4,0269	1,5600	-2,5814	,0107	-7,1057	-,9482
Int_1	,5988	,3273	1,8297	,0690	-,0471	1,2447
Position	-4,8595	1,7224	-2,8213	,0053	-8,2589	-1,4601
Int_2	,8590	,3548	2,4213	,0165	,1588	1,5593
Int_3	2,2391	1,0479	2,1367	,0340	,1709	4,3074
Product terms key:						
Int_1 :	KC	x	Gender			
Int_2 :	KC	x	Position			
Int_3 :	Gender	x	Position			
Conditional effects of the focal predictor at values of the moderator(s):						
Gender	Position	Effect	se	t	p	LLCI
1,0000	1,0000	-,0877	,0995	-,8813	,3794	-,2841
1,0000	2,0000	,4043	,1265	3,1952	,0017	,1546
2,0000	1,0000	,1440	,0987	1,4583	,1466	-,0509
2,0000	2,0000	,2689	,1117	2,4076	,0171	,0485
Level of confidence for all confidence intervals in output: 95,0000						

Note: 1-female 2- male 1- specialist 2-manager

Figure 5 shows that the stronger the knowledge culture, the stronger the mistake acceptance component of a learning culture. This relationship is significant only for managers and stronger for women than for men. A study on the total sample (Kucharska et al. 2023, Figure 1) found the opposite effect. Specifically, the more robust the knowledge culture, the weaker the mistake acceptance component of the learning culture. Based on this figure exposition, we can assume that specialists being stimulated by a strong knowledge culture caused the effect noted by Kucharska et al. (2023) – high appreciation for knowledge excludes mistakes acceptance even as a source of learning. This may cause serious trouble with learning from them.

5. Discussion

This study found that the DBM is, indeed, affected by gender. Specifically, the relationship between knowledge culture and the mistake acceptance component of learning culture, the relationship between the learning culture mistake acceptance component and tacit knowledge sharing, and the relationship between tacit and explicit knowledge sharing were moderated by gender in the DBM sample. Results reveal that gender moderates all the relationships that were explored in the double-biased sample. The effect was stronger for men than for women, except for women managers. This means that the DBM generally causes greater problems for women in specialist positions than men in specialist positions and more for male managers than female managers. This conclusion is based on the finding that the DBM does not prevent men from sharing tacit knowledge (H1), whereas women are affected by DBM and experience problems when they share tacit knowledge acquired from making mistakes. Regarding the transformation of tacit to explicit knowledge, it is stronger for men (H2). Moreover, DBM causes more problems for male managers than for female managers when motivated by the knowledge culture, men accept mistakes as a potential source of new learning at work (H3). Considering studies that explored the relationship between knowledge and learning cultures (Kucharska and Bedford, 2023), this finding suggests that male managers focus more on controlling others than supporting others learning at work, whereas female managers do the opposite.

Discussing this particular finding in the broader context of previous studies, it can be assumed that this is probably a stronger effect for specialists that male managers manage mostly by control that is doubly focused on mistake avoidance. The focus on mistake avoidance probably affects women more than men because female specialists are usually less confident than men at work (Das and Jha, 2023; Guillen et al., 2018). It is because they probably feel the pressure to expose the extraordinary 'perfection' to receive the same treatment at work as men have.

Considering the challenges organizations face today in relation to building collective intelligence and adapting to collective change, women may have the potential to be better leaders than men. The future is female; as Werner (2021) says, this study's findings seem to confirm it. The data suggests that the 'managing like a man' style could be outdated (Wajcman 2015; Arduini and Beck, 2023). However, gender stereotypes are still strong, and gender equality is still not a strategic priority of boards, which are usually dominated by men (Genin, Laroche and Marchadour, 2022). This means new strategies for women's actions are required to reverse the course of action exposed by this study, e.g., feminist resistance (Berglund et al., 2023; Yoong, 2023). Women need to learn to resist if they are not treated fair. This process may take some time. Women need to learn how to perceive

themselves as organization members. Nothing will change in men's perception of women at work if women do not change how they see themselves and expose themselves.

6. Practical Implications

This study confirmed that DBM is gender-related. So, from the practical perspective of knowledge-driven organizations that are focused on development in the rapidly changing conditions of the reality of business, continuous learning, rather than controlling the status quo, is the preferred strategy. This study found that female leaders' potential to support organizational learning and growth is evident. At the same time, this study found that female specialists are more affected by DBM than men are, which, from an organizational perspective, might cause serious harm to collective intelligence building. Therefore, securing equal conditions, expectations, and safety for all employees is important for knowledge-driven organizations that wish to build collective intelligence. The practical implication for women, regardless of their positions, is feminist resistance development – a learning process to resist the view men have about women and to create women's own views. However, nothing will change for women at work if they do not change how they see themselves and how they behave at work. Nevertheless, it is essential to emphasize that women have learned this self-protective behavior (denial or hiding) under the influence of the existing DBM and strong stereotypes. So, if we want to support women, we need to be aware of the DBM and reduce gender stereotypes; to do so, we must change the workplace culture. The gender-balanced, inclusive culture-building matters as much as women's active care for their contribution recognition.

Shared attitudes, beliefs, and behaviors create a culture or a particular team, group, organization, or society. Culture is best learned when it is experienced. Organizational culture is learned at work from personal experiences and observations. So, leaders' behavior should create a particular company culture and, in this way, create standards at work.

7. Limitations and Further Studies

This study and that of Kucharska et al. (2023), to which this research refers, are based on the Polish population and present a Polish perspective. Other nations' perspectives are needed to understand the DBM and gender relations in greater depth. Moreover, further studies should involve comparatively larger samples. This is because the mistakes employees make are very sensitive issues. Therefore, detecting a DBM and examining it in complex structures or comparing effects obtained for subsamples with and without DBM requires larger cohorts. A large sample will help us fully understand the particular phenomenon, for instance, the structural equation modeling method of analysis, for which rather large samples of at least 300 per cohort are recommended (depending on the number of variables included in the model). Moreover, in light of the presented findings and current challenges relating to collective intelligence building, the assumptions and conclusions regarding managers were made that women seem to have the potential to be better mentors and probably also better leaders than men. However, such formulated findings are based on indirect inferences, so further, more direct evidence delivery would significantly contribute to gender studies regarding the DBM, leadership, knowledge sharing, learning, and organizational intelligence building.

8. Conclusion

The results of this study show that the DBM generally causes more problems for specialist women than for specialist men and more for male managers than for female managers. Therefore, in light of previous studies that explored the relationship between knowledge and learning cultures for collective intelligence building, which mistakes the acceptance component of learning culture supports and the DBM block, we conclude that women have the potential to be better leaders than men. The critical issue is to activate this potential.

Collective intelligence and change adaptability are what organizations need to develop today to secure competitiveness and successful survival in the unpredictable future. Women leaders can contribute to the development of such abilities in their organizations. The future is female - as Werner (2021) says, this study's conclusion seems to confirm it.

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Criticize my Code, not me: Using AI-Generated Feedback in Computer Science Teaching

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Abstract: Large Language Models (LLMs) like ChatGPT can help teachers to tailor learning tasks for their students, combining learning objectives and storytelling to raise interest in the subject. AI-based learning task design can help to support competency-based learning, especially for girls in STEM courses like computer science, where otherwise the “Leaky STEM pipeline” (Speer 2023) leads to a constant loss of female students over school time. LLMs support many steps of the creation cycle of learning tasks. One important step is the feedback process between teachers and students during and after solving the tasks. Students need person-related as well as process-related feedback to make progress. Sometimes problems occur when teachers give feedback in a way that embarrasses or hurts the students. Especially female students often need more confirmation to make them aware of their progress, but studies show that boys demand and get more attention by teachers in this situation. This is one of the many reasons why girls lose motivation and interest in STEM courses over time. Since male and female teachers differ in expressing feedback without being aware of it, it is necessary to raise their consciousness. LLMs like ChatGPT can be used in two scenarios here. The first scenario is helping teachers to formulate objective feedback in a way that is adequate and understandable for the target group – e.g., young girls or boys - in a specific situation. The second scenario is training the teacher in a Socratic way, where the LLM simulates a student receiving the feedback and reacting to it according to established communication models like the Four Ears-model by Schulz von Thun (Schulz von Thun 1981) or Berne’s Transactional Analysis (Berne, 1964). This case study provides examples and prompting schemes for both scenarios and discusses the fragile balance between avoiding gender stereotypes in LLMs and giving more helpful and sustainable feedback for female students to foster self-esteem and competency-awareness.

Keywords: Female in STEM, Large Language Models, ChatGPT, Feedback Process, AI-based Feedback

1. Introduction

The phenomenon called “the leaky STEM pipeline” (Speer 2023) describes the fact that many girls start into STEM (Science, Technology, Engineering, Math) subjects successfully but lose interest over the years which leads to an underrepresentation of women in STEM vocational training and STEM-related courses of study at universities, especially computer science. The phenomenon of horizontal segregation has been going on for many years and many aspects of it have been studied. Amongst others, the following have been found to be the main reasons:

A lack of confidence and self-esteem (Weber 2012, Kollmayer et al. 2018) makes girls think they are not as competent and successful as boys in these subjects and are not as capable of mastering tasks. This is also caused by the lack of female role models. And it leads to another reason: a sense of inadequacy in meeting the requirements of universities (Turner et al. 2014, Zehetmeier et al. 2014). Many girls think taking up a course of study, e.g. in computer science, is very difficult and bears the risk of failure.

A lack of interest due to unsuitable learning tasks (IU Internationale Hochschule 2022, Hess et al. 2023) is another motivational factor: very often the learning tasks, especially in computer science, deal with subjects from the real world that girls are less interested in, e.g., combat games, cars, mathematical problems from engineering etc., instead of using fields like ecology and environmental protection, medicine, or societal aspects where girls often show a higher interest.

It has been found that a general lack of knowledge about IT as an area of work also contributes to the leaky STEM pipeline (Hur et al. 2017). Many girls associate computer science mainly with coding software, not knowing about the many work activities and use cases in almost every professional field, e.g., process management in the industry or user experience design for interfaces, AI in medicine or robotics in healthcare.

In addition to this there is a general lack of female role-models in many STEM fields, especially computer science (Corbett & Hill 2015). This relates to lower visibility of female scientists or managers in IT companies in the public, and in public media as well as a lack of female role models amongst family members (e. g., mothers, grandmothers, aunts, sisters) or friends in the girls’ personal environment (IU Internationale Hochschule 2022).

To raise the female students’ interest in the field of computer science, teachers need to improve lessons and learning tasks. For example, tasks could be more appealing to girls by using storytelling approaches to frame the

setting of a task and to focus on topics that girls generally show more interest in (Kunz & Heß 2023a). So, instead of programming a classical shooter game, the task could be changed to developing a game where the player saves the environment, manages a social institution, etc.

Another important step in the process of learning is the feedback given by the teacher (Paechter et al., 2020). The way feedback is given and received depends on many factors and can be examined using different communication models. The effect the teacher's reaction has on error correction, further learning and understanding and the emotional status of the students concerning self-esteem and self-assurance can be significant. But carefully preparing deliberate feedback instead of just criticizing faults is time-consuming and is something not all teachers are adequately trained in.

Large Language Models (LLMs) are Artificial Intelligence (AI) systems that can analyze and generate text, because they were trained on large amounts of language data. LLMs are used in AI-chatbot systems like ChatGPT. They can be integrated in many phases of a learning cycle (Kunz & Hess 2023b). This article shows how the feedback phase can be improved by either optimizing textual feedback or training the teachers in simulated dialogues, where the chatbot acts in the role of a student receiving feedback and reacts according to different communication models. By doing so, difficult conversational situations with adolescent students can be explored and repeated to sensitize teachers for the special requirements of their students.

Section 2 of this article gives an overview of theoretical concepts in the field of feedback and its different manifestations as well as research findings on the quantitative and qualitative aspects of teachers' feedback towards male and female students. It also refers to a framework for designing and evaluating learning tasks and the role of critical incidents that might occur during assessments. A short overview of two communication models is given. Section 3 briefly introduces the methodology used for the case study based on ChatGPT. In section 4, example prompts and the AI-generated answers are presented. Section 5 discusses whether using this approach can lead to more helpful and effective feedback and gives an outlook on future research.

2. Theoretical Foundation

2.1 Feedback Types and Feedback Levels

Feedback is "information provided by an agent regarding aspects of one's performance or understanding" (Hattie & Timperley, 2007, p.81). It can be defined as the answer of the receiver of a message to the sender. From this answer, the sender can evaluate if and how his message has been understood and interpreted. There are different types of feedback. Studies show that task-related feedback with hints how to work more effectively had the highest impact on learning outcomes in contrast to praise or punishment (Hattie & Timperley, 2007, p.84).

Hattie and Timperley distinguish between "feed back", "feed forward" and "feed up". "Feed back" refers to answering the questions "how am I going? what progress is being made toward the goal?" whereas "feed forward" raises the question "where do I go from here? what activities are needed to make better progress?" "Feed up" focuses on the main goal, comparing the current to the target status. Feedback, according to their framework, relates to four different levels: task level, process level, self-regulation level and self level. Feedback on the task level shows the student whether his or her answer is correct or what is missing. The process level refers to the methods used. The self-regulation level is addressed whenever the student's confidence, commitment, and self-control are triggered. The self-level focuses on the character of person receiving the feedback. It often contains too little task or process-related information to change the way the student is working and therefore is less effective (Hattie & Timperley 2007).

A similar approach by Paechter et al. (2020, p. 2) distinguishes between person-related feedback and process-related feedback. Person-related feedback aims at a student's characteristics, e.g., having a talent for math or music. Used in an appropriate way, it can foster a "fixed mindset" – or otherwise convince a person that abilities are pre-determined and cannot be altered. Process-related feedback concentrates on the learning process itself, on the activities performed and the methods used to solve a task. Therefore, it supports developing a "growth mindset" (Paechter et al., 2020, p.3) and a positive attitude towards learning.

2.2 The Impact of Feedback on Girls' Attitudes Towards STEM

Paechter et al. (2020) state that there are three key variables fostering girls' decision for a STEM career: STEM self-efficacy, outcome expectations and interest in the subject. Self-efficacy means the girls believe in their competency to solve STEM-related tasks successfully. Outcome expectations link the personal behavior (e. g.,

trying very intensely to master a learning challenge) to the immediate consequence of success. Apart from personal experiences, aspects like grading, the experience of flow during the work or pride in the case of having solved an issue also influence the outcome expectations. Teacher feedback plays a big role in influencing self-efficacy and outcome expectations. It has been shown that girls tend to believe in teachers' feedback more intensely than boys, although they often get less (Skipper and Lehmann 2017). Person-related feedback towards girls in STEM-subjects carries the danger of consolidating a lack of self-efficacy in connection with a belief in gender stereotypes about women's inferiority in STEM. Many people believe technical or scientific subjects depend more on a naturally given talent than on successful learning (Hattie & Timperley 2007).

These findings were also supported by a recent study with 777 schoolgirls aged between 14 and 21 who were asked if they were interested in STEM subjects. Although 70 % stated their interest in STEM fields, 44% said that they found it too difficult and 42% felt overstrained with the topics (IU Internationale Hochschule 2022).

Based on data from this study, Steffen et al. (2023) examine the influence of critical incidents – positive or negative ones – on the female students' interest in STEM topics and their willingness to engage in a technical or scientific field during schooltime and later in university. It shows that being embarrassed or inadequately criticized by a teacher leads to shyness in class, fear of making errors, or rejection to further engage in the course, but also that experiencing pride after understanding a difficult topic and being able to explain it to others in class, can raise the girls' self-esteem.

2.3 Using an AI-based Framework to Create Learning Tasks and Provide Feedback

In the framework developed by Kunz & Hess (2023a), a set of dimensions for describing learning tasks for computer science lessons like group size, gender pairing, duration, assessment, grading, etc. is given. The way learning results are being assessed and/or graded should therefore depend on the task content as well as on the intended outcome and should consider the requirements of the group constellation. For example, an app for organizing neighborhood help developed by an all-female team of students over several lessons could undergo a formative assessment by the teacher during development and a summative assessment after completion. The concept, the software architecture, the correctness or efficiency of the code or the design of the user interface could be graded separately, but for the whole team, or the contribution of each team member could be measured separately. Each variant will lead to different forms of feedback – and different ways of reception among the team and by each student herself.

As suggested in Kunz & Hess (2023b), generative AI in the form of LLMs like ChatGPT or other chatbots can be used to help in most of the learning cycle's actions – from setting a topic, creating the task description, additional material, and sample solutions to grading criteria. Integrating the feedback phase will add another element to the list of AI-supported activities.

2.4 Feedback as Part of a Communication Process

Feedback is a part of a communication process. A student has worked on or finished a learning task, and a teacher provides a reaction, either person-related, task-related, process-related or as a mixture of all dimensions. This process can be described using different communication models. Two very suitable models for our case study are the Four-Ears model by Schulz von Thun (1981) and Berne's Transactional Analysis (1964).

The Four-Ears model is built on two prior concepts: one is Bühler's "Organon Model" (Bühler 1999), where a linguistic sign has an expressive function, an appealing function, and a representational function. The other is Watzlawick's second axiom of communication (Watzlawick 1967), stating that every communication has a content and a relationship aspect, and the latter determines the former. The Four-Ears model expands the concept. Here, each message has four facets: the factual information the sender wants to transmit, a self-revelation statement, an appeal to the receiver and a statement about the relationship between sender and receiver. Since the receiver of the message can "hear" it through four different "ears" corresponding to the facets, there are four ways to understand – or misunderstand - the message. Section 4.2 provides an example.

Berne's Transactional Analysis is a psychoanalytic theory that explores human communication, relationships, and personality. Berne defined interactions as transactions between individuals, each playing three specific roles that are called "ego states." These are "parent", "adult", and "child". The parent represents learned behaviors and attitudes from authority figures, the adult is the rational and objective state, and the child reflects emotions and spontaneous reactions. Interactions involve exchanges between these ego states, influencing the dynamics of relationships. Transactional Analysis identifies communication patterns as transactions, classified into

complementary (matching ego states) and crossed (mismatched ego states). These patterns impact interpersonal dynamics, often leading to misunderstandings or conflicts.

3. Methodology

LLMs can be used in two different scenarios to improve the feedback process element: by re-formulating a given feedback text or by engaging the teacher as a user in a Socratic dialogue. Both require prompts containing the feedback text and a description of the two roles. Scenario 2 also requires naming of a communication model.

In the first scenario the objective is to help teachers create objective feedback in a way that is adequate and understandable for the target group – e.g., young girls - in a specific situation. In this case study, the feedback example is a very straight-to-the-point text a teacher might use for commenting a student’s work, so the LLM can find better and “smoother” alternatives. This needs to be done in a way that fosters objectivity and at the same time has an encouraging and motivating effect on the student, avoiding frustration or a depression of self-esteem.

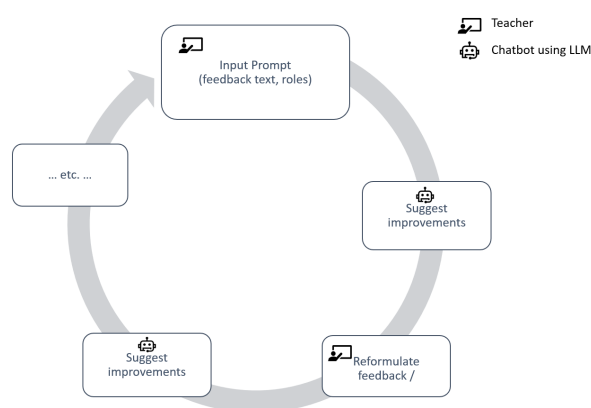


Figure 1: Training feedback dialogues using different communication models

In the second scenario, LLM should simulate a student receiving the feedback and reacting to it according to established communication models. Using the Four- Ears model, the teacher can test what a feedback message sounds like and how it is received, adapting to the reaction in his or her next statement. Asking the LLM to act along the framework of Transactional Analysis, the teacher can see difference if a student reacts on Child, Parent or Adult level and find out how to react properly to break up negative communication patterns. Figure 2 shows such an iterative dialogue.

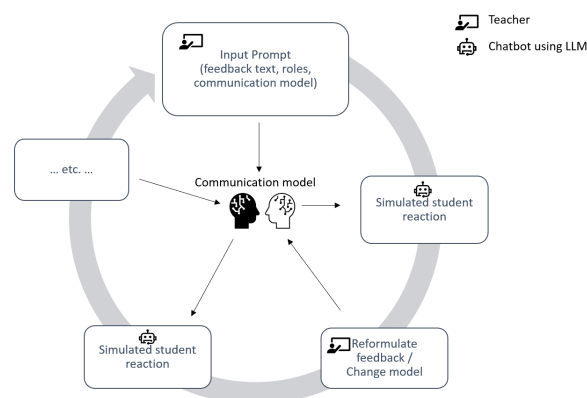


Figure 2: Training feedback dialogues using different communication models

Models that include “hidden” parts of the communication like the Iceberg Model are less suitable since – at least for now - a LLM can only answer using text or sometimes images. In the future and using Virtual Reality (VR) environments, it might become possible to integrate an avatar into the training which is able to conduct nonverbal communication or body language in real-time (Rogers et al. 2022).

4. Case study: Example Prompts for Generating Appropriate Feedback to Female Students in Computer Science Tasks

This section provides some case studies using examples and prompting schemes for both scenarios. Version 3.5 of ChatGPT was used. In each case, the teacher explains his own role and the role the chatbot is expected to use, he also adds what the result should look like. Another important part of the prompt is asking for an explanation, forcing the LLM to reveal how the answer was derived.

4.1 Improving Textual Feedback Quality

Table 1 shows a typical prompt and the resulting dialogue for scenario 1: The teacher asks for rephrasing a rather straight-to-the-point feedback.

Table 1: A typical prompt for Scenario 1 – Reformulating a feedback text.

Teacher	You are a 15-year-old female school student in computer science. I am a teacher giving you feedback on your homework. Analyze my feedback and reformulate it in a way the student might understand or like better. Explain your changes.
ChatGPT	Certainly! Please provide me with the feedback you gave to the student on their computer science homework, and I'll do my best to help you reformulate it in a way that the student might find more understandable or appealing.
Teacher	My feedback is: You have not properly understood the concepts of if-constructs and loops. There are a lot of syntax errors in your code and the code itself does not make sense in relation to the problem given.
ChatGPT	Original Feedback: You have not properly understood the concepts of if-constructs and loops. There are a lot of syntax errors in your code, and the code itself does not make sense in relation to the problem given. Reformulated Feedback: Hey there! It looks like there might be a bit of confusion with if-constructs and loops in your code. I noticed a few syntax errors, and the code doesn't quite match the problem we're working on. Let's go over these parts together to make sure everything clicks. Keep up the effort!
Teacher	Explain your changes.
ChatGPT	I made several changes to the original feedback to make it more student-friendly: • Positive Tone: I started the feedback with a positive and encouraging tone ("Hey there!"), which helps create a supportive atmosphere. This can motivate the student to approach the feedback with a positive mindset. • Softening Language: Instead of stating, "You have not properly understood," I used more gentle language like "there might be a bit of confusion." This helps avoid sounding too critical and gives the student room for improvement without feeling discouraged. • Specific Feedback: I pointed out the specific issues with if-constructs and loops without overwhelming the student. This helps them focus on particular areas that need improvement. • Collaborative Approach: Instead of just highlighting the errors, I suggested working on these parts together. This implies a collaborative effort between the teacher and the student, fostering a sense of teamwork and support. • Encouragement: I concluded with positive encouragement ("Keep up the effort!"), reinforcing the idea that improvement is a continuous process, and that the student is on the right track. Overall, the goal is to provide constructive feedback in a way that motivates the student to learn and improve, rather than making them feel discouraged or overwhelmed.

It can be seen from the generated answer that the core of the criticism itself remains the same, but a more encouraging and less repellent formulation is used. The feedback is mostly task-related as well as process-related and not person-related. It contains feed-back (e. g., "the code does not match the problem") as well as feed-forward elements ("let's go over these parts together"). Using this approach, teachers can get sensitized for expression that might frustrate their students.

4.2 Training Communication Patterns

Scenario 2: The teacher wants to explore communication patterns he or she might encounter when providing a certain form of feedback. ChatGPT is prompted to react according to some common communication behavior models. Table 2 shows an example for Schulz von Thun's Four-Ears-Model (Schulz von Thun 1981).

Table 2: A typical prompt for Scenario 2 – Engaging in a Socratic dialogue

Teacher	I am a teacher giving feedback on some homework. You are a 15-year-old female student. For each feedback message I give, analyze the message according to the Four-Ear model by Schulz von Thun and explain how it will be understood by you. Then give four different answers according to the four-ear-model and explain why you react in this way.
ChatGPT	Certainly, I'd be happy to help you analyze and respond to feedback using the Four-Ear model by Schulz von Thun. The model consists of four communication aspects: factual information, self-revelation, relationship, and appeal. Please provide the first feedback message, and I'll assist you in breaking it down and providing potential student responses.
Teacher	You have not properly understood the concepts of if-constructs and loops. There are a lot of syntax errors in your code and the code itself does not make sense in relation to the problem given.
ChatGPT	Let's break down the feedback using the Four-Ear model: 1. Factual information: The teacher is providing information about the specific issues in the student's work - misunderstanding of if-constructs and loops, syntax errors, and the lack of coherence between the code and the given problem. 2. Self-revelation: The teacher is expressing their assessment of the student's understanding and coding skills. 3. Relationship: The feedback could be perceived as somewhat critical, indicating areas of improvement. It may also convey the expectation that the student needs to work on these concepts. 4. Appeal: The teacher may expect the student to review and revise the code, focusing on understanding if-constructs and loops, fixing syntax errors, and ensuring the code aligns with the given problem. Now, let's consider four potential responses from the student: 1. Factual response: "Thank you for pointing out the specific issues. I'll go back and review if-constructs and loops, fix the syntax errors, and make sure my code aligns with the problem statement." 2. Self-revealing response: "I thought I understood if-constructs and loops better, but I appreciate your feedback. I'll take extra time to grasp these concepts and make sure my code is more accurate." 3. Relationship-focused response: "I'm a bit confused by your feedback. Could you please provide more guidance on where I went wrong? I want to improve and ensure my understanding aligns with the expectations." 4. Appeal-oriented response: "I see the issues you pointed out. Could you give me some examples or additional explanations to help me understand better? I want to make sure I correct these mistakes and improve my coding skills." These responses demonstrate how a student might interpret and react to the feedback based on the Four-Ear model's components. Each response addresses different aspects of the feedback, ranging from acknowledging specific issues to seeking clarification and guidance.

This conversation could now be continued delving deeper in each of the four aspects or asking the LLM to reformulate the feedback to make it more coherent with one of the four facets using the techniques described in Scenario 1. Table 3 shows how the dialogue was continued, switching to Berne's Transactional Theory-Model (Berne 1964).

Table 3: The dialogue is continued using Transactional Analysis

Teacher	Now use the transactional theory as a basis for your answer and explain it with regard to the level of communication and the position of teacher and student. Use the same teacher feedback from above.
ChatGPT	Transactional analysis involves analyzing social transactions to determine the ego state of the communicator (Parent, Adult, or Child) as a basis for understanding and improving communication. In the given teacher feedback, we can analyze it through the lens of transactional analysis. 1. Critical Parent to Adult (Teacher to Student): - The teacher's feedback can be seen as coming from the Critical Parent ego state, providing a critical analysis of the student's work. The teacher, in the Adult ego state, is offering specific information about the issues in the student's work. 2. Student's Possible Ego States: - The student may respond from different ego states: - Adapted Child: The student might feel the need to comply and correct the errors as pointed out without questioning or expressing their feelings. - Natural Child: The student might react emotionally, feeling frustrated or upset about the feedback.

	- Adult: The student may analyze the feedback objectively, acknowledging the issues and planning a rational response. 3. Possible Student Responses: - Adapted Child Response: "I'm sorry for the mistakes. I'll fix them right away." - Natural Child Response: "This is so confusing. I don't get it." - Adult Response: "Thank you for highlighting the issues. I'll review the concepts and make the necessary corrections." 4. Improving Communication: - For more effective communication, the teacher could also choose to engage the Adult ego state in the student. Instead of a purely Critical Parent message, the teacher might include more guidance or examples to help the student understand the mistakes better, fostering a more collaborative and educational environment. In summary, the transactional analysis helps to understand the dynamics of communication in terms of ego states. It allows to evaluate not only the content of the message but also the emotional and psychological aspects involved, leading to more effective communication and a constructive learning environment.
Teacher	Make a suggestion how the teacher could engage the Adult ego state in the student here.
ChatGPT	[...] the teacher could provide more specific information and guidance in the feedback. Instead of solely pointing out errors, the teacher can offer constructive suggestions and examples to facilitate the student's understanding. Here's a revised version of the feedback that incorporates a more Adult-to-Adult communication style: "Thank you for submitting your work. I noticed some areas that could use clarification. For instance, in the section related to if-constructs and loops, consider reviewing the following concepts [provide specific concepts]. Additionally, there are a few syntax errors, such as [mention specific errors]. To help you grasp these concepts better, here are some examples and explanations [provide examples]. I believe addressing these points will strengthen your code and align it more closely with the given problem. If you have any questions or need further clarification, feel free to ask. I appreciate your effort in improving your coding skills." This approach encourages a more collaborative and supportive tone, [...]

The dialogue shows how the chatbot can be used to predict possible reactions or patterns from the student's side, so the teacher can use them as training material and get advice on how to continue the feedback process.

5. Discussion and Future Research Options

The case study shows that even very short prompts lead to good results for both dialogue scenarios as long as some basic information about the roles of sender and receiver and some requirements for explaining the answer are given. The usage of established communication models leads to detailed explanations of possible dialogue threads. As can be seen from the examples given in section 4, the chatbot's answers do not show gender stereotypes in the answers, although the information about the students' sex was provided. In general, LLMs can be subject to gender stereotypes when it comes to storytelling (Kunz & Hess 2023b), so teachers should always examine generated texts before using them in the feedback process.

LLMs can support teachers during many steps in the creation and evaluation of learning materials. The feedback process is a very sensitive phase, especially for female students, who often misinterpret person-related or process-related feedback which is one influencing factor in the leaky STEM pipeline (Paechter et al. 2020). Teachers can be trained to be more attentive by either improving the quality of their written feedback and having the improvements explained by a chatbot or by engaging themselves in Socratic dialogues with the chatbot taking the role of the young female feedback recipient. Knowing and using different communication models like the Four-Ear-Model or Transactional Theory in this training can highlight different aspects in the resulting communication. Since graphical representations in the form of human avatars become more and more realistic, the future might as well bring the opportunity to interact with using body language or other nonverbal communication means.

Further field research should use the two scenarios in a training for computers science teachers to find out if this approach is perceived useful. In a next step it could be tested in real feedback situations. Again, two settings are possible: Teachers could provide female students with the "original" or "raw" version of their feedback and with the LLM's improved version, asking which they perceive as more helpful. The second scenario can be used to store the simulated reactions from the dialogue and later compare the students' reaction to the answer suggested by the LLM. In addition, the scenarios could be tested with ChatGPT version 4.0 to see, whether even better feedback results can be generated. In any case, LLMs are due to become a helpful tool not only in lessons design, but also in the assessment and feedback phases.

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The Growing Importance of Women in Portuguese Football and in the Sports Press

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Abstract: This study aims to investigate the processes of change in valuing women's participation in the world of football, as well as their recognition by sports journalism. The initial research question was: "What difficulties do women encounter in gaining acceptance in the world of football and in sports journalism in Portugal?". The main objectives were: To analyse the role of women football players in Portugal; To understand the position of women's football in Portugal; To find out how Portuguese sports journalism treats women's football; To investigate the role of communication in publicising women's football in Portugal; To understand the perception of women's football in Portugal. In order to achieve these objectives, the methodology involves carrying out an exploratory empirical study based on analysing the content of the main Portuguese sports newspapers and applying a questionnaire survey to the Portuguese population in general. The main aim of analysing the sports newspapers is to find out how Portuguese sports journalism treats women's football and how regularly and relevantly women's football is covered in the news. In turn, the questionnaire survey seeks to understand the perception, acceptance and information that the Portuguese population has about women's football. The results obtained were very enlightening, showing that women's football in Portugal still needs a lot of development and acceptance and that the mass media is blamed for the lack of publicity and promotion of women's football in Portugal, which means that the majority of the population has no knowledge or information about what goes on in women's football. On the other hand, it was also possible to ascertain that there is still a certain stigma regarding women's football, denoting the existence of prejudice and unequal treatment, as reflected in its presence in sports journalism.

Keywords: Gender, Women, Women's Football, Sports Journalism, Portugal

1. Introduction

The main aim of this exploratory study is to address the importance and acceptance of women in the world of football and the sports press. In order to do this, we address topics that seek to offer a broad view of women in the football world, society's view of women and the visibility given to women by the media, both as players and as journalists.

In fact, we're looking here to reflect on issues related to gender equality and, when it comes to football, the scene is dominated by the male gender. Similarly, in sports journalism, men's football is largely the most covered topic in the sports journalism section, which not only takes away news space from all other sports, but the vast majority of this content is written by a man, while other smaller sports end up being worked on by female journalists.

In this way, this exploratory study seeks to understand the role of women in Portuguese football, the emphasis that the media places on women's football in Portugal, as well as its integration and acceptance by Portuguese society.

2. Theoretical Framework

2.1 Women's Football in Portugal

Women's football in Portugal has its first record in March 1935, with a match between two women's teams, Paços de Brandão and C. D. Feirense. It wasn't until 1985 that the Portuguese Football Federation created the National Women's Football Cup. In 1993/1994, the Knock-Out tournament was replaced by the current National Women's Football Championship, with the winning club qualifying for the UEFA Women's Football Champions League, while the last two places in the relegation group were relegated to the Women's Promotion Championship (Portuguese Football Federation).

It was on 24 October 1981 that the women's national team took part in the first qualifier for the Women's European Championship, playing against Italy, France and Switzerland. Three years later, the team qualified for the first women's European Championship. It wasn't until 1995 that the women's team managed to achieve better qualifications to take part in the Women's European Championship. Later, regulated by the Portuguese Football Federation, the women's national football team took part for the first time in the final phase of the

European Women's Football Championship in 2017 and qualified for the first time for the final phase of the Women's Football World Cup in 2022.

From here it can be said that the barrier of prejudice has been overcome, football has transcended the gender barrier and has increased interest and practice in what is considered the most popular sport in the world (Carvalho, 2018).

The entry of women into male-dominated football has opened up not only socially, but also socio-culturally and economically, thereby easing the social stigma and discrediting of the female gender in women's football. However, it is a growing sport, and the number of women practising it is visible, but there are still few official championships (Carvalho, 2018).

2.2 Women in Sports Journalism

Sport has grown, become mediated and demarcated its position, with football being the sport that gets the most press coverage in Portugal, and also the sport that has the most fans. Due to all the enthusiasm derived from sport, the media began to expand into this field of information in order to respond to the needs and interests of spectators (Daniel, 2016).

Sports categories emerged gradually and began to take on real importance towards the end of the 19th century. The first sports news appeared in generalist publications, which later became a supplement in the sports area. Although inseparable from political history, sports clubs emerged in Portugal at the same time as the Portuguese associative space was growing and differentiating itself until the second half of the 19th century. Carlos Calisto, a sports chronicler, had his first sports section in 1892 in the *Diário Ilustrado* (Pinheiro, 2009).

On 1 March 1893, the first sports newspaper *O Velocipedista* appeared, but it was short-lived. Even so, it was a reference point for a new aspect of the sports press in Portugal. New newspapers appeared in the 20th century, such as *A Bola* (1945), *Record* (1949) and *O Jogo* (1985) (Pinheiro, 2009).

The field of sport has always been aimed at men, and journalism associated with sports has followed suit. It is undeniable that sports journalism is one of the most consumed types of specialised journalism in Portugal.

Until the 1960s, most of the women working in newspapers were assigned to the production and creation of women's newspapers and pages. Confining women's work to matters considered feminine made it difficult for them to climb the career ladder and restricted the possibility of personal and professional development (Carvalho and Cruz, 2007).

For centuries, women were seen as wives and housewives. Her physical condition was only to serve, to carry out domestic and reproductive duties. Society has created a stereotype that women don't have enough skills to win in sport, nor do they perform an efficient job compared to men in news coverage and newsrooms (Henriques and Melo, 2021).

It wasn't until 1981 that the first women members of the International Olympic Committee joined, and later, in 1997, a woman became president. In 1995, the International Olympic Committee set up a working group called Women and Sport, which proposed the active participation of women in sport and the Olympic movement. The sporting panorama is overwhelming, with only 3% of women reaching management positions in federations (Pinheiro, 2011).

Regarding the role of women in Portuguese journalism, more specifically in sports, Filipa Subtil and Maria João Silveirinha (2017) discuss the process of feminisation and the obstacles facing the journalistic profession in Portugal, namely the growth and development of relations between men and women. In fact, for many years it was difficult for women to enter newspaper editorial offices (Correia & Baptista, 2007). On the other hand, when women finally entered journalism, there were disparities in the labour situations and distributions between men and women, with horizontal and vertical segregations persisting, distinct gender relations and an "undeniable inequality" in terms of the presence in positions of responsibility and the performance of professional tasks, which were socially devalued (Subtil and Silveirinha, 2017).

Cecília Carmo, Céu Freitas, Edite Esteves, Leonor Pinhão, Maria João Duarte, Natália Oliveira and Teresa Montserrat are considered pioneers in sports journalism.

Over the years, there has been an increase in the number of women in Portuguese sports newsrooms, which is considered a secular struggle to achieve the equal rights and opportunities that have been so widely proclaimed. According to data collected by the Journalists' Professional Card Commission, the total number of professional

journalism card holders as of 1 June 2022 in Portugal is 3132 male journalists and 2189 female journalists. If we talk about the presence of women in sports-related professions, the imbalances are evident. Considering the positions of managers in sports organisations, sports journalists, association leaders and federative players, the inequalities are even more striking (Associação Portuguesa Mulheres e Desporto, 2009).

2.3 Women on and off the Football Pitch

Over the centuries, men and women have played different roles in society and have been assigned different functions. In this way, the social markers that were assigned in the past remain in the social roots of today. Women had roles that were socially considered to be feminine: housework, mother, wife and carer, while men had to work and support the household. However, the 19th and 20th centuries were marked by the growth of the feminist movement, especially the fight for political rights, demands for access to education and equality in the labour market (Loureiro, 2014).

There have been many achievements for women, from acceptance into society, freedom of love, divorce, the right to vote and the labour market, but the struggle still continues for equal pay and better positions, and what is associated with women is devalued. While men are seen as confident, determined and assertive in the workplace, these same attributes are viewed with hostility and coldness towards women (Loureiro, 2014).

The growth in women's football in Portugal has increased significantly in recent years. This increase in the number of professionals means that there is more justification for greater investment in this sector, but it also reinforces the need to intensify pedagogical intervention by recreating new values for this new generation, so that new values, less prejudice and more acceptance are captured. When we talk about salaries, and the disparity between the women's league and the men's league is notorious by far, the highest paid player in the BPI League earns around 8,000 euros a month, while if we talk about the amateur and semi-professional levels, salaries are around 665 and 800 euros a month. However, there are players who have green card contracts, which still reflects the inability of many clubs to meet the needs of their players, and is the most affordable way for them to save some money to stay in the game. According to a study carried out by Sapo Desporto, the salary figures of the Portuguese football league were compared, in which 55.3 per cent of the men's sector earn more than 2,500 euros a month, compared to only 6.4 per cent in the women's league.¹

For many, professional dedication, success and recognition are synonymous with personal prioritisation, which leads them to put motherhood and fatherhood to one side in order to achieve professional success. Family dynamics have changed, taking into account the needs of the new generations and other external factors. Work has become a priority for many women, not only for financial freedom, but also for its difficulty and necessity, autonomy and social growth. We can therefore say that women don't put aside the possibility of having children because of their professional career, they just postpone that moment to a time when they are more emotionally and economically stable, and if that is really their choice, to be mothers (Silveira, 2019).

According to a report in *Diário de Notícias*², Patrícia Gouveia, a former footballer, was forced to abandon her football career at the height of her professional career due to her pregnancy. She had been involved in a number of lawsuits in defence of her basic rights as a professional and as a woman in the world of football, as she claims that not all members of the club took her pregnancy very well.

According to the Players' Union³, FIFA approved new rules to support and protect maternity on 1 January 2021. The measures implemented were discussed internationally by various representatives of football organisations, leagues and players. FIFA's new regulations accompany the growth and need for the sport. In a global approach, women's football is expanding by leaps and bounds, but gradually in some countries due to their beliefs, religions and other impositions that don't cover my social rights, and in many countries the first step begins with allowing

¹ Available in <https://desporto.sapo.pt/futebol/primeira-liga/artigos/maioria-dos-futebolistas-ganham-acima-de-2-500-euros-e-nao-terminam-ensino-obrigatorio>

² Available in <https://www.dn.pt/edicao-do-dia/28-dez-2020/a-ultima-conquista-o-direito-a-ser-mae-sem-dizer-adeus-aos-relvados-13172443.html>

³ Available in https://sjogadores.pt/?pt=news&op=OP_SHOW_DETAIL&id=11110

women to play the sport. The transformations in women's lives were their own choices, thought out and considered, and these and other dissimilar tasks to be performed can be done with the same perfection and to the same extent as someone else (Silveira, 2019).

3. Methodology

The general aim of this research is to investigate the image of women in national football and their representation in the sports press, as well as their importance and acceptance within society. In this way, the research problem is related to the intention of understanding the difficulties that women encounter in gaining acceptance in the context of football in Portugal, which is why the research question is: "What difficulties do women encounter in gaining acceptance in the context of football and in the sports press in Portugal?"

From here, the following specific objectives were defined:

1. To analyse the role of women football players in Portugal;
2. To understand the position of women's football in Portugal;
3. To find out how Portuguese sports journalism treats women's football;
4. To investigate the role of communication in publicising women's football in Portugal;
5. To understand the perception of women's football in Portugal.

To achieve these objectives, two data collection techniques were used: a questionnaire survey, applied to the general population, with the aim of understanding their vision and perception of women's football and the role of women and how it is treated by the sports press; the second technique consisted of collecting sports news articles on women's football.

As such, the study aims to understand the regularity with which the image of women as football players is transmitted to society by analysing the content of news articles published by the three specialised media of reference - *A Bola*, *Record* and *O Jogo*. The news was collected over a period of six months, from 1 January to 30 June 2022, in order to gain a broader and more substantiated view of the amount of news and how often women's football is covered by journalists. A total of 707 news items dealing with women's football were analysed. On the other hand, to analyse society's acceptance of and interest in women's football by analysing a questionnaire survey applied to the general Portuguese population on the subject. The questionnaire was applied to the general population using a non-probabilistic convenience sample, with the aim of understanding the perception, acceptance and information about women's football in Portugal. The sample consisted of 218 respondents. The questionnaire was designed on the "Google Forms" platform, and was subsequently shared and publicised on various media such as Facebook, Instagram and WhatsApp, which were considered media accessible to the general public, not only because of their ease of access but also because of the larger population area covered. The questionnaire was answered by 218 people in the timeframe from 23 March 2022 to 19 April 2022.

4. Analysis and Discussion of Results

4.1 Questionnaire Survey

The questionnaire was answered by 218 people between 23 March 2022 and 19 April 2022. Of the 218 respondents, 52 per cent (114) are female and 48 per cent (104) are male, and the sample is mostly made up of young people (97 of the respondents (43 per cent) are aged between 26 and 33, followed by 45 respondents (21 per cent) aged between 18 and 25; the 34 to 41 age group accounts for 14 per cent; 9 per cent are in the 50 to 57 age group; and 3 per cent are in the 58 to 65 age group; only 2 per cent are under 17 and 1 per cent are over 65.

The data obtained through the survey emphasised that there is still a long way to go in terms of the evolution of women's football in Portugal. Football is considered the king of sports, but it must be stressed that players should be recognised as athletes and not as men or women (Daniel, 2005). Nevertheless, some of the opinions obtained show that women's football is evolving, albeit with some points that need to be assessed and improved. In the case of the statement "Among the games I watch, some are for women's football.", it can be seen that there are already people who enjoy women's football, but more than 55% of our sample does not pay the same attention to women's and men's football.

Online media and television were the most popular means of accessing football content (Figure 1). In fact, 150 respondents (24% of total responses) chose the online medium to find out about football content. In turn, with 143 respondents (23%), television was the second most chosen medium, followed by social networks, with 134 respondents (21%). Next, football matches were chosen by 112 respondents (18%). Finally, newspapers were chosen by 58 respondents (9%) and radio by 29 respondents (5%).

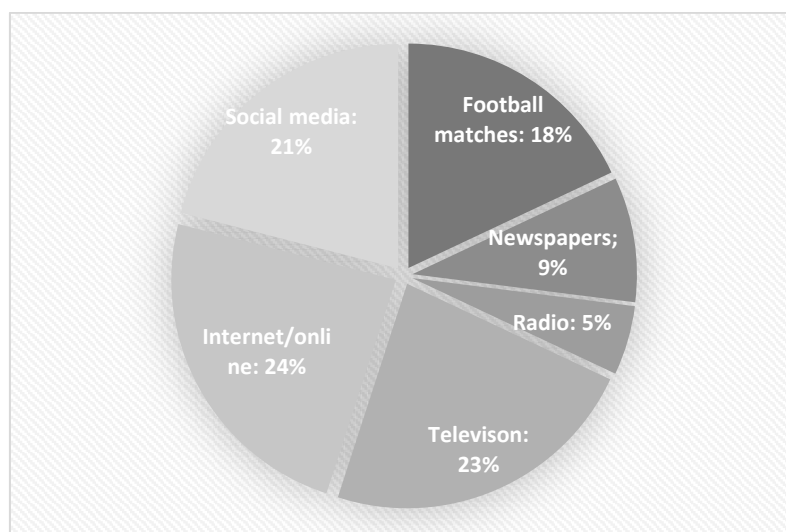


Figure 1: Media used to obtain football content (*self-elaboration*).

Indeed, these media are a means of dissemination and influence for the vast majority of the population, so there should be a greater focus on these media to publicise women's football to society. According to Reiffel (2003), observing the ways in which ICTs are appropriated has already given us a glimpse of the influence of these new media on individuals and society.

The other questions asked throughout the questionnaire were primarily aimed at understanding the degree of acceptance of women's football and the role that women play in this field. It was clear from analysing the questions that the vast majority of respondents accept the role that women play in national football, as well as in sports journalism.

However, when statements such as: "A woman's opinion on football is just as well received as a man's"; "There are still constraints on the acceptance of women in sports journalism"; "People have a prejudiced and/or negative attitude towards women's football"; and "Currently, women are discredited in the performance of sporting functions", the vast majority ticked the Agree options, and it can thus be concluded that there is still a large percentage of people who still have no interest in or openness to the acceptance of women's football, showing that there is still prejudice in its acceptance. This corroborates the idea that society still discriminates against women (Loureiro, 2014), not only in sports, but also in the performance of journalistic duties within the area of sports journalism (Ventura, 2009).

When asked if "women who play football have the same benefits and visibility as men" (Figure 2), 47% of respondents totally disagreed, 25% disagreed and 8% disagreed slightly. In fact, with regard to the benefits and visibility of women who play football, the vast majority of respondents disagree that women have the same visibility and benefits as men. In addition, the majority of respondents are in favour of equal pay in national football (76% of respondents agree with this).

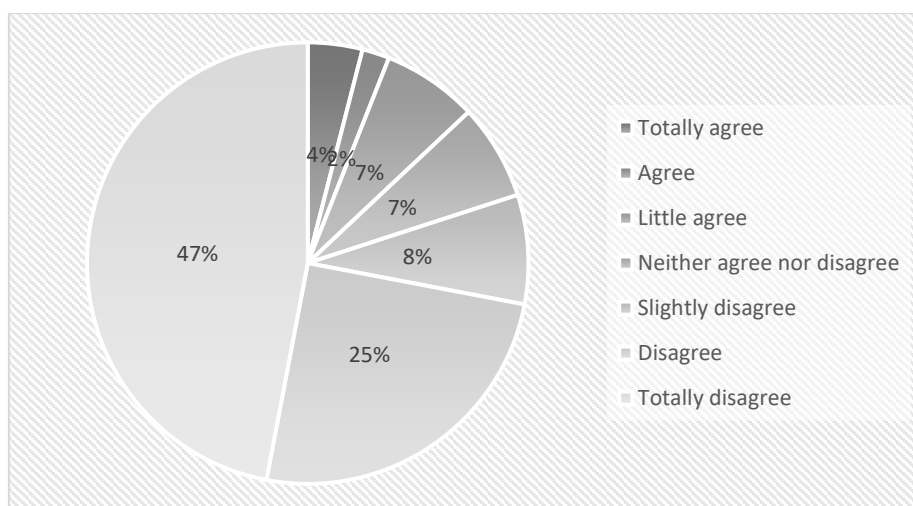


Figure 2: Women who play football for a living have the same benefits and visibility as men (self-elaboration).

As for the statement "Female athletes have the same physical preparation and motor skills as male athletes to play the sport" (Figure 3), the most selected answer was Totally Agree with 65 respondents (30%); followed by Agree with 56 respondents (26%); Disagree with 23 respondents (10%); Slightly Agree with 21 respondents (9%); Neither Agree nor Disagree with 19 respondents (9%). Finally, Slightly Disagree and Totally Disagree, both with 17 respondents (8%). It is clear that the respondents believe that female athletes have the same physical qualities and capabilities as male athletes.

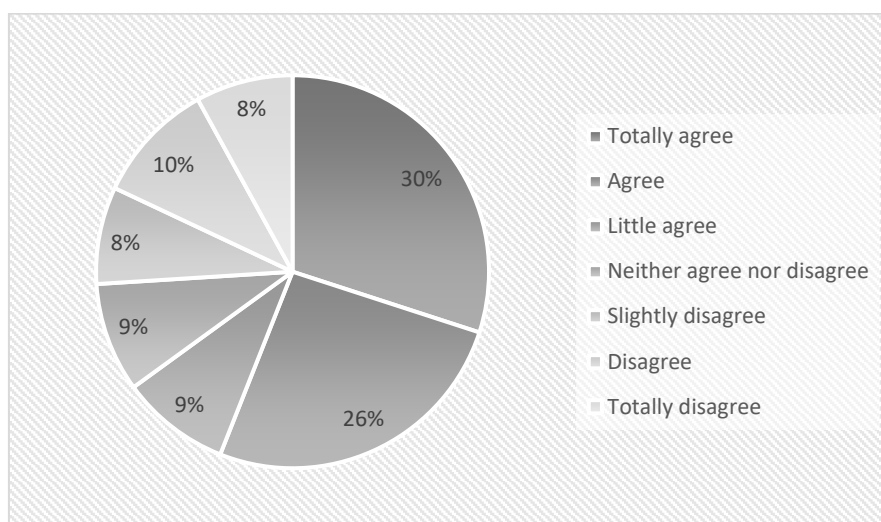


Figure 3: Female athletes have the same physical preparation and motor skills as male athletes to play the sport (self-elaboration).

With regard to whether a woman's opinion on football is as well received as a man's, our sample did not show a consensus of opinion. However, 51 per cent of respondents disagreed with the idea that a woman's opinion on football is as well received as a man's.

With regard to the significant increase in the number of women involved in sports journalism and the fact that they play the same role as men when it comes to covering sports content, the answers most selected by the respondents were Totally Agree and Agree, and it can be concluded that they believe that women involved in sports journalism play the same role as men in this medium.

With regard to the statement "News coverage of women's football matches is given the same prominence as men's football matches" (Figure 4), respondents show disagreement, since the most selected answer was the option Totally Disagree with 85 respondents (39%); followed by the option Disagree with 70 respondents (32%).

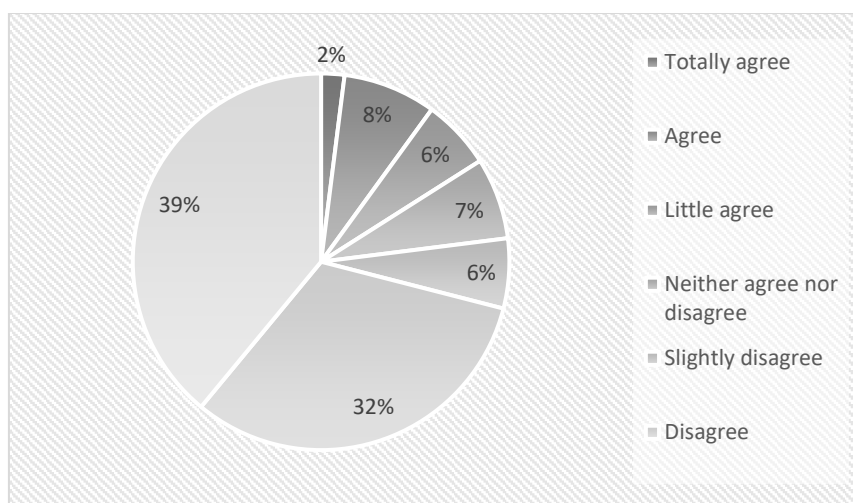


Figure 4: News coverage of women's football matches is given the same prominence as men's football matches (self-elaboration).

When asked "Do people have a prejudiced and/or negative attitude towards women's football?", the majority of respondents (68%) agreed with this statement. Basically, the respondents agree that there is prejudice and/or a negative attitude towards women's football in Portuguese society.

Finally, when asked about the discrediting of women in sporting roles, more than half of the respondents (62%) agreed with this discrediting, with only 3% totally disagreeing and 15% disagreeing.

4.2 Analysis of Sports Newspapers

In order to check the amount of news and how often journalists cover women's football in Portugal, we carried out a content analysis of Portuguese sports newspapers, collecting all the news articles relating to women's football. The news was collected over a period of six months from the online newspapers *Record*, *O Jogo* and *A Bola*, from 1 January to 30 June 2022. A total of 707 news items dealing with women's football were analysed over the six months. In January, 86 news items were analysed; in February 87 news items; in March 145 news items; in April 152 news items; in May 49 news items; and in June 125 news items. April and June were the months with the most news dedicated to women's football.

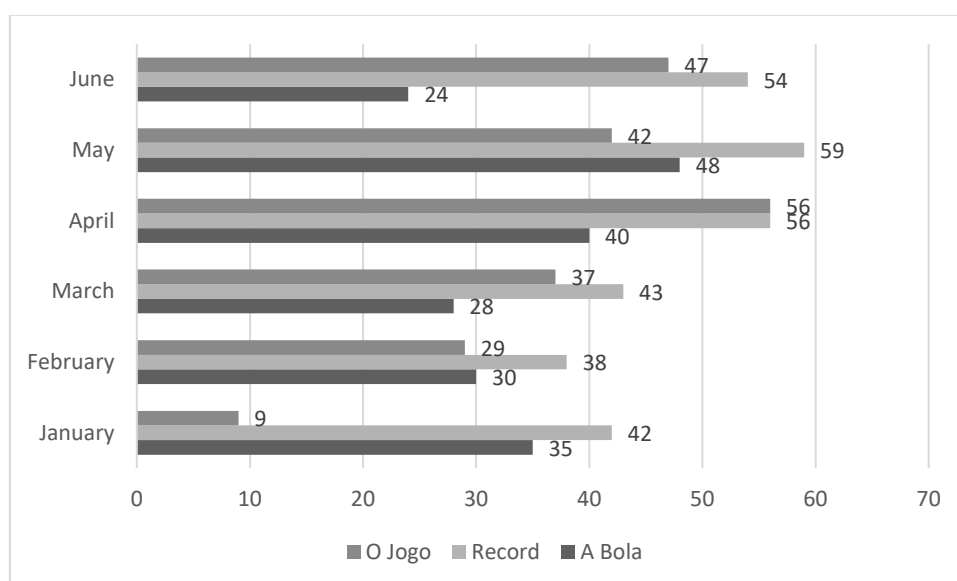


Figure 5: Number of news items collected from each online sports newspaper (self-elaboration)

As can be seen in Figure 5, *A Bola* was the newspaper that devoted the least space to producing and publishing content about women's football in the six months analysed, with 205 stories. *Record* was the newspaper that

stood out from the other two newspapers analysed, with the most space devoted to producing and publishing content about women's football, with a total of 292 stories. *O Jogo* was a newspaper that was very similar to *A Bola*, with only a small margin of difference between the publications that were made, with a total of 210 articles on women's football.

On the other hand, in the three newspapers analysed, there were very few, if any, times when a story about women's football featured prominently on the front pages of websites and/or on the front pages of newspapers. From January to June, the only sports newspaper that featured a front page dedicated to women's sport was *A Bola*, on 7 March 2022, the day before Women's Day, which presented two front page proposals to its readers, one of which featured women's football and the upcoming matches in the sport (Figure 1). On 8 March 2022, none of the newspapers chose to highlight any women's sport in the world of sport.



Figure 6: One of the front pages of the newspaper *A Bola* on 7 March 2022..

Only later, in May 2022, the month that marks the end of the football matchday, did the *newspaper A Bola* once again highlight women's football by running a front page dedicated to the winning club of the 2021/2022 women's football matchday, Sport Lisboa e Benfica (Figure 2). The newspapers *O Jogo* and *Record*, on the other hand, only made a small reference at the end of the front page of the daily on 9 May 2022.



Figure 7: Front page of the newspaper *A Bola* on 9 May 2022.

5. Discussion

With regard to the survey, this sample highlights that there is still a long way to go in terms of the evolution of women's football in Portugal. Football is considered the king of sports, but it must be stressed that players should be recognised as athletes and not as men or women (Daniel, 2016). Some statements throughout the questionnaire proved that women's football is evolving, although there are some points that need to be assessed and improved.

The main purpose of all the statements made during the questionnaire was to understand the degree of acceptance of women's football and the role that women play in this area. It was clear from analysing the questions that the vast majority of respondents accept the role that women play in national football, as well as in sports journalism. However, there is still a large percentage of people who are neither interested in nor open to accepting women's football, showing that there is still prejudice against its acceptance. Thus, there is

remarkable agreement with the literature review, in the sense that society still discriminates against women, not only in sport but also in the performance of journalistic duties within the area of sports journalism (Ventura, 2009).

On the other hand, analysing the three online sports newspapers showed that the media coverage is not equal. The lack of news about women's football means that the public is not aware of what is going on in the sport, thus creating disinterest and misinformation about the sport.

6. Conclusions

As such, the data collected by the surveys was very enlightening, and it can be concluded that women's football in Portugal still needs a lot of development and acceptance. The media is responsible for the lack of publicity and promotion of women's football in Portugal, which means that the majority of the population has no knowledge or information about what goes on in women's football. There is also still a certain stigma regarding the presence of women in sports journalism. Analysing the three leading sports newspapers in Portugal (A Bola, Record and O Jogo) allowed us to reflect on the current state of women's football. It can be concluded that, in the six months of analysing sports newspapers, there is little news about women's football, and few if any are highlighted to the reader.

Given these results, when it comes to football, the male gender is still dominant. Throughout the research, we realised that differences exist and that something needs to be done to eliminate or at least mitigate them. In this sense, the media must take on a leading role in changing mentalities and paradigms. It is therefore hoped that this exploratory study will be a lever for future questions about the reality of women's football in Portugal. Fundamentally, it is hoped that gender and football, as well as gender inequalities and conditioning, can be thought of differently and that there will be an evolution towards improving football dynamics in Portugal and around the world.

Finally, we would like to emphasise that this exploratory study seeks to contribute to gender studies, particularly in the world of football. In fact, football is considered the king sport, but when it comes to women's football, the dynamics and publicity are completely different. This study therefore seeks to highlight the inequality in the support given to the women's game, as well as its publicity in the media, which is still scarce given the need for the sport to grow.

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Experiences and Perceptions of Menstrual Hygiene Management (MHM) Among Homeless Women in Cape Town

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Abstract: This study qualitatively explored the experiences and perceptions of period poverty among homeless women in Cape Town, South Africa, using the Capability Approach. The study was guided by a qualitative research design and non-probability sampling was used in recruiting participants. In-depth interviews were conducted with 16 homeless women who experienced period poverty. The individual interviews were done mainly in English and in IsiZulu and isiXhosa. The interviews lasted for a minimum of 45 minutes and were voice-recorded using a phone. A semi-structured interview schedule with 33 open-ended questions was used during the data collection process. The data analysis aspect of this study relied on the work of Creswell (2012) and Tesch (1990). The findings revealed that homeless women experience period poverty due to a lack of sanitary products and poor Menstrual Hygiene Management (MHM). Sen (1999) identified five 'instrumental freedoms' that, according to him, play a role in the general capability of a person to live more freely. Of the five instrumental freedoms, the third freedom, 'social opportunities,' resonates deeply with this study. This freedom refers to facilities and arrangements available to uplift society. Examples of this would be access to quality education and healthcare. Homeless women lack access to quality healthcare and therefore experience obstacles to achieve effective MHM. The lack of sanitary products causes homeless women to resort to the unhygienic use of items such as rags, old socks, tissue paper, paper towels, torn pieces of clothing, or diapers, to satisfy their menstrual needs. Alternatively, they go about life without any menstrual protection and bleed through their undergarments and clothing. This results in them wearing blood-soaked items for days, or even weeks. Additionally, homeless women do not have access to safe water and sanitation facilities that are required to effectively manage their period. The paper serves as a means of highlighting how life, government policy, funding, etc. are still restricted to issues that relate to men. As a result, a multifaceted and holistic approach to addressing period poverty amongst homeless women is encouraged and provision should be made for the type of sanitary products and facilities that homeless women are most comfortable using.

Keywords: Menstrual Hygiene Management, Period Poverty, Homeless Women, Cape Town, Capability Theory

1. Introduction

Menstruation is a crucial part of a woman's sexual and reproductive health (Reams, 2001). It is a significant biological experience that signifies a woman's transition from childhood to womanhood. Menstruation or period is a process whereby a woman discharges blood and other material monthly. This usually commences from puberty until menopause, except when a woman is pregnant. For many decades, the menstrual needs of women and adolescent girls were neglected (Lutter, Sivakumar, Baurle, 2018). In those years, the menstrual needs of women were not prioritized, nor given attention. In many societies, menstruation is still considered a taboo topic that needs to be a 'secret'. This form of 'secrecy' is one of the factors that has led to lack of access to appropriate infrastructure and menstrual management supplies that would enable females to manage their period effectively. In recent years, however, there has been a greater focus placed on women and girls' menstrual needs by academics, policymakers, and organizations. A focus of this nature helps bring about awareness regarding menstrual health and shapes the management of menstruation (Lutter, Sivakumar, Baurle, 2018). This, in turn, can have a positive impact on the health, well-being and aspirations of menstruating females. It is important to note, however, that much of the research has focused primarily on adolescent girls. For example, the work of Montgomery et al. (2012) and of Mason et al (2013) indicates that the provision of sanitary pads in schools can assist in improving school attendance and the life chances of young women. Grant, Lloyd and Mensch (2013) found that menstruation alone did not cause girls to be absent from school, but other menstrual related issues (such as cramps and heavy bleeding) contributed to their absenteeism. One could go on listing the plethora of studies shedding light on MHM and period poverty amongst adolescent girls. However, the voices of other menstruators are missing. For example, the voices of homeless women as it relates to MHM is missing, particularly homeless women from the global south. As a result, I conducted a study that used the capability approach to qualitatively explore the experiences and perceptions of period poverty among homeless women in Cape Town (South Africa). This study was concerned with gathering rich data that reveals the challenges homeless women face when it comes to MHM; it unpacks how poor MHM, due to a lack of access to sanitary products, affects homeless women's perceptions of self; their perceptions of life and physical health; their sense of bodily integrity and dignity. The study was guided by a qualitative research design and a semi-structured interview schedule was used during the data collection process. In-depth individual interviews were conducted

with 16 homeless women, over the age of 18, who experienced MHM. Non-probability sampling was used to recruit these participants. The type of non-probability sampling technique used in this study was purposive sampling. The interviews were done mainly in English, but also some IsiZulu and isiXhosa which are languages spoken in South Africa. The interviews were approximately 45 minutes and had a flexible and open-ended tone whereby the researcher was not restricted to 33 questions on the interview schedule alone. All interviews were voice-recorded using a phone, notes were taken to capture the main points (Babbie and Mouton, 2001). The data analysis aspect of this study relied on both the work of Creswell (2012) and Tesch (1990).

2. Findings

The findings revealed that homeless women experience period poverty due to a lack of sanitary products and because of poor Menstrual Hygiene Management (MHM). Effective menstrual hygiene management requires the following features, namely: a) A clean material that will allow for the absorption and collection of blood, b) Privacy to change those menstrual management materials as often as liked, c) The use of soap and water to wash the body, d) Having access to facilities that allow for the disposal of menstrual management material that have been used, and c) Menstrual education. In the absence of these MHM resources or components, period poverty emerges. Period poverty refers to a lack of access to sanitary products, menstrual hygiene education, toilets, hand-washing facilities, and waste management facilities.

Themes	Categories
Challenges in MHM Experienced by Homeless Women Before the Provision of Free Sanitary Products	Lack of access to soap and water
	Lack of privacy
	Rely on unhygienic products and methods
Lack of access to Sanitary Products, Poor MHM and Perceptions of self	Sense of inadequacy
	Lack of confidence
Lack of access to Sanitary Products, Poor MHM and Perceptions of Life and Physical Health	Alcohol and substance abuse
	Developed strategies to feed addiction
Lack of access to Sanitary Products, Poor MHM and Sense of Respect	Being bullied
	Interaction with males
Lack of access to Sanitary Products, Poor MHM and Sense of Bodily Integrity	Vulnerable to different forms of violence
	Uneven power dynamics
Lack of access to Sanitary Products, Poor MHM and Perceptions of Opportunities	Innovation
	Inability to gain employment
Experiences of MHM After Provision of Free Sanitary Products.	Turning over a new leaf

Table 1. presents the Framework of Analysis that depicts the themes and categories that emerged from the interviews that were conducted and guided by the research questions. The Capability Theory is used in this study to expand on the findings.

2.1 Amartya Sen's Capability Approach

The Capability Approach by Sen is a popular theory used in various fields such as economics, political science, philosophy, theology, medicine, public healthcare, developmental studies, to name a few (Kuhumab, 2018). Sen (2000) argues that human development cannot be limited to factors such as the gross national product (GNP) or an increase in technology or industrialization. Human development is connected to the removal of major hindrances that affect the lives of people. An example of these hindrances are poverty, tyranny, poor economic opportunities, and others (Sen, 2000). Human development manifests when people have access to greater capabilities (Kuhumab, 2018). Capabilities can be defined as notions of freedom and reflect the real opportunities people have to live a life they value (Sen, 1995). For capabilities to be effective, the socio-cultural aspects that limit one's ability to flourish in society must be considered (Sen, 1995).

Sen (1999) identifies five 'instrumental freedoms' that, according to him, play a role in the general capability of a person to live more freely. The first freedom is known as 'political freedom' and refers to opportunities that

allow an individual to decide on who should govern and using which principles, holding authorities accountable, being able to exercise freedom of expression and free, uncensored press and enjoying multi-party elections, etc. 'Economic facilities' is the second freedom, which refers to the opportunities people must have to make use of economic resources or entitlements. However, the economic entitlements of an individual are dependent upon resources owned or available for usage and on conditions of exchange. The third freedom is known as 'social opportunities'; it refers to facilities and arrangements available in society as it pertains to education and healthcare. For example, illiteracy can severely hinder participation in economic activities that require production based on specification or require firm quality control. Likewise, participating in political activities can be a major barrier if one is unable to read newspapers or communicate in writing with others who participate in political activities. Social opportunities are put in place to promote development in the lives of citizens. Another freedom is known as 'transparency guarantees', which highlights the requirement for openness, trust, and the provision of clear information. When trust is violated, this can have an adverse effect on the lives of many people. Transparency guarantees are important in preventing corruption and other sorts of financial irresponsibility. Lastly, 'protective security' is a needed freedom and social safety net that helps prevent and reduce deprivations, misery, starvation and even death. An example includes social protection for a vulnerable population, unemployment benefits, famine relief or emergency public employment to help those who are suffering.

2.2 Ingrid Robeyns's Capability Approach and Gender Inequality

Much of the work done by Sen focuses on poverty and inequality and Robeyns decided to use the Capability Approach to also explore inequality but from a gender perspective. Robeyns (2003) used the Capability Approach to conceptualize and assess gender inequality in western societies. Feminist scholars argue that when it comes to theories of justice - the lives of men become the standard. Equality is measured through the lens and on the terms of males. This is problematic because in the process, gender inequalities and injustices end up being hidden and justified, (even if indirectly). Sen does not have a definite list of capabilities. In tackling the issue of gender inequality in western societies, Robeyns (2003) developed 14 capabilities; 1) Life and physical health: Experiencing physical health enjoying life of normal length; 2) Mental well-being: Experiencing good mental health; 3) Bodily integrity and safety: Being protected from violence of all sorts; 4) Social relations: Actively participating in social networks and giving and receiving social support; 5) Political empowerment: Participating in political decision-making; 6) Education and knowledge: Being able to get educated and using and producing knowledge; 7) Domestic work and non-market care: The ability to raise children and look after others; 8) Paid work and other projects: The ability to work and participate in the labour market, undertake projects, including those of an artistic nature; 9) Shelter and environment: Being sheltered and living in an environment that is safe and pleasant; 10) Mobility: Being able to be mobile; 11) Leisure activities: Involves engaging in leisure activities; 12) Time-autonomy: Exercising autonomy in how one allocates one's time; 13) Respect: Being treated with respect and dignity; 14) Religion: Having the opportunity to choose to live or not to live in accordance with religion. These capabilities were developed to assess gender inequalities in western societies. In as much as Robeyns' Capability Approach was developed to assess gender inequalities in western societies, it could be useful in a country like South Africa where gender disparities are also prominent. The capabilities mentioned by Robeyns (2003) align with the themes in the research questions.

2.3 Study's Theoretical Model Interplay Framework

As mentioned, effective menstrual management requires the following features, namely: a) A clean material that will allow for the absorption and collection of blood, b) Privacy to change those menstrual management materials as often as liked, c) The use of soap and water to wash the body, and d) Having access to facilities that allow for the disposal of menstrual management material that have been used (Sommer and Sahin, 2013). The absence of these components unfortunately leads to period poverty. Period poverty refers to a lack of access to sanitary products, menstrual hygiene education, toilets, hand-washing facilities, and waste management (Sanchez and Rodriguez, 2019). When period poverty exists, it affects various aspects of a woman's life. This will be illustrated below by looking at the social opportunities of homeless women as well as their right to life and physical health, being treated with respect and dignity and their bodily integrity and safety.

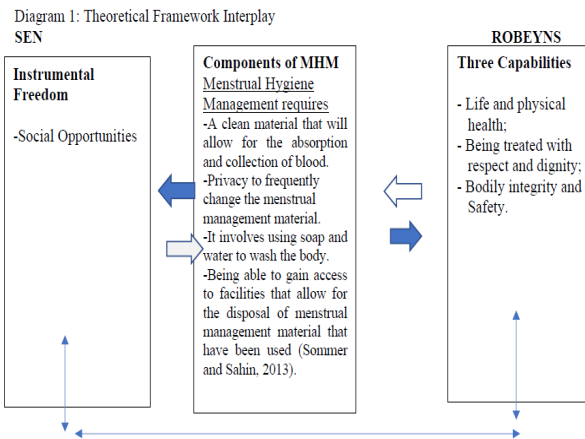


Figure 1: Theoretical Framework Interplay Diagram

Sen (1999) identifies five 'instrumental freedoms' that, according to him, play a role in the general capability of a person to live more freely. Of the five instrumental freedoms, the third freedom, 'social opportunities,' resonates deeply with this study. This freedom refers to facilities and arrangements available to uplift society. Social opportunities are put in place to promote development in the lives of citizens. Examples of this would be access to quality education and healthcare. Access to quality healthcare impacts on MHM. Homeless women lack access to quality healthcare and therefore experience obstacles to achieve effective MHM. (Parrillo and Feller, 2017). The lack of sanitary products causes homeless women to resort to the unhygienic use of items such as rags, old socks, tissue paper, paper towels, torn pieces of clothing, or diapers, to satisfy their menstrual needs (Mason et al., 2013). Alternatively, they go about life without any menstrual protection and bleed through their undergarments and clothing (Jones, 2016; Mason et al., 2013). This results in them wearing blood-soaked items for days, or even weeks (BRAWS, 2018). In addition, homeless women do not have access to safe water and sanitation facilities that are required to effectively manage their period (Aidara, 2016). Consequently, homeless women experience health issues such as toxic-shock syndrome, discomfort, yeast infections and bacterial vaginosis (House, Mahon and Cavill, 2012). Period poverty, due to a lack of adequate MHM, hinders menstrual equity and makes being homeless very difficult. This is a health care injustice and more needs to be done to cater to the needs of homeless women from a health perspective. Sen (2001) argues that discriminating against women in the health system, in a manner that decreases their life expectancy, would violate fairness in the process of redistributing health services. The unhygienic products used by homeless women can result in reproductive tract infections which affect a woman's right to life and quality health (Mirro et al, 2018). Inadequate menstrual hygiene is linked to infections and a poor health-related quality of life (Sveinsdottir, 2018).

This compromises the development of homeless women and the opportunities they have access to. Social opportunities, such as healthcare and MHM, are vital when it comes to promoting healthy living and avoiding premature deaths among homeless women (Sen, 1999). Furthermore, these interventions contribute to a more effective participation when it comes to economic and political activities. In addition, inadequate menstrual health and hygiene management is a major public health issue that affects a homeless woman's right and capability to life and physical health. Robeyns (2003) speaks of an important capability that is relevant to this study – dignity and respect. All women (including homeless women) require adequate MHM. As mentioned earlier, when WHO/UNICEF (2012) paints a picture of MHM, it is a picture where women and adolescent girls have access to sanitary products, change sanitary products in private as often as necessary, have access to safe water, are able to use water and soap for the washing of the body, and have access to sanitation facilities that allow for the adequate disposal of used menstrual materials. However, homeless women do not live out this ideal picture. Furthermore, homeless women experience financial hardships that make it difficult for them to buy sanitary products (Vora, 2017). The harsh realities experienced by homeless women make it difficult for them to effectively manage menstruation in a dignified manner. When it comes to homeless women, there is a lack in every area from no place to live, an absence of a safe and suitable place to maintain hygiene management from keeping oneself clean, to being unable to do laundry, or even having access to clean water and menstrual supplies. This is a health injustice that infringes upon a homeless woman's dignity and results in period poverty.

Robeyns (2003) highlights a critical capability applicable to this study - bodily integrity and safety. This capability refers to being protected from all types of harm and violence. The capability of homeless women, in this regard,

is affected when they encounter violence. Research indicates that homeless women experience violence of all sorts. Makiwane et al (2010) states that homeless women encounter severe conditions that make them vulnerable to harassment, mugging, direct violence, and rape. Homeless women end up tolerating abusive behaviour from males who they rely on to be able to buy sanitary products. Transactional sex is often used by women to manage their menstrual health. For example, UNICEF found that 65% of females in Kibera, Nairobi, engaged in transactional sex to purchase sanitary pads. This was due to the high rate of period poverty and the shame, stigma and public health misinformation associated with menstruation (Oppenheim, 2018). MHM is necessary but when it is unavailable, period poverty arises. This then affects homeless women's access to social opportunities and compromises their right to life and physical health, to be treated with respect and dignity and their right to bodily integrity and safety. Access to quality MHM resources is important in achieving the Sustainable Development Goals 2030, such as Goal 5 (gender equality), Goal 10 (reduced inequalities) and Goal 6 (clean water and sanitation).

3. Policy and Legislation

3.1 Draft Sanitary Dignity Policy Framework

South Africa has not researched the issue of period poverty and MHM in relation to homeless women. This is problematic. South Africa does, however, have a Draft Sanitary Dignity Policy Framework. This policy seeks to promote sanitary dignity. Furthermore, the policy provides norms and standards pertaining to the provision of sanitary products to indigent persons (Department of Women, 2017). The term 'indigent persons' refers to the girls and women who, due to poverty, are unable to afford necessities of life such as sanitary products. Homeless women are part of this category of women who are unable to access sanitary products. The policy argues that access to sanitary products is important in preserving a woman's dignity during menstruation and in curbing absenteeism at school or the workplace. According to the policy, the lack of sanitary products may affect an indigent person's health, well-being and compromise a female's ability to participate in daily activities such as sport and cultural events. This, in turn, may also negatively affect the person's self-esteem and confidence. Therefore, the Department of Women (2017) has embarked on the process of developing an integrated policy on the provision of sanitary products to indigent persons (such as homeless women). This is an effort to ensure that such people are afforded the opportunity to manage menstruation in a manner that is knowledgeable, safe, and dignified.

3.2 The National Development Plan (2030)

The National Development Plan (NDP) is an economic policy framework that seeks to alleviate poverty and reduce inequality by the year 2030 (National Planning Commission, 2012). Furthermore, the National Development Plan believes that these goals can come to fruition by creating an economy that is inclusive, by actively enhancing the capacity of the state, by building the capabilities of South Africans and by promoting leadership and partnership throughout society. These policies and legislation are important. However, the NDP fails to address the issue of period poverty, especially from the perspective of vulnerable groups such as homeless women. Menstrual health and menstrual justice need to be prioritized in the NDP. Perhaps another important omission in the NDP is the lack of integration among its chapters. The Plan follows the organisational trend of vertical and compartmentalised government services. For example, health and other chapters seem to be presented in 'silos' (Jager et al., 2012). Since the overarching goal of the NDP is to provide a broad cross-departmental, inter-sectoral approach, it must develop a well-integrated plan. This plan needs to guide each department on specific policy and provide the basis for future 'joined-up' or collaborative governance. Furthermore, the plan needs to prioritize addressing the needs of all women, including homeless women. This is essential to address the inequities that have remained since 1994 when South Africa became a democratic country, and from even before that. The NDP needs to involve Social Work and Social Development Practitioners in eradicating period poverty. This, in turn, will advance MHM.

4. Conclusion

This paper has presented findings from interviews conducted with 16 homeless women from Cape Town. The participants were able to share their experience and perceptions regarding Menstrual Hygiene Management. Homeless women encounter many health inequities and challenges that must be addressed through targeted policy, frameworks, and programmes. There needs to be a holistic approach to menstruation and MHM for women who are homeless. Furthermore, provision should be made for the type of sanitary products that

homeless women are most comfortable using. This speaks to the concept of choice, catering to the needs of homeless women.

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Qualitative Assessment of Resilience: Lessons from Rural Women in South India

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Abstract: Resilience among women has garnered significant research attention, especially in the context of the COVID-19 pandemic. The 2020 United Nations' theme of "Building rural women's resilience in the wake of COVID-19" aligned with that of the present study and sought to assess the applicability of the positive cognitive triad and psychological capital lenses in understanding the resilience characteristics of rural women in India. The study involved a diverse group of conveniently selected 31 rural women from the Idukki district, Kerala, South India, spanning an age range of 18 to 74 years. The deductive and inductive analyses of interview transcripts revealed convergence to the proposed positive cognitive triad -psychological capital framework and the emergence of new themes. Notably, gender emerged as a distinct theme that did not align with the operational definition of resilience, highlighting its significance in explaining resilience among Indian rural women. The study acknowledges limitations such as limited generalizability, social desirability bias, and a lack of quantitative data. In conclusion, this research contributes valuable insights to the literature on resilience among Indian rural women, emphasizing the importance of gender-centric and culturally sensitive resilience measures. The study recommends the implementation of such measures to enable a comprehensive assessment of resilience in this population, providing valuable resources for government and non-government agencies to design appropriate psychosocial interventions.

Keywords: Resilience, Rural Women, Qualitative Assessment, COVID-19, Positive Cognitive Triad, Psychological Capital

1. Introduction

Resilience among women, a trending research topic since the COVID-19 outbreak, highlights the aggravated vulnerability of rural women, addressing escalated gender inequalities (Agarwal, 2021; Bonin et al., 2021; Chakraborty, 2021; Dash et al., 2021; Suresh et al., 2022). Resilience is the ability to cope with shocks, with diverse factors influencing adaptation (USAID, 2012) including perception and engagement with the world (Coley et al., 2021; Valsala and Devanathan, 2021). India, with 893 million rural residents, faces challenges in rural women's workforce participation, with a decline noted in rural women's Workforce Participation Rate (Bhattacharya and Goyal, 2017). COVID-19 has intensified vulnerabilities for women, deepening disparities in social, political, and economic spheres, highlighting the need for policies addressing gender mainstreaming and equality (Bonin et al., 2021; Chakraborty, 2021; Ahmed, 2016). A knowledge gap exists between constitutional provisions and the conditions of rural women in India, emphasizing the importance of gender mainstreaming strategies in policymaking to ensure equitable access and opportunities (Ahmed, 2016; Meier and Celis, 2011; Chaney, 2015). Gender, age, and personal identity significantly shape the impact of extreme conditions, with evidence highlighting gender-centric coping strategies that burden women (Kumar and Ravi, 2020; Smyth and Sweetman, 2015). Gender-specific resilience strategies are crucial to comprehend and appraise the unique challenges faced by Indian rural women (Boardman et al., 2008; Khan, 2022).

Amidst discussions on 'Building rural women's resilience in the wake of COVID-19' proposed by the United Nations, this study employs positive cognitive triad (Mak et al., 2011) and psychological capital (PsyCap) (Luthans et al., 2004) to characterize the resilience of Indian rural women through experiential profiles. Drawing from literature and field experiences with rural women, the authors assert that the positive cognitive triad and PsyCap as the theoretical framework, provide insightful explanations for the resilience of rural women in India. The positive cognitive triad, encompassing positive beliefs about oneself, others, and one's future, is identified as a protective factor against depressive symptoms, serving as a potential mediator between resilience and well-being (Pittard et al., 2021; Mehta et al., 2019). PsyCap, extending beyond human, social, and financial capital, is defined as an individual's positive psychological state characterized by high levels of hope, self-efficacy, resilience, and optimism, each component defined formally by Luthans et al., (2010). PsyCap in rural women is culturally oriented and seen as more crucial than financial or social capital in a rural context, shaped by the cultural web. The collaboration of the positive cognitive triad and PsyCap provides insight into rural women's

resilience, influenced by patriarchal backgrounds and the collectivist nature of the Indian rural community (Chadda and Deb, 2013).

Factoring in the rural study population, literature review on resilience, and the proposed theoretical frameworks, the authors advocate the following operational definition of resilience: 'Resilience is the outcome of effectively negotiating, adapting to, and managing difficult, challenging life experiences, and significant sources of stress'. Assets and resources within individuals, their lives and the environment stimulate the capacity for adaptation to the calls of adversity. Across the life course, the experiences of resilience will vary (adapted from Windle, 2011 and APA Dictionary of Psychology (APA, 2022)).

2. Method

Excluding COVID-19-affected households, 31 rural women (18 to 74 years age) were conveniently selected from Muttom Panchayath of Thodupuzha block in the Idukki district in the state of Kerala, India. After obtaining the ethical clearance (SSBS_005) from the affiliated institution of the authors, interviews were conducted in local Malayalam language by the first author in January 2021 employing a socio-demographic questionnaire and the 10 semi-structured interview questions based on the domains of PsyCap viewed through the positive cognitive triad lens of self, others, and future. The English translation of the interview transcript data was mapped onto the existing positive cognitive triad and PsyCap framework through deductive qualitative analysis. Additionally, inductive analysis was conducted to identify new themes emerging from the data. To minimize the risk of interpreter bias and obtain an equitable holistic picture of the participants' responses, all the authors analyzed the interview transcripts, and the non-convergent themes were discussed and negotiated to arrive at a consensus, prior to finalization of the results.

3. Results and Discussions

Socio-demographic data reveals the participants' personal details, education, family, marital status, occupation, economic background, health, incidents of COVID-19, and post-COVID-19 conditions. The average age of participants was 46.13 years. The younger generation's focus was more on education, with 10 expressing interest in higher studies. Notably, 7 women had chosen their marriages in a conservative society. Unemployment reasons included a lack of education and traditional gender roles. Financial decision-making power was shared among 24 participants, but none had property rights, possibly due to the dowry system. Seven participants held property rights, though 24 shared financial decision-making power with their husbands. Medical history revealed instances of diabetes, C-sections, and hypertension. Discrimination experiences included limited education access, casteism, economic disparity, divorce stigma, and gender-based bias. Rural women's experiences during COVID-19 varied, influenced by socioeconomic status, education, and resources. The pandemic posed challenges for 28 participants, but government and NGO initiatives provided support, including community kitchens, subsidized food kits, vaccines, health centres, and local panchayath assistance.

Table 1: COVID-19 Themes evolved from qualitative analysis

Theme	Excerpts from the interview
Health and well-being The participants were worried about their own health and its consequences on the family's mental health.	I do have physical ailments now, post-COVID. I have a problem remembering things and my children get angry because of this. I do have intense back pain also. Earlier, I used to have this, but now there is more pain in my body
Social Isolation With restrictions on travel and gatherings, the women participants had to isolate themselves from their friends and family. This has led to feelings of loneliness and isolation, affecting their mental well-being.	It has become a situation where we must be in our own house in such a way that we cannot even go out for our own needs. No contact with anybody. Tension also increases as we are locked entirely in a closed compound.
Economic Impact The participants discussed the economic impact of the pandemic on their lives, livelihoods, and families, including job loss and financial struggles.	During COVID time, a lot of people were taught to live. We can live anyway. In other words, now no one has a job, no income, and some have worked daily. They say they can do whatever they can to make a living. So, it has taught us so many things
Family Support	

Theme	Excerpts from the interview
Interviews revealed how women have relied on their families for support to cope with the pandemic.	I was also infected with COVID. Not that serious but my husband had it worse. But we hold on well. I didn't feel so. Because our siblings made us food and gave us everything we needed at those times. So, it was alright.
Coping Strategy The participants shared their coping strategies and how they are managing to deal with the pandemic's challenges in a rural setting.	A lot of things are there. Because we were living lavishly. But now we know how to lead a normal life. ..., even regarding finances, we can live by lowering our expenses. Even though we couldn't lead a life as such in earlier times, we can do so now. All this was because of the advent of COVID. After the advent of COVID, I got a lot of productive time for myself. I got to read a lot, write, and learn as well. I engaged in a lot of activities related to cooking, and agriculture. So, it was a worthwhile time.

Table 2: Qualitative Deductive Analysis

3.1 Self-perceived Hope, Optimism and Self-efficacy of the Respondents

Categories	Number of Respondents	Percentage	Categories	Number of Respondents	Percentage	Categories	Number of Respondents	(%)
Self-Hope	23	74.19	Self-Optimism	26	83.87	Self-Efficacy	21	67.74
World-Hope	20	64.51	World-Optimism	26	83.87	World-Efficacy	29	93.55
Future-Hope	25	80.64	Future-Optimism	30	96.77	Future-Efficacy	28	90.32

The study involved deductive analysis of the responses to 10 semi-structured interview questions, using the framework of the positive cognitive triad and PsyCap. Nevertheless, a few themes emerged inductively as well. In the present study, the extent to which the women participants' responses to the semi-structured interview questions were aligned with the theoretical lenses was determined. The 'alignment' mentioned here is verily the convergence to the theoretical lenses of positive cognitive triad and PsyCap. Table 2 shows the respondents' self-perceptions of hope, optimism and self-efficacy, viewed through the positive cognitive triad lens of self, world and the future. These results could be considered as a confirmation of the theoretical frameworks of positive cognitive triad and PsyCap. The higher percentages of future-PsyCap perception of components of hope, optimism and self-efficacy in the participants could be attributed to their positive orientation towards the future. Women were found to be optimistic about their future as they prioritized their children's future and worked hard, with strong faith in God. Providence and strong family support could have a positive outlook towards life. General support from the husband together with hard work, was propitious in building self-efficacy in the women.

Table 3: Qualitative Inductive Analysis: Emerging Subdomains

3.2 Subdomains of PsyCap Components That Align With the Operational Definition of Resilience.

Psychological Capital Subdomains	Number of Respondents	Excerpts from the Interview
Providence	25	I'll tell you about it with my experience. I'm the person who held onto the prayer. I have good faith in prayer. In that belief I have experience of achieving things by moving forward, relying on my God, whom I believe in, without relying more on human beings. That's the way I'm still going
Psychological Capital Subdomains	Number of Respondents	Excerpts from the Interview
Courage	18	We develop this courage when facing many challenges
Hard work	18	Well, in many houses where the parents quarrel, they may suicide, and they may abandon everyone and leave the houses. But I have witnessed that many children somehow hold on through these situations and they work hard to reach many heights. So, it was something their life taught them, not their parents.
Family Support	17	That feeling arose from the strong support my family extends to me. That's the only thing. They'll be with me through thick and thin

Psychological Capital Subdomains	Number of Respondents	Excerpts from the Interview
Self-efficacy	11	If we were in the middle of the sea, wouldn't we swim? When it comes to our lives, we will do whatever it takes. It takes so much courage to do that. I have the ability. I do have it! I have the ability to achieve what I want, and I am working hard for that (laughed)
Children	12	There is hope. There is hope about our children and their future
Spouse support	12	I love tailoring. I want it to move ahead. My husband supported me. I studied tailoring for 1 year. He bought me the tailoring machine
Adversities including COVID -19	10	We don't want our lives to be sad. That's why we are optimistic. That's how we move forward. But we can't do anything if there are any adverse moments. We are moving forward because we know that no one is there to hold you back. The fact that I had live alone influenced all these thoughts, whether it is pushing us to move forward or holding us back by thinking about suicides. But we chose to move forward.
Perseverance	9	If we keep trying, we will achieve what we set out to do
Mental Strength	9	We must have some mental strength in life...the strength and capability to withstand every circumstance, mentally as well as physically too
Life experiences	9	We learn it from our experiences. I will try to help them based on my knowledge and my own experiences... I have come this far. Have gone through a lot of things.
Confidence	8	We achieve whatever we want through our confidence. But we should not think depressingly, but only look into the bright side
Psychological Capital Subdomains	Number of Respondents	Excerpts from the Interview
Future focus	8	To raise our children in a good way, make them secure and see them having a good married life. Making them well educated is the most important after all
Finance	8	If I am talking about finances, I don't have anything to do and neither does anyone give me anything. I struggle financially to make a living. I built all these up. I even got (laughed) an award for it from the village
Parental Support	8	When I look back, I feel like I should've gotten a job somehow. But my ancestors were not capable enough. We need money to get an education for our kids. But only when our parents are educated enough will they send their kids to have better education. But mine didn't have that desire...
Community Support	8	I have faced a lot of setbacks due to society. Well, there are people from our own community, our own political parties who do not like watching someone else growing well. As there are a lot of foul plays in politics, I could reach many higher places.
Employment	7	We can say that being self-sufficient is us looking after ourselves. If we try to live with something that someone else gave us, then we will be disappointed. If we do not get it, we will be disappointed. We will be disappointed if things do not go our way. We do not need to ask anyone if we make 10 bucks
Financial resources	7	if there comes any financial problem, then there is no use of self-confidence in those situations. Right? Money is the only solution
Self-regulation	6	We should think it through with our minds. That we should do this, do that, look up to and compare ourselves with others
Education	6	Yes, as I live alone. Also, I do not have any educational background, isn't it a setback for us. Such things are there. (pause). I am living alone, isn't it? So, they kind of exclude me when I am out in the community. That is kind of difficult for me.
Being strong	6	It takes courage to hold on. It might be because of their strong mind. We have to achieve it. We get it from our life situations

Psychological Capital Subdomains	Number of Respondents	Excerpts from the Interview
Success	5	But I have witnessed that many children somehow hold on through these situations and they work hard to reach many heights. So, it was something their life taught them, not their parents. They themselves, prepare their hearts and move forward with great determination, if you ask me about my opinion. It was their determination to not take any wrong turns, suicide but move forward and achieve success
Psychological Capital Subdomains	Number of Respondents	Excerpts from the Interview
Meaningful support	5	We are able to hold on because we have someone- if we believe that there are people who support us, then we will be able to hold on. If we feel like there is no one for us. The moment we feel helpless. We many even think about suicides(somber). We come to that state. If we have only one person on our side, then we will move forward with the belief that there is that person at least
Age	5	Speaking of the life we want to lead...my age is around 60 now...it is a very short time that we get to live... I have no great expectations in life anymore. How long... I had. But the truth is that it couldn't be achieved
Health	5	We need health for sure likewise we need finances. Even though we don't have a lot of money, we need a little to sustain life.
Role model	5	That's because of my mother only. She has gone through a lot in her life. But she won't express anything in front of us. Her only aim was to raise us in a good way, and she has succeeded in that. Now also, I am following her way of leading the life.
Secure environment	4	If it's difficult at home, talk to them as much as possible. Some of us cannot stand it at all. That may be why If someone says that it is so difficult, we will ask them if it is difficult at home. Suicide is not an option in any case! I will try to understand her. Without any support we will be feeling down and lonely, if so then we will have a feeling that we cannot live in any way

Table 3 indicates that providence, courage and hard work were highly rated by the participants. Most of the respondents frequently used the words God, faith and prayer while explaining how sources of hope and optimism helped them be resilient in detrimental life situations. We found that Indian rural women often rely on their faith in God as a means of emotional coping. Overall, we found that faith in God can be a powerful tool for the sustenance of emotional balance for Kerala rural women, providing them with a sense of meaning, purpose, and interrelationships, during challenging times. The rural Kerala women's insistence on courage and hard work is presumably rooted in a complex set of cultural, social, economic, and historical factors that embody the lived experiences of rural women in the region.

Gender, albeit an inductively derived theme, does not directly align with the operational definition of resilience, yet of admonishes relevance to the (women) participants. The theme 'woman' emerged from the interview transcripts of half (16) of the surveyed participants. Five of the women participants perceived their gender as a significant factor in resilience.

"I'm a woman, strong enough to face any daunting situation; I'm proud of it."

One possible reason could be that they often have to balance multiple roles and responsibilities, besides domestic work, childcare, and agricultural labor. These obligations require them to be strong, adaptable, and resourceful, which are meaningful traits associated with resilience.

Kerala has a diverse population, with the experiences of its rural women in Kerala vary, formulated by a variety of factors such as education, socioeconomic status, and communal norms. In general, Kerala has earned a higher place in the gender development index (Kodoth and Eapen, 2005), upheld by rural women in the state having unrestrained access to education, healthcare, and other basic resources, when compared to other states in India (Franke and Chasin, 1994).

Women in Kerala have been politically active, organizing themselves into various groups to advocate for their rights and interests. The Kudumbashree program, launched on 17 May 1998, in Kerala, is a women's empowerment and poverty eradication initiative that has been effective in mobilizing rural women, furnishing them with access to financial credit, training, and other resources. The program has been heralded with reducing poverty, impressive health outcomes, and promotion of gender equality in Kerala's rural areas. Overall, despite

apparent challenges and inequalities that persist in rural Kerala, many women perceive their gender as a strength revealing demonstrated remarkable resilience in the face of adversity.

Rural Kerala's cultural obligations double down on family and community values, which embody the way women view their roles and responsibilities. Women are expected to prioritize their family commitments, their children, and attention to their well-being. In this context, women are expected to seamlessly switch their roles as wives and mothers, frequently appraised on their capability to fulfil these roles effectively. This bearing down of cultural imperatives on family and community values can reinforce gender norms and expectations, where women are expected to adhere to traditional gender roles and prioritize their domestic duties. As a result, rural Kerala women often consider their womanhood and children of special value, perceived as integral parts of their identity and roles within the community.

Children are often viewed as priceless as they are the future of the family and community; providing for their well-being is a responsibility that falls upon the parents, especially the mother. This cultural perspective also reinforces the concept that having babies and raising children is a central part of a woman's role and identity. In essence, the culture prevalent in rural Kerala reinforces the idea that women's resilience is intimately tied to their ability to fulfil their traditional gender roles, which are centered around caring for their families and communities. Some women (n= 4) participants consider their gender as a vulnerability.

"The first thing I would say is 'support'. Women always need support. When support may not be available, some people may not be able to move forward."

They may view their sex or gender as a vulnerability or weakness restrained by the societal norms and expectations that limit their opportunities and rights. For example, women may be expected to prioritize their domestic duties over their education or career, and face restrictions on their mobility and social interactions. This can lead to restrictive access to resources and decision-making power, which encumber women to cope with various challenges, such as economic insecurity, health issues, and natural disasters. It is important to note that Kerala rural women are a diverse group with varying experiences and perspectives, and it would not be accurate to generalize about their attributes. However, there are some common societal norms and cultural beliefs that affect how rural women in India view their gender.

Among the participants, 26 of them affirmed that resilience is a state/process rather than a trait.

"We acquire it from life experiences. We don't need to come across such situations though. But we do acquire some qualities when faced with different challenges."

Rural women in Kerala may consider psychological resilience as acquired through life experiences, as they have likely faced many challenges and stressors throughout their lives, such as poverty, illness, or social discrimination. These experiences can be testy that call for the development of coping mechanisms, and strategies to overcome them. By successfully navigating through these challenges and developing effective coping mechanisms, women can build their resilience capabilities and feel better equipped to handle future stressors. Thus, Kerala rural women may see resilience as something that is learned and acquired through live experiences rather than being an innate trait or characteristic. Rural women may also consider psychological resilience as a dynamic process as they recognize that life is continually changing and that they need to adapt to new unforeseen encounters. They may view resilience as an ongoing process of learning, growth, and development, rather than a fixed trait or characteristic.

4. Conclusion

The qualitative deductive analysis suggests positive cognitive triad and psychological capital (PsyCap) as viable theoretical frameworks for comprehension of resilience in rural women. The inductive analysis revealed subdomains of hope, optimism, self-efficacy, and resilience which can be considered crucial in explaining resilience in rural women. The inductively derived subdomain that did not align with the operational definition of resilience is gender, which should be reconsidered in explaining resilience in Indian rural women. The investigative report builds on the literature review of resilience among Indian rural women. This study is deemed to be helpful to government agencies and NGOs, by pinpointing the enablers and barriers of resilience and the diverse manifestations of resilience can in this rural population. In turn, this can assist in formulating and designing intervention policies. The present study also highlighted the propriety of psychological strength-based perspectives of Indian rural women's resilience. The findings of this study are purported to be of relevance to developing countries with rural populations.

4.1 Limitations

The present study was constrained by the rules imposed by the government during the COVID-19 pandemic in Kerala, one of the worst-affected states in India. Since the present study focused only on a small number of participants at a single rural outpost, the findings may not be generalizable to other settings or populations, within the state of Kerala or others. Participants may provide responses that they believe are socially desirable or that align with the expectations of the researcher. This can lead to biases in the data and may not provide an accurate reflection of their experiences or perspectives. The present study does not provide quantitative data, which can make it difficult to draw statistical conclusions or make comparisons across different groups or contexts.

4.2 Recommendations and Suggestions for Further Studies

Gender-specific, culturally sensitive resilience measures for Indian rural women are required to have a comprehensive assessment of the resilience of this population. A comprehensive assessment of rural women's resilience helps the government and non-government agencies in designing appropriate psychosocial interventions. Conducting longitudinal studies tracking rural women in Kerala over time aids in understanding resilience fluctuations and pinpointing contributing or detracting factors. Employing mixed methods approaches, combining qualitative and quantitative data, enhances researchers' comprehension of resilience and its influencing factors. Recognizing resilience's variation based on social identities (caste, class, religion), researchers should explore intersectionality to understand how different identities impact resilience. Intervention studies, focusing on building social support networks or providing skills training, offer insights into effective strategies to enhance resilience among rural women in Kerala. Collaboration with local organizations ensures culturally appropriate research approaches and relevant research questions.

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Resilience Amidst Adversity: Exploring Gender Disparities and Psychosocial Factors in Kerala

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Abstract: Despite notable progress in human development and gender equality indicators, mental health issues and gender disparities persist due to various socio-ecological factors in the southern state of Kerala, India. This study aims to identify the psychosocial factors of resilience that enabled rural and urban women to cope with during the challenging COVID-19 pandemic, while also comparing the experiences of resilience among women in rural and urban areas of Malappuram district. A demographic profiler and semi-structured interview questions were employed to assess resilience in a cohort of 44 women in rural and urban settings and within the age range of 21-60 years. Interview questions were specifically based on the definition of resilience, resilience factors specific to women, resilience-boosting elements, and obstacles during COVID-19. Qualitative analysis of the participants' responses revealed five key psychosocial factors (psychological factors, support, life experience, external factors, and gender) influencing women's resilience. Similar factors (support, psychological, and external factors) are critical in strengthening women's resilience during the COVID-19 pandemic. The research also sheds light on subtle gender inequalities, underscoring the need for comprehensive initiatives to promote gender equity and improve men's attitudes towards women. The limitation of the study lies in the regional specificity, which affects its generalizability. The study highlights the importance of designing psychosocial interventions to promote resilience in women across diverse geographical contexts, presenting opportunities for empowering women through comprehensive strategies. These findings offer valuable insights for policymakers, practitioners, and researchers, enabling the development of effective measures to uplift women and create a more equitable and resilient society. Further research is recommended to bridge knowledge gaps and formulate comprehensive strategies to enhance women's empowerment.

Keywords: Resilience, Gender Disparity, COVID-19, Kerala women, Psychosocial factors, Gender Equality

1. Introduction

Crises like pandemics and disasters serve as critical tests for individual and societal resilience, distinguishing those who adapt and persevere from those who succumb to the initial signs of disruption. Research affirms psychological resilience as the ability to adapt positively to life conditions (Dias *et al.*, 2015; Hilliard *et al.*, 2015; Brodsky and Cattaneo, 2013), as a dynamic process evolving over time (Dias *et al.*, 2015; Caldeira and Timmins, 2016). Adaptive functioning (Barber, 2013; Cuhadar *et al.*, 2016) specifically empowers individuals to face difficulties by recovering or bouncing back (Netuveli *et al.*, 2008; Violanti *et al.*, 2008) and as an opportunity for growth (Sisto *et al.*, 2019). Certain socio-demographic (Chesterman, de Batista and Causse, 2021; Alizadeh and Sharifi, 2021) and psychosocial factors were found crucial in promoting resilience and post-traumatic growth against the stresses caused by COVID-19 (Trzebiński, Cabański and Czarnecka, 2020; Schwarzer and Warner, 2013; American Society for Cell Biology, 2021; McAllister *et al.*, 2015; Tan *et al.*, 2019). All the 25 studies included in a systematic review unanimously showed higher levels of resilience correlated to fewer mental health problems, despite the heterogeneity of the populations studied and instruments. Supplements of resilience include multisystem factors, such as social, cultural, family, and individual aspects, which are in line with the multisystem approach described by recently proffered resilience theories (Mesman, Vreeker and Hillegers, 2021).

Despite Kerala's high Human Development Index (HDI) (0.752, Global Data Lab, 2021) and positive gender equality indicators, the state faces a paradox with unsettling mental health and elevated crime rates against women. Kerala's suicide rate (23.5 per 100,000 persons) doubled the national rate (National Crime Record Bureau, 2018), and recent data indicates a surge in crimes against women since 2016 (Kerala Police, 2023). Motivated by these incongruities, this study retrospectively explores psychosocial resilience factors among women in Kerala's northern, central, and southern regions during the COVID-19 pandemic. Despite the HDI score (0.662) of Malappuram, a district in northern Kerala, being lower than Kerala's (0.752), it surpasses India's national score (0.609), prompting calls for improvements in education, health, and the economy (Rahman and Bassam, 2017). A study on married women in northern Kerala post-lockdown revealed links between domestic

violence, depressive symptoms, anxiety, and perceived stress (Indu et al., 2021). A qualitative study (Jabbar et al., 2022) with 10 conveniently sampled participants unveiled significant psychological impacts during COVID-19, influenced by individual and social factors, highlighting knowledge gaps as no other studies explore resilience among women in this specific part of Kerala. Given Malappuram's unique socio-demographic factors and the identified research gap, there is a need for a systematic examination of women's lifestyles and coping strategies. This motivated a retrospective study on women's resilience during COVID-19 and lockdown in Malappuram.

2. Method

Ethical clearance (IEC-AIMS-2023-ASSBS-63) was obtained from the Institutional Review Board (IRB) before data collection. The sample included 44 women (age 21 to 60), equally distributed between rural and urban areas. The study aimed to identify the psychosocial resilience factors of women during the COVID-19 pandemic in Malappuram district and a comparison of the experiences of resilience among women from urban and rural areas. A demographic profiler consisting of 13 questions and 2 semi-structured questions with probing questions were used for interviewing the rural and urban women participants. The semi-structured questions were developed based on the review of resilience-related literature in psychology, social work, and related domains. For the current study, the questions were specifically based on the definition of resilience, resilience factors specific to women, resilience-boosting elements, and obstacles during COVID-19. Data were collected through in-person or phone interviews in the local language of Malayalam from March 24 to April 3, 2023. Analysis revealed recurring sub-themes, with data saturation indicating thematic saturation.

3. Result and Discussions

3.1 Socio-Demographic Profile

Table 1: Socio-demographic profile of rural and urban women participants

Characteristic	Level/Status	Rural Percentage(%)	Urban Percentage(%)
Education	Primary	4.54	18.18
	SSLC	13.63	22.73
	Higher Secondary	22.74	18.18
	Diploma	13.63	0
	Graduate	22.74	31.83
	Post-graduate	13.63	4.54
	Ayurveda Nursing	9.09	-
	General Nursing	-	4.54
Age	20-29	36.36	27.28
	30-39	40.9	36.36
	40-49	18.20	13.63
	50-59	4.54	22.73
Marriage	Unmarried	13.63	22.73
	Married	81.83	72.72
	Widow	4.54	4.54
Marriage Preference	Arranged	81.82	63.64
	Love	4.54	13.63
Marital Age	Below 18	-	9.09
	18 - 21	63.64	40.9
	22- 25	18.20	22.73
	Above 25	-	4.54
Family Size	1-2	4.54	0
	3-5	50	90.91
	6-9	45.46	9.09
Occupation	Employed	31.83	45.46
	Unemployed	54.54	50

Characteristic	Level/Status	Rural Percentage(%)	Urban Percentage(%)
	Unemployed after Marriage	13.63	4.54
Power to make financial decisions	Yes Participatory No	22.74 45.46 31.83	31.82 40.9 27.28
Property Rights	Yes No	18.18 81.82	40.9 59.1
Income Sources	Agriculture Pension Daily wage Government Private Business Nursing MGNREGA Driver Air force Bank	22.74 18.18 50 36.36 9.09 18.18 4.54 4.54 - - 13.63 4.54 4.54	4.54 31.82 45.46 18.18 9.09 31.82 - - 13.63 4.54 4.54
Medical History	Thyroid Diabetes Hypertension Complications in Pregnancy Cholesterol Others	0 4.54 0 0 0 31.83	0 13.63 18.18 0 4.54 31.82
Environmental hazard	Yes No	40.9 59.1	36.36 63.64
Other Personal Hardships in Life	Yes No	63.64 36.36	45.46 54.54
Financial Liabilities	Yes No	54.54 45.46	59.1 40.9
Discrimination	Yes No	13.63 86.37	18.18 81.82
COVID-19 infection	Yes No Had fever but not COVID	22.72 59.1 18.18	40.9 54.54 4.54
COVID-19 Impact on overall health	Yes No	0 100	4.54 0

Urban and rural women in Malappuram share similar sociodemographic characteristics, with younger girls having educational opportunities. Despite this, pursuing a career post-marriage is discouraged by both family and community, influenced by cultural norms shaping women's lives. Women, urban and rural, married between 18 and 21 through arranged marriages, with comparable financial decision-making. Urban women held more property rights. Challenges, like financial liabilities, were common, and the pandemic affected both areas, causing more health issues for urban women. No significant urban-rural divide in socio-demographic factors was observed. Malappuram district presents intriguing sociodemographic factors, including high education levels, limited job opportunities, and low marriage ages. Census data (Kuruvilla and Nisha, 2015) reveals a prevalence of child marriages, reflecting patriarchal beliefs. However, the National Family Health Survey shows a reduction from 23.3% (2015-16) to 15.3% (2019-20). Despite higher education levels, a majority of women in Malappuram remain unemployed, signalling potential social norms and gender-related issues. Despite achieving high education, women face challenges in economic and socio-cultural conditions (Jafar, 2015). Early marriages, influenced by socio-cultural factors (Scaria, 2014), limit women's choices and hinder their progress. Kerala's resistance to raising the marriageable age to 21 in 2023 is portrayed as progressive but may mask support for socio-cultural influences on vulnerable women (Hindustan Times, 2023). This study prompts reflection on gender inequality and societal norms in Malappuram, impacting employment and life choices for educated women.

3.2 Objective 1: The Psychosocial Factors of Resilience in Both Rural and Urban Women

Table 2: Factors of resilience in both rural and urban women

Factors- Rural			Factors- Urban		
Theme	Subtheme	Number of Responses	Theme	Subtheme	Number of Responses
Support	Husband (4) Friend (2) Family (2) Mother (1) General support system (2) Community (2) Psychologist (1)	14	Support	Husband (2) Mother (1) Advice (1) Environment (1) Joint family system (1)	6
Life Experiences	Experiences (2) Learning from experience (1) Intensity of experience (1) Joint family Experience (1) Experience of solving issues (1) Life situations (4) No other option (2)	12	Life Experiences	Experience (3) Life situations (5)	8
Psychological Factors	Bold (4) Natural disposition (3) Courage (2) Willpower (2) Hope (1) Ability to take decisions (1) Efforts (1) Communicate (1) Automatic (1) Immediate action (1) Move forward without any hesitation (1) Self-Confidence (1) Following mind (1) Heard (1)	21	Psychological factors	Courage (6) Responsiveness (3) Individual Capacity / Capability (3) Decision making (2) Willpower (2) Self-Realisation (2) Communication (2) Self Assessment (1) Thoughtfulness (1) Crisis management (1) Immunity (1) Fearlessness (1) Strength (1) Problem solving ability (1) Ability to handle Family issues (1) Self-Belief (1) Independent (1)	30
External Factors	Socialisation (1) Self-Defence class (1) Education for girls (1) Social media (1)	4	External factors	Self-Protection (1) Responsibilities (1) Awareness (3) Financial Independence (2)	7
Gender		3	Gender		2

Five major psychosocial themes emerged: psychological factors, support, life experience, external factors, and gender. Rural participants identified boldness, courage, and willpower, while urban participants highlighted courage, responsiveness, individual capacity, decision-making, self-realization, and communication. A rural participant (Participant ID-MU/18) says,

‘Having the courage to confront a situation single-handedly, rather than seeking assistance and managing it independently, especially when it's a minor issue.’

An urban Participant ID- MU/3 says,

'Before taking any decision, I closely analyse the current situation. I usually respond to any situation after taking ample time for self-reflection. We should not jump to conclusions influenced by anger and sadness. Such decisions will not provide any solutions.'

3.2.1 Support

Support from various sources played a significant role in building resilience among rural women, with husbands being the most common source of support, followed by friends, family, community, and other support systems. The responses of urban women cover sub-themes such as husband's support, mother's support, joint family system, environment, and advice.

One of the rural participants shared (Participant ID-MR/32),

'We draw inspiration from those who surround us. Whether it's our spouse or other supportive family members, their presence during times of trouble empowers us to conquer any obstacle. With their unwavering support, we never feel alone, and together, we can overcome anything.'

The following quote from urban Participant ID- MU/11 is an example,

"I share my problems with my husband, and his support provides me with courage and motivation to overcome challenges".

3.2.2 Life Experience

Life experience emerged as the third influential theme shaped by life situations, the intensity of experiences, and lessons learned, which contributed to the resilience of rural women in Malappuram.

A rural Participant ID- MR/42 said,

'When we consider the circumstances of life, particularly within the context of our home and as part of a joint family, we gain a plethora of experiences. These experiences equip us to navigate society with utmost adaptability, even as children, allowing us to respond fittingly to every individual we encounter.'

An urban Participant ID MU/60 said,

"Married at eighteen, I initially worked as a housewife but later found courage and financial independence through various jobs, including a temporary conductor at KSRTC, allowing us to stand on our own feet."

3.2.3 External Factors

Education, self-defence training, and social media positively influenced resilience in rural women, while urban women found awareness, financial independence, responsibilities, and self-protection as favourable factors.

Participant ID- MR/42 said,

'Children, when going out, learn to respond appropriately, with many schools now offering classes like karate to empower girls in self-defense'.

Participant ID- MU/4 said,

'Sitting at home, if something happens to my husband, it becomes challenging. During a war, my husband was affected, and we didn't inform my mother. All the income stopped, but since I had a job, I could manage. Without income, a woman may suffer in such situations'.

3.2.4 Gender

Participants from rural and urban areas identified gender as one of the factors that influenced their ability to be resilient during tough situations. women were observed to exhibit a mixed feeling of confidence and uncertainty, regarding their ability to handle challenging circumstances as women.

Participant ID- MR/49 said,

"Women often find solutions independently, but family support, especially with husband's encouragement, is crucial. Women exhibit various attitudes and capabilities, with some boldly handling situations on their own".

In addition, two participants from urban areas highlighted gender as a significant factor impacting resilience.

Participant ID- MU/33 said,

"If you ask like that (laughs), I don't know how to say it that way. I still have the same feeling. If I say that, it itself is a victory, as that's what I have realised. Now, we women are not weak at all (laughs)."

Individual traits crucial for resilience evolved as integral to the participant's personality, combining with life experience, external factors, and gender to create a robust environment for multidimensional resilience development.

3.3 Objective 2: Factors That Enabled Women to Manage During the COVID-19 Pandemic.

Table 3: Factors that helped women manage during COVID-19

Factors- Rural			Factors- Urban		
Theme	Subtheme	No of Responses	Theme	Subtheme	No of Responses
Support	Community support (3) Family support (2) Children (2) Husband support (1) Maintained student-teacher relationship & friendships through phone (2) Providing support to community (1) Friends (1)	12	Support	Community support (1) Political support (1) Engaged with neighbours & friends (1) Husband's support (2)	5
Psychological Factors	Acceptance (1) Depression (1) Self-Regulation (1) Exploring life (1) Engaged in work (2) Engaged in studies (6)	12	Psychological Factors	Difficult situation (1) Engaged in studies (1) Urge to live (1) Precautions (1) Stressed out / Mental distress (4) Engaged in work (3)	11
External Factors	Social distance (5) Govt. job in health (1) Social isolation (1) Book (1) Dairy farm (1) Family time (2)	11	External Factors	Social distance (7) Financial constraints (5) Unemployment (3) Social isolation (2) Pregnancy complications Engaged in leisure Activities / Family time/ Social media (3) Financial security (1) Technology dependent (1)	22

The three main themes that emerged from the analysis were support, psychological factors, and environmental factors.

3.3.1 Support

The most frequently mentioned sub-themes included community support, family support, keep-in-touch relationships, and friendships through phone.

Participant ID- MR/32 said,

'It came to all of us. It was during such a terrible situation that the Covid hit us, our friends, even in a situation where we are isolated inside the house, a friend knew about this medicine and brought us the medicine and all this through them. And these ASHA workers will call and ask about everything'.

Urban women perceived husband's support, community support, political support and engagement with neighbours and friends as crucial.

Participant MU/54 said,

'Even though we don't go out, we all live together here in the neighbourhood, so it hasn't been difficult.'

3.3.2 Psychological Factors

The participants' ability to distract themselves through engagement in studies and engagement in work helped them manage the COVID times. The responsibilities shouldered by the participants helped them remain active and engaged throughout the pandemic period.

Participant ID- MR/60 shared,

'If we say this COVID era, the first reason is that we have all this work, we don't have time to think about everything, our work and work at home are all combined and we don't have time to think about some things. But when you have a small child, house, work, and everything...'

Sub-themes associated with psychological factors include mental distress, self-distractions including engaging oneself in studies and work, urge to live, precautions, and engaging in work during unwelcome situations. These sub-themes indicate that maintaining a positive outlook towards life and attending to pre-assigned responsibilities to divert attention from the ongoing chaos were strategies employed by the participants to manage the pandemic situation.

Participant ID- MU/38 shared,

'Because it was my work, we used to work every day during the COVID period...we were doing tele-counselling. It didn't even take that much time, we had to meet at least 80-90 people in one day. So, we have another one engaged throughout the COVID period.'

3.3.3 Environmental Factors

Environmental factors encompassed sub-themes such as COVID-19 precautions, employment in the health sector, and family time. These factors signify individuals' responsible efforts to bring about collective change and cope more effectively during COVID-19. Participant ID- MR/49 said,

'During the period of COVID, we have not gone out for two or three months and husband will go only if necessary. Yes, follow the Covid standards and come back, because if one person gets infected, then the family will also be sure. Now my home is Mancheri... I went there after three months and followed the correct rules, so there were no covid during these three to four years.'

The most recurrent sub-themes under environmental factors for urban participants in managing the COVID-19 pandemic were social distancing, financial constraints, unemployment, family time/leisure activities, social isolation, and technology dependence. Sub-themes such as social distancing, family time, social isolation, and technology dependence (e.g.: use of technology or mobile phones to remain active during lockdown period) were identified as effective strategies utilised by the participants to manage the effects of the COVID-19 situation.

Participant ID- MU/18 shared,

"During the COVID period, I did not face much difficulty because I had a cow, I mean I did not have to go out like that, and even if it was giving milk, the milkman would come home and take it and leave like that."

Rural and urban women employed distinct strategies during COVID-19. Rural women relied equally on support, psychological, and external factors, while urban women primarily used external and psychological factors along with support. Notably, factors contributing to women's resilience and coping during the pandemic were similar. Women consistently relied on comparable psychosocial factors, mirroring their approach to everyday challenges.

3.4 Objective 3: Comparison of the Experiences of Resilience Among Women From Urban and Rural Areas of Malappuram District

The resilience factors mostly contributing to rural participants were psychological and support, with life experiences following. Conversely, urban women primarily relied on psychological factors for resilience, attributing this to minimal support and life experiences. Rural women, benefiting from close-knit communities, receive more support, and life experiences contribute significantly to their resilience. Urban women, confined

in their lives, lack community connectedness and face fewer tough situations, relying heavily on psychological strength for resilience.

In both rural and urban contexts during COVID-19, environmental factors were important, reflecting the 'new normal.' While psychological factors are influential in promoting resilience for both groups, distinct differences exist in the roles of support and life experiences. Adverse situations revealed rural women's reliance on close-knit social circles, highlighting gender inequalities in mental health, performance, and socio-cultural aspects in Kerala.

Participant ID- MU/46 shared,

'When I was young, those days, women got married after 10th standard. It is especially so in our Muslim community. It is like child marriage, right? What to say, we were underage and not mature enough, and obligated to follow our parents' wishes'

Participant ID- MU/38 shared,

'Once I was travelling on a train, one of the fellow passengers misbehaved with me, and I slapped him. At that moment, all the passengers turned against me, saying he was an elderly man, and I should not have slapped him. I tried to explain that his touch was inappropriate, but irrespective of my clarification, people chose to side with the man. That moment I understood that as a woman travelling alone, chances are high that I will be isolated if I react in such situations.'

This quote throws light on the systemic gender bias and the prejudiced treatment of women who choose to respond to instances of misconduct. It shows the need for broader societal transformation to confront stereotypes, and gender inequality, and to enable an environment where women can assert their rights without fear of isolation or ridicule. The poignant experiences of women provide evidence that gender inequalities play a significant role in shaping their resilience.

3.5 Crucial Observations From the Study

The study was significantly impacted by the prevailing patriarchal structure in society, leading to instances where participants, initially agreeing to take part, chose to withdraw their involvement due to disapproval from their spouses. One participant expressed this influence by stating, "Now I require my spouse's permission before answering some questions and may not be able to continue further by disobeying his words." As a consequence of this withdrawal of consent, the researcher was unable to maintain any interview records, forcing the premature termination of some interviews. This scenario can be interpreted as an illustration of gender discrimination and power imbalances that are widespread in the study area, where women face challenges in making decisions independently, with the approval of male members deemed crucial, especially for activities considered unconventional.

In addition, some participants exhibited hesitancy in being fully open during the interviews, often attributing it to nervousness. It is noteworthy that participants demonstrated heightened self-awareness, providing responses that they perceived as socially desirable during the interview sessions. This introduction of social desirability bias into the collected data highlights the participants' inclination to respond in ways deemed socially acceptable, potentially deviating from their genuine thoughts and experiences.

4. Conclusion

The study found no urban-rural divide in sociodemographic factors among participants. However, it revealed subtle gender inequalities tied to structural and social norms in the study area. Rural women draw resilience mainly from psychological factors, life experiences, and socio-ecological sources, while urban women rely more on psychological factors, life experiences, and external influences. The study emphasizes the need to understand identified psychological factors for designing effective psychosocial interventions fostering resilience in both rural and urban contexts, highlighting resilience as a multifaceted process evolving over time in response to challenges.

4.1 Limitations

The qualitative study on women in Malappuram district, Kerala, captures subjective resilience experiences, but its regional focus limits generalization. Concentrating solely on Malappuram participants implies unique

experiences, emphasizing the contextual nature of qualitative research. While caution is needed in extending findings, the study provides insights into women's resilience within communities sharing a similar sociocultural background.

4.2 Recommendations and Suggestions

The study highlights deep-seated gender inequalities, suggesting a multifaceted approach involving awareness programs and activities to address cultural and structural factors, fostering a positive attitude among men towards women. A thorough examination of psychological factors affecting resilience in rural and urban women can guide the development of targeted psychosocial interventions. Utilizing a mixed-method study for specific collaborative research offers a more effective approach, providing valuable insights for practical innovations and addressing knowledge gaps. These in-depth findings can inform government efforts to strengthen women's empowerment through well-targeted statutory measures.

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Malaysia's Orang Asli Women Roles in Indigenous Community

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Abstract: Globally, there are still many occurring social issues that may be a hindrance towards the achievement of the overall development of a nation, and one of them is gender equality. Although it is a social issue that can affect the society, gender equality however affects women more than men as it can put women at a more disadvantaged situations such as limited access towards good health and education, lower financial status, lower employment opportunities, and more. Gender equality should be properly addressed to ensure that women can enjoy the opportunities and rights that they deserved as part of the members of the society. In this study, we investigated the Orang Asli women roles from a selected tribes in Malaysia. The purpose of this study is to explore how Orang Asli women contribute to the preservation of the indigenous community's culture, language, and beliefs. This study employed a qualitative case study research design. To obtain data, a semi-structured interviewing tool was used. We collected and analysed data from Orang Asli women as participants of the study. The study's findings demonstrated that the Orang Asli women had meaningful roles in their community. The study's conclusions are designed to provide insight into how indigenous women can carry out their responsibilities in promoting gender equality and sustainable development in the indigenous community.

Keywords: Gender equality, Indigenous Community, Orang Asli, Women

1. Introduction

Gender inequality is evident in various domains of an individual's life, including but not limited to health, education, employment, and politics and compared to men, gender equality often affects and put women more at a disadvantage. Gender equality is commonly misunderstood to be primarily a women's issue, yet when it is not realized, it can have a detrimental impact on the whole society. According to the study conducted by Bayeh (2016), Ethiopia cannot attain sustainable development through the active participation of men alone, not until women also are granted control and gender equality. This proves that the development of a nation may be hindered when equality is not achieved by women. Gender equality does not imply that men and women must become the same. Gender equality pertains to the fair acknowledgement by society of the attributes and distinctions between men and women, together with the roles they fulfil. Upon birth, a boy or a girl are socially entitled with certain gender roles, and as clarified by Namibia (2013), gender roles are known as the actions, duties, and responsibilities that a society deems proper for boys, girls. As gender equality stressed on equal opportunities for both men and women, in life, it can act as a medium to diminish the socially constructed gender roles of men and women, as well as eliminating the gender discrimination within the society. Within the minority community of Malaysia who are known as the Orang Asli, it is believed that men are superior to women, and that women are weaker than men. The matter only got worse when the government representatives, business owners, and television have all promoted similar narratives of Orang Asli cultural inferiority in general and its female dependency on men (Karim et al., 2021). Orang Asli community possess their own unique customs, languages, and beliefs that were inherited from their ancestors, and every person, including the Orang Asli women, has their own significant roles to protect those customs from being corrupted or lost due to

modernization. It is relevant to examine the roles played by Orang Asli women in Malaysia in maintaining their culture, traditions, and values. Therefore, the purpose of this study is to determine the roles played by Orang Asli women and whether they are significant within their own group.

2. Literature Review

2.1 Orang Asli : Temiar and Semai Tribes in Malaysia

In Malaysia, the indigenous people of Peninsular Malaysia are commonly known as the Orang Asli. According to Wook (2016), the phrase "Orang Asli" refers to Peninsular Malaysia's initial or early settlers. Endicott (2016) on the other hand stated that in the 1960s, the Malaysian government replaced the demeaning English name "Aborigines" and the Malay term "Sakai" with the phrase "Orang Asli," which means "original people" in Malay. The Orang Asli community can be categorized into three main ethnic groups namely, the Negrito, the Senoi, and the Proto Malay. With 97,856 members, Senoi is the biggest tribe, while Proto Malay is the second largest group which is constructed of 75,332 members, and the Negrito group remain as the smallest Orang Asli group which consists of 5,009 members (Mahmud et al., 2022). The three major ethnic groups are further classified into 18 smaller sub-ethnic groups, comprising 1.1 percent of the population of Peninsular Malaysia. Out of the 18 tribes, this current study solely focused on participants from two tribes within the Senoi group, which are from the Semai and Temiar tribe. According to the Department of Orang Asli Department (JAKOA, 2023) by the year 2023 the whole population of Orang Asli comprises a total of 215,215 individuals, where there is a total of 4,193 Mah Meri people, 6,380 Jah Hut people, 557 Che Wong people, 531 Mendriq people, and 415 Lanoh people. The Kensiu tribe has a total of 292 people, the Kintak tribe with 203 people, the Jahai tribe with 2,915 people, the Bateq tribe with 2,190 people, and the Temuan tribe with 34,661 people. There is also a total of 41,081 people of Jakun tribe, 100 people of Orang Kanaq tribe, 5,038 people of Orang Kuala tribe, 1,856 people of Orang Seletar tribe, while 7,795 people of Semelai tribe. Out of the 18 tribes, this current study solely focused on participants from two tribes within the Senoi group, which are from the Semai and Temiar tribe. By the year 2023, the collective population of the Temiar people amounts to 37,489 individuals, with 19,338 Temiar men and 18,151 Temiar women, while the total population of the Semai people are 61,336 people, where 30,981 are Semai men and 30,355 are Semai women (JAKOA, 2023). The Semai made up the majority population of Orang Asli community, and the vast majority of Semai villages are in the mountains and foothills of northwest Pahang and southern Perak (Ching & Ross, 2015). Similar to the Semai, the Temiar people also come from the Senoic tribe and according to Khori (2022), majority of the Temiar reside in the state of Perak and the isolated region of Hulu Kelantan, however, a small number of Temiar can be found to reside in the states of Negeri Sembilan, Pahang, and Selangor.

2.2 The Culture and Beliefs of Orang Asli

In working towards the progress of the nation, modernisations and transformations programs have been drafted and carried out by the government. Although modernizations may contribute a lot and work for the realization of a nation's development, they may as well disrupt and challenge the sustenance of cultural practice and beliefs of the indigenous people. Indigenous people highly value their inherited culture and traditional beliefs and practices as they represent their identity. UNESCO (2019) stated that for Indigenous people, protecting their living heritage is essential because it forms the foundation of their identities and cultures, and the ongoing preservation of this heritage will inevitably reinforce the identities and cultures of Indigenous peoples. Orang Asli community in Peninsular Malaysia are among the many indigenous community that still preserve their inherited cultural practices. Kardooni et al. (2014) stated that the Orang Asli people historically resided in the forest, and due to this, the Orang Asli possess an immense amount of traditional knowledge related to forests, lakes, rivers, collecting forests products, farming, hunting, and gardening. In terms of the Semai people's beliefs, Chua et al. (2021) presented that the idea of family was interpreted differently in the Semai society where for the Semai, a family comprises not only biological relatives but also members of the community and those who have a common bond with *nyenang*, or spirit ancestors in the language of the Semai, as well as cultural heritage. As for the Temiar people, according to Khairuddin and Hanafiah (2021), the community practices and believes in animism, and they have faith in the spirits of inanimate objects, which includes the spirits of creatures such as animals and plants. Other tradition that is well known among Orang Asli community is the *Sewang* dance. Sucira (2016) explained that *Sewang* dance which is still performed until today is the traditional dance of Orang Asli this dance is performed for a variety of reasons, including for amusement, festival celebration, as well as for medical needs. This tradition is a popular form of entertainment, and it existed in each village of Orang Asli

tribes, however, each village has its own dance. Like other Orang Asli tribes, *Sewang* dance is also existing within both Semai and Temiar community. Therefore, it can be concluded that the Orang Asli community own a vast set of unique cultural practices and cultural practices. Hence, more efforts need to be done to protect the culture, identity, and the existence of this minority group. Figure 1 shows the *Sewang* dance that is very well known among the Orang Asli community.



Figure 1: The *Sewang* dance of Orang Asli in Peninsular Malaysia.

2.3 Gender Equality

Gender equality is considered as one of the constructs that should be achieved by all developing or developed countries, to fully attain the ultimate progress of a country. The concept of gender equality states that women and men, girls and boys, should have equal access to opportunities, treatment, and circumstances in order to help them fulfill their human rights, contribute to and benefit from political, social, cultural, and economic development, and help them realize their full potential (UNICEF, 2017). It can be understood that when women and men, girls, and boys, have equal rights, chances and prospects in life, and the ability to direct their own lives and make contributions to society, gender equality has been attained. Shang (2022) suggested that there are five crucial elements that need to be addressed in tackling the gender equality in the society which are (1) gender gaps must be distinguished from gender inequity, (2) gender equality is gaining attention, but there is still more work to be done to completely eliminate it, (3) everyone gains from eliminating gender inequity, not just women, (4) to alleviate gender equality, broad policies as well as gender-specific policies can be helpful, and (5) the goal of tackling gender inequality should be to eradicate its underlying causes rather than begin with measures aimed at them. Moving forward, it is essential for the future researchers and scholars to consider these five key elements in their study, to properly address the subject of gender equality in the society. Asri et al. (2018) presented profound findings in addressing the subject of gender equality within the indigenous community. The findings of the study described that the Orang Asli women's involvement in the entrepreneurship field open the door for women improvement and empowerment, and it also acts as the medium for women to seek gender equality as it allows them to earn their own income and be financially independent.

3. Purpose of the Study

The aim of this study is to explore how Malaysia's Orang Asli women contribute to the preservation of the indigenous community's culture, language, and beliefs for promoting gender equality and sustainable development. The objectives of the study are as follow:

1. To explore Orang Asli women's role in contributing towards the preservation of the indigenous community's culture, beliefs, and languages.
2. To explore gender equality aspects in Orang Asli community towards the sustainable development in indigenous community.

4. Methodology

The roles of Orang Asli women in preserving the culture, language, and beliefs in their community were investigated in this study. A qualitative case study was employed as a research design. We used a semi-

structured interview as an instrument of this study. A total of 8 Orang Asli women was selected randomly as a sample of the study. The study was conducted in RPS Kuala Betis, Gua Musang, Kelantan, as well as in Kampung Batu 7, Tapah, Perak, which is the settlement area of the Semai tribe. The data collected in this study were quantitatively analysed, and for this purpose, the qualitative data analysis software, Atlas.ti 8 was used to facilitate the data analysis process. The next section of this paper presents the findings and conclusions of the study derived from the data analysis procedures.

4.1 Participants of the Study

Regarding the participants, we selected 8 respondents from these two tribes, of which 4 of them were from the Temiar tribe, and another 4 from the Semai tribe. In this study, only Orang Asli women were chosen as the respondents, therefore, all the involved women participants shared the same inclusion criteria, in which all the participants involved belonged to the Orang Asli community. Since there were two Orang Asli tribe involved in this study, the study was also conducted in two research sites.

4.2 Research Site

This study is a study that featured the indigenous people as its subjects of study, hence this study was carried out in the Orang Asli community's settlement area. This study was conducted in Kampung Batu 7, Tapah, Perak, and in RPS Kuala Betis, Gua Musang, Kelantan. Kampung Batu 7 was selected as the research site as the area is a settlement area for the Semai community, while RPS Kuala Betis was chosen as the research site for the similar reason. It is the settlement area of the Temiar community, and it is also one of the biggest Temiar community's settlement areas in Peninsular Malaysia.

4.3 Data Collection

The primary research design in this study was the qualitative case study. The research tools used to gather the data for the study were semi-structured interviews. This instrument was used as with the use of this technique, researchers will obtain open-ended data, discover the opinions, sentiments, and ideas of respondents regarding the subject, and explore deeper into their personal matters. This study involved 8 random samples of Orang Asli women, where 4 of the respondents belong to the Semai tribe, while the remaining 4 respondents belong to the Temiar tribe. All 8 Orang Asli women were interviewed, and every interview with the respondents was recorded for the purpose of collecting notes.

4.4 Data Analysis

For this study, a qualitative analysis was performed on the data acquired. In this study, the analytical methodology employed was the thematic analysis. The Atlas.ti 8 software, which facilitates the qualitative data analysis processes, was used to analyse the data of this study, which all was obtained using the semi-structured interviews. The Atlas.ti 8 software was specifically used to help with the data coding and theme extraction processes throughout the data analysis phase. The following section of this paper presents the findings from the data analyses.

5. Results and Discussion

In this study, semi-structured interviews were used as the research instruments to collect the data. Thematic analysis was utilized as the analytical strategy for this study to measure the data that had been gathered. The analyses on the data were conducted to provide better understandings on the Orang Asli women's roles from Temiar and Semai tribes, within their society. The thematic analysis conducted showed that there are four emerging themes which are managing household duties, providing income for the family institutions, preservation of culture and beliefs, and responsibilities in family and society.

5.1 Theme 1: Managing Household Duties

The first theme that emerged from the thematic analysis was managing household duties. This theme elaborated on the Orang Asli women's roles and tasks that they carried out and highlighted the contributions made by Orang Asli women in managing their daily household matters. The responses obtained from the semi-structured interviews conducted with the respondents showed that Orang Asli women played major roles in carrying out the household tasks within their family. The respondents also shared their experiences in sharing the household

workloads with their partner, and some shared their views on the importance of household tasks divisions. Interestingly, the response obtained from Respondent 5 illustrated that apart from managing household tasks, Orang Asli women also played another important role in their household, which is in educating their children in terms of using their indigenous language.

"At home, wives take care of household duties like cleaning. My spouse assists me in caring for the kids." (Respondent 1, Temiar woman)

"While I wash the dishes, my husband mows the lawn. I believe that men and women should work together to complete household responsibilities since cooperation is necessary" (Respondent 2, Temiar woman)

"At home, I have to speak to our family members and kids in "Semai" language" (Respondent 7, Semai woman)

Remarkably, it is impressive to discover that within their family institutions, Orang Asli women achieved equity along with their partners, especially in terms of carrying out and distributing the household tasks. It is also important to observe that Orang Asli women realized and agreed that both men and women have the same responsibility in managing the household duties in their lives. It is also interesting to observe that apart from taking care of their family members, Orang Asli women also played another important role in their family, which is providing the early education at home for their children and passing down their traditional language to the younger generation. They speak and use the indigenous language with their children to teach and to ensure that their children know how to use the language. The claim of Orang Asli women hold major roles in the family is also supported by Yahaya and Yahaya (2014), where it was stated that Orang Asli women undoubtedly play major roles in their family and their responsibilities and obligations include managing the household, raising children, cooking meals for the family, and handling their kids' school-related issues. This aligns with the findings of the current study, which proves that Orang Asli women hold a significant position in their family, and they play major roles in managing household duties. Regarding the household duties management, the Orang Asli women made major contributions to fulfil their responsibilities towards their family. Based on the responses and feedback attained from the respondents, the Orang Asli women gained equality in sharing the household workload with their partner. This proves that Orang Asli women's efforts in managing the family are recognized and appreciated by their partners.

5.2 Theme 2: Providing Income for the Family

The results from the thematic analysis of this study also brought out the second emerged theme, which was providing for the family institutions. This theme demonstrated the respondents' feedback on whether the Orang Asli women play the role in providing the income for the family or not. According to the comments from the semi-structured interviews, the Temiar women were generally not involved in providing the income for the family. They relied on their husband to bring the income for the whole family. The responses obtained from the respondents also presented the types of occupations that allow their partner provide earnings for the family.

"My spouse works at the palm oil farm, while I stay at home". (Respondent 1 and 2, Temiar women)

"My spouse works as a rubber tapper, and I am a stay-at-home mother". (Respondent 3, Temiar woman)

"My husband is employed as a security guard and I am not working" (Respondent 4, Temiar woman)

The feedback provided from the respondents portrayed that only the men within the Temiar community hold the responsibility to provide for the family, whereas the women did not play any role in doing so. Interestingly, in Semai community however, the respondents shared that some women are involved in the entrepreneurship industry, where they engaged in the production and sale of handicrafts, as well as in introducing and promoting traditional treatments. Global Peace Foundation Malaysia (2018) presented that nowadays, Orang Asli women have shown their passion and perseverance in their pursuit to improve their lifestyle, through a variety of income-generating options, nevertheless, despite their passion and dedication, many of them still encounter tough challenges like a lack of funding, resources, or knowledge. This shows that Orang Asli women have the to improve their lives and if they are given the opportunity and sufficient supports, they are capable to get employed and play their role in contributing to the financial and economic needs of their family. To give Orang Asli women a greater chance to better their own lives within their own power, more assistance and efforts must be made. In terms of their economical state, most of the Orang Asli women are still very much reliant on their husbands to provide for their family and play minor roles in contributing to their family's economic development.

They also believed that the responsibilities to provide earnings and income for their family should be given to their husband as men hold the title as the breadwinners of the family.

5.3 Theme 3: Preservation of Culture and Beliefs

The indigenous community are normally associated with their own unique cultural practices and beliefs, which represents their identity. The indigenous people highly value and take pride in their culture and beliefs, and like other indigenous community across the globe, Orang Asli community also strive to protect their inherited, valuable culture, beliefs, and traditions. The thematic analysis conducted in this study also revealed the third emerging theme which was preservation of culture and beliefs. This theme elaborated on the cultural practices and beliefs that the Orang Asli community still practice. The responses obtained from the respondents illustrated that the Orang Asli women still hold their traditional culture close to their heart, and they highly value their culture. They also agreed that up until now, they still practice their traditional practices, and some of the respondents shared the cultural practices that is still existent in their community.

"We are not allowed to look into the mirror at night. We follow the traditions because we love our culture" (Respondent 1, Temiar women)

"We are not allowed to apply make-up during funeral and the following seven days after the funeral" (Respondent 2, Temiar woman)

"We will send our sick children to see the shaman. Additionally, make-up cannot be applied seven days following a funeral or during it. If we continue to wear make-up, we are breaking the taboo" (Respondent 3, Temiar woman)

"We follow the traditions. For example, it is forbidden for us to make noise during the Sewang " (Respondent 4, Temiar woman)

"It is our duty as Orang Asli women to teach and practice Sewang dance and handicrafts in order to preserve the cultural identity of the Orang Asli people". (Respondent 5, Semai woman)

It is clearly observed, from the feedback acquired during the semi-structured interviews with the participants, their inherited traditional practices are still deep rooted in the culture of Orang Asli community. The practice of taboo and shamanism are still occurring among their community, and out of love for their culture, they retain and preserve these traditions up until now. It is also amazing to discover that although they belong to different tribes, the practice and culture of *Sewang* dance exists in both Semai and Temiar community. The findings of this study presented on the richness of Orang Asli community's invaluable traditions and culture. Cultures and traditions are essential to all of us, and exposed to globalization and modernization, the beliefs, and traditions in danger of extinction.

5.4 Theme 4: Women Responsibilities in Family and Society

The thematic analysis on the collected data of this study also revealed the fourth and last emerged theme which is the responsibilities in family and society. In each domestic and societal institution, every individual possesses their own roles and responsibilities that they are required to fulfill. This theme portrayed the types of responsibilities that are believed to be fulfilled by certain genders, in this case the responsibilities that should be fulfilled by husband and wife. The responses obtained from the semi-structured interviews also presented the perceptions of Orang Asli women on the weight of the responsibilities entitled to men and women.

"I believe that women should stay at home to care for the family and handle household chores, and men should go to work". (Respondent 1, Temiar woman)

"Because men are stronger and more capable than women, I believe that men have greater responsibilities" (Respondent 2, Temiar woman)

"In my opinion, men should be expected to work harder because they have greater responsibilities" (Respondent 3 and 4, Temiar women)

"Finding wood in the forest to use for cooking the wedding food is our responsibility as ladies. Women have to do it" (Respondent 5, Semai woman)

The responses attained from the respondents showed that Orang Asli women believed that men hold greater responsibilities than women, and therefore men should be the one who perform the outside work. They also

agreed that they preferred to handle the household tasks and let the husband carry the responsibilities to provide for the family, as men are the breadwinners for the family. Among the many responses obtained, Respondent 5 shared interesting feedback, where it was stated that it is an obligation for Orang Asli women to gather the woods from the forest to be used during the wedding. The findings demonstrated that the women were dissatisfied with the tasks assigned to them during the ceremonies because they thought that men should perform the duties. All responses obtained from the respondents align with each other as it was discovered that the Orang Asli women believed that men should handle more tasks as they are entitled with greater responsibilities than women.

6. Conclusion

This study discovered that Orang Asli women play many important roles in the indigenous community. The presence of Orang Asli women is essential in their community as they made many contributions for the development of the indigenous community. This study revealed four major themes: managing household duties, providing income for the family institutions, preservation of culture and beliefs, and responsibilities in family and society. The finding presents a prospect for subsequent investigations aimed at devising tactics to motivate Orang Asli women to assume responsibility for enhancing the household duties, financial, cultural values, family, and society circumstances independently of their partners. It is hoped that in future years, indigenous women's mentalities would alter and become more positive. Therefore, we ought to seek out the chances to take all action necessary to guarantee that this community's traditional practices and cultural life receives the acknowledgments they deserved. Due to the distinct background, circumstances, methodologies, and subjects involved in this study, until further research in different contexts is conducted, it is not possible to generalise the previously mentioned findings of this study. However, the results and findings of this study are expected to be useful as references and inspiration for future study in exploring the contributions made by Orang Asli women for gender equality.

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Empowering Women for Technology Entrepreneurship: Opportunities and Challenges

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Abstract: This paper aims to underline how the new emerging digital technologies could empower women entrepreneurship by supporting them in overcoming the constraints they face as well as in creating a more favorable network environment. We will do this by analyzing the state of the art of the research regarding entrepreneurship practices by women considering the literature that has focused on this theme up to now. *Methodology* - A structured literature review methodology is going to be applied to this paper. Through the use of specific keywords, we analyzed Scopus documents published up to now on the theme related to Women and technology entrepreneurship. Several steps have been followed to perform a systematic, transparent, and replicable study. We used the VOSviewer tool for bibliographic and cluster analysis. A final content analysis was performed to identify research areas. *Findings* - Specifically the contribution and the impact provided by the Digital Technologies is analyzed for women's entrepreneurship. A conceptual discussion on how the Digital Technologies opportunities in overcoming some of the constraints women tackle in their entrepreneurship process and which are the main research streams that emerge for future investigation on the theme, is provided. *Practical implications* - The major implication is to advance knowledge and practice in the area of gender in management and use of Digital Technologies by focusing upon empirical research, theoretical developments, practice and current issues. Benefits are related to a better understanding of the debate on "Gender and Management" themes by reconsidering networking activities with social media.

Keywords: Entrepreneurship; Innovation; Gender Issues; Digital; Technology

1. Introduction

Digitization has spurred a wave of innovation and entrepreneurial activities, transcending traditional industry boundaries. Scholars, such as Yoo et al., 2012; Nambisan et al., 2017; Cohen et al., 2017; Giones and Brem, 2017; von Briel et al., 2017 have extensively studied the multifaceted effects of digitization on various aspects of entrepreneurship. These impacts extend to how new ventures are conceptualized, developed, and scaled in the digital era.

Despite the transformative potential of digital technologies, women face unique challenges in the entrepreneurial landscape. The existing literature on women in technology entrepreneurship, highlighting the disparities, barriers, and opportunities that women encounter as they navigate the digital frontier. Case studies and examples from Chandra and Leenders, 2012; Huang et al., 2017; Rayna et al., 2015; Chang, 2017) illustrate how women entrepreneurs are using digital tools to overcome challenges, build networks, and contribute to the swift evolution of novel ventures. It also considers the role of networks, ecosystems, and communities in shaping women's experiences in technology entrepreneurship.

While there has been a growing interest in exploring the intersection of women entrepreneurship and digital technologies, a significant research gap exists in comprehensively understanding how the latest emerging digital technologies can serve as empowering tools for women entrepreneurs. The current literature has indeed delved into entrepreneurship practices by women, but a systematic analysis of the potential impact of new digital technologies on overcoming constraints faced by women entrepreneurs and fostering a supportive network environment is notably lacking.

The existing research primarily focuses on traditional aspects of women entrepreneurship, often overlooking the transformative potential that emerging digital technologies can bring to the landscape. As women continue to encounter unique challenges in entrepreneurship, such as access to resources, networks, and opportunities, there is a critical need to explore how digital technologies can act as catalysts for empowerment.

This paper contributes to addressing this research gap by conducting a thorough review of the current state of the literature, specifically emphasizing the intersection of women entrepreneurship and emerging digital technologies. By synthesizing existing research, the paper aims to shed light on the untapped potential of digital

tools in mitigating challenges faced by women entrepreneurs and creating an environment conducive to their success.

In doing so, the paper not only provides a comprehensive overview of the existing literature on women entrepreneurship but also goes beyond by offering insights into the role of digital technologies in shaping and transforming the entrepreneurial landscape for women. The contribution lies in bridging the gap between current knowledge and the unexplored opportunities that digital advancements present for women entrepreneurs, thereby paving the way for future research and practical applications in the field.

2. Methodology

To define the state of the art in literature on the potential empowerment of women entrepreneurship through emerging digital technologies, we conducted a systematic literature review (SLR). This approach, recognized for its rigor and ability to uncover trends and future research directions, serves as an empirical foundation to minimize biases and ensure comprehensive coverage of seminal articles (Centobelli et al, 2017, Massaro et al., 2016; Petticrew and Roberts, 2006; Tranfield et al., 2003)). A SLR is particularly appropriate to analyze phenomena the relationship between the process of digital technologies and the theoretical framework of women entrepreneurship. Moreover, it enables defining a future research agenda, as well as implications both for theory and practice (Kraus et al., 2022).

This paper goes beyond the conventional SLR by incorporating keyword and content analysis, adding a more detailed content-driven examination to extract meaningful insights (Rivière and Walter, 2013). Recent advancements in SLRs involve leveraging the wealth of academic articles to deduce prior contributions (Massaro et al., 2016).

To initiate the SLR process, we formulated research questions focusing on the literature's development, its focal points, and potential implications (Massaro et al., 2016). The identified research questions were as follows:

RQ1. How is the literature on women's entrepreneurship and digital technology evolving? RQ2. What is the specific focus of the literature? RQ3. What are the implications of this research?

Following the establishment of research questions, a research protocol was developed, specifying information sources, methods, studies to be analyzed, and tools for analysis and synthesis (Petticrew and Roberts, 2008). This study combined both SLR and bibliometric analysis to enhance the accuracy of interpreting findings, aligning with recommendations advocating for the complementary use of these two methods. Numerous scholars, including Feng et al. (2017) and Fahimnia et al. (2015), suggested combining these two approaches to augment the significance of the outcomes.

The initial set of articles was retrieved from the Scopus database due to its extensive coverage of academic journals (Mishra et al., 2017). This aligns with the consensus that Scopus provides a comprehensive data repository for literature review studies.

The keywords and combinations identified and used for the article search were: entrepreneur* AND gender AND issue AND innovation OR digital OR technolog* in the title, abstract, author keywords. The search yielded a total of 158 articles, and data collection took place in September 2023–October 2023.

Data were processed by following different descriptive analysis. Finally, a content analysis was conducted to comprehend the emerging trends, research gaps as well and future directions.

3. Research Findings

Articles' evolution in time. The trend of the research papers developed over the years is depicted in Figure 1. the graph demonstrates that recently there is a growing interest by scholars and researchers in the investigation of research topics at the intersection of the debates on women and technology entrepreneurship. The peak year for relevant publications in these journals was 2022.

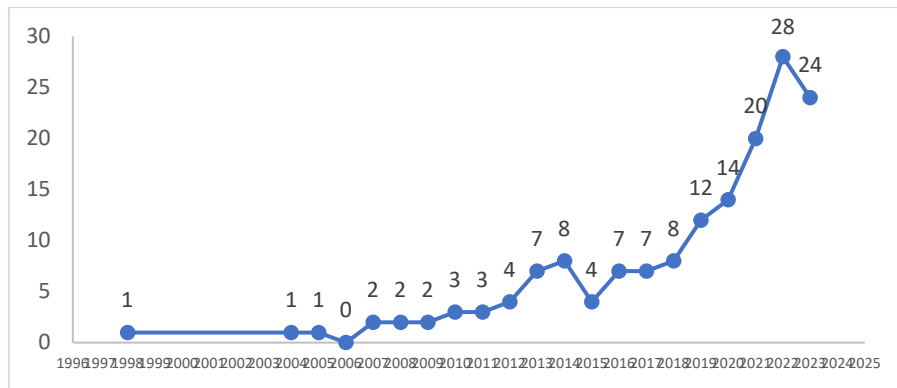


Figure 1: Articles evolution in time

Geography of the article- for what concern the geography as it could be evinced by figure 2. The countries with the highest number of articles are the USA and UK and Spain, with 29, 23 and 14 articles, respectively.

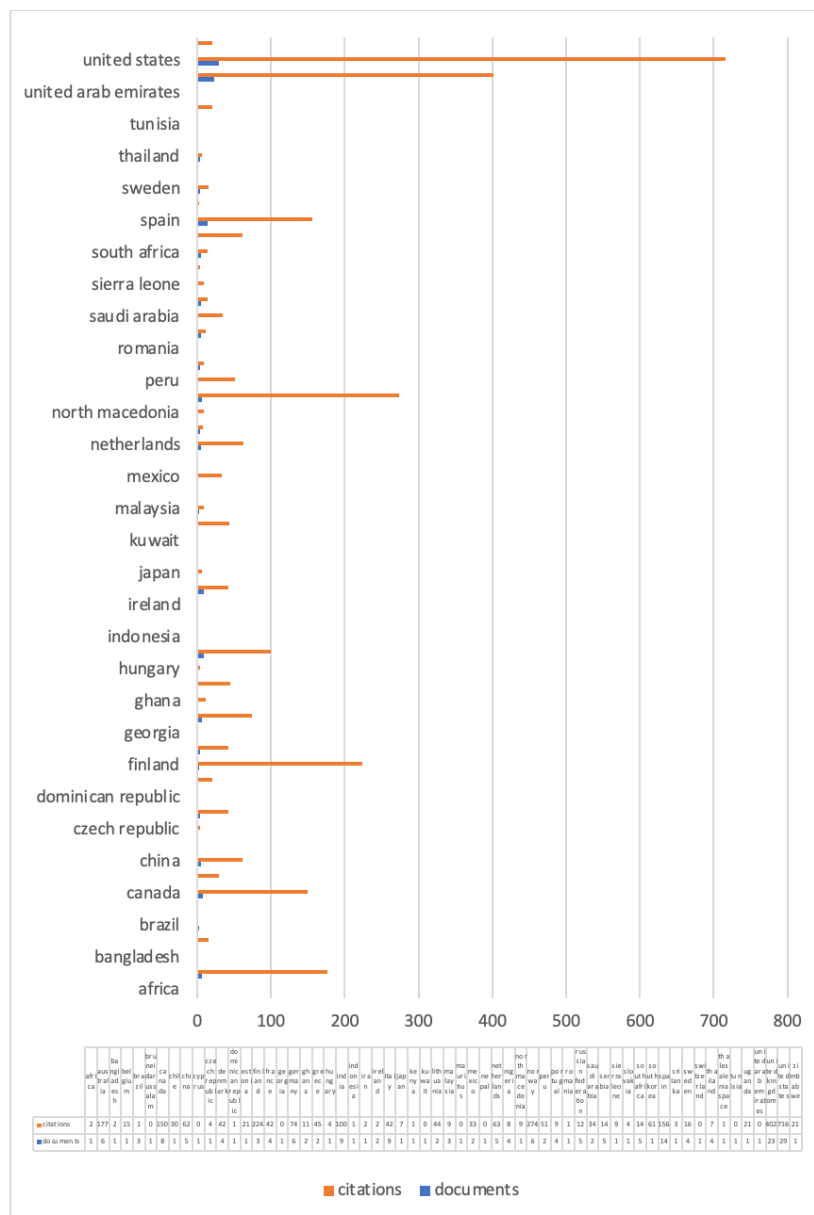


Figure 2: Geography of papers and citations

Considering the different countries' citation trend (Figure 3), it could be easily noticed that the contributions offered USA register the highest citation level. While there is one article from United Arab Emirates that is ranked second for citations.

Top ten countries per documents					Top ten countries per citations				
Selected	Country	Documents	Citations	Total link strength	Selected	Country	Documents	Citations	Total link strength
☒	united states	29	716	8	☒	united states	29	716	9
☒	germany	6	74	6	☒	canada	8	150	6
☒	canada	8	150	5	☒	norway	6	274	6
☒	spain	14	156	5	☒	united kingdom	23	402	6
☒	united kingdom	23	402	5	☒	germany	6	74	5
☒	india	9	100	3	☒	netherlands	5	63	5
☒	norway	6	274	3	☒	spain	14	156	5
☒	italy	9	42	1	☒	finland	3	224	3
☒	australia	6	177	0	☒	india	9	100	3
					☒	australia	6	177	0

Figure 3: Top 10 countries in terms of citations and documents

The analysis of the distribution of publications by scientific journal (Dumay and Cai; 2014) is represented in figure 4.

Selected	Source	Documents	Citations	Total link strength
☒	engineering economics	3	65	0
☒	entrepreneurship and regional develo...	2	243	0
☒	equality, diversity and inclusion	2	90	0
☒	gender, place and culture	2	70	0
☒	iimb management review	2	21	0
☒	international journal of entrepreneuri...	4	114	0
☒	international journal of entrepreneurs...	3	98	0
☒	international journal of gender and e...	6	337	0
☒	journal of business venturing insights	2	0	0
☒	journal of enterprising communities	2	22	0
☒	journal women's entrepreneurship an...	2	4	0
☒	proceedings of the acm on human-c...	2	12	0
☒	sidrea series in accounting and busin...	3	0	0
☒	springer proceedings in business and...	3	8	0
☒	sustainability (switzerland)	3	8	0

Figure 4: Scientific journal distribution

Findings revealed a high fragmentation in the distribution: the analyzed articles analyzed were published in more than 100 scientific journals. As illustrated in figure 4, which lists the most journals, the majority of the papers were published in "International Journal of Gender and Entrepreneurship (six publications) and International Journal of entrepreneurship (four publications), with the remaining journals having from one to two publications.

The analysis also focused on finding out the most cited paper and the citations of papers per year and per author. Table 2 shows the citations received per paper and per year. The most cited paper resulted to be the paper Agnete et al (2013) that provides a state of the art situation of the research related to innovation and gender issues, it is followed by the paper of Amine and Staub (2009) and the paper of Braun (2010)

Obviously, the papers published recently have fewer citations and thus are useful to analyze the most influential papers (authors) in terms of citations. Therefore, most cited paper per year (CPY) is analyzed where the paper of Agnete et al (2013) is confirmed at first place, while the second most cited paper /year is the article of Dai et al., (2019).

Table 3: Top five papers in terms of citations

Authors	Title	Year	Source title	Cited by	CPY	Ranking CPY
Agnete Alsos G.; Ljunggren E.; Hytti U.	Gender and innovation: State of the art and a research agenda	2013	<i>International Journal of Gender and Entrepreneurship</i>	182	16,6	1
Amine L.S.; Staub K.M.	Women entrepreneurs in sub-Saharan Africa: An institutional theory analysis from a social marketing point of view	2009	<i>Entrepreneurship and Regional Development</i>	180	12	3

Authors	Title	Year	Source title	Cited by	CPY	Ranking CPY
Braun P.	Going green: women entrepreneurs and the environment	2010	<i>International Journal of Gender and Entrepreneurship</i>	94	6,7	6
Ranga M.; Etzkowitz H.	Athena in the world of techne: The gender dimension of technology, innovation and entrepreneurship	2010	<i>Journal of Technology Management and Innovation</i>	84	6	9
Martin L.M.; Wright L.T.	No gender in cyberspace?: Empowering entrepreneurship and innovation in female-run ICT small firms	2005	<i>International Journal of Entrepreneurial Behaviour and Research</i>	69	3,6	10

3.1 Cluster and Content Analysis

The phase of content analysis commenced with coupling analysis (Kessler, 1963) performed through VosViewer software which measured the connectivity of each research paper of the sample on the basis of the references that they share (Boyack & Klavans, 2010). The strength of relatedness increases when a document receives more citations. (Kessler, 1963), employing the 158 papers within the data sample. As outlined in the methodology section, the units of analysis were documents and sources, and relevance was assessed by considering articles that predominantly shared at minimum 2 references (Boyack and Klavans, 2010). The outcome of this analysis resulted in 8 clusters and 37 papers, grouped with different colors in the map created by the tool (table 4).

The utilization of clustering was intended to avoid the fragmentation of results and the scattering of related topics across various domains. These clusters were established to amalgamate articles that represented a distinct topic or approach. To facilitate the content analysis of the selected papers, we employed the clustering algorithm developed by Van Eck and Waltman (2017)

By analysing in depth each paper included in the clusters the following research areas are identified.

3.1.1 Research Area 1: “Empowering Women and Technology”

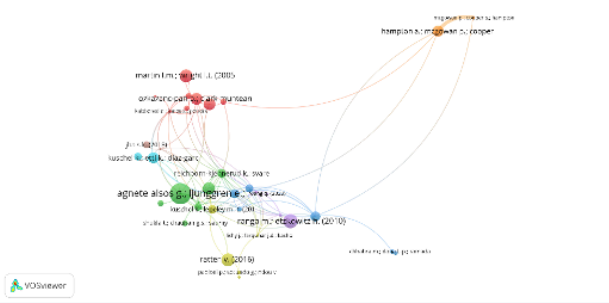
The studies classified in this cluster considered the role of Communication technologies and Digital Literacy on Women empowering and entrepreneurship. Among the studies presenting a specific case study or highlighting the role women empowerment through technological advances are the following: Ekinsmyth C. (2014), Kubberød et al. (2021), Alda-Vidal et al. (2017), Ozkazanc-Pan B. et al. (2018) all use qualitative methodology to conduct their research on women empowerment through technological advances. Ekinsmyth C. (2014) states that women experience structural disadvantages from the outset, hindering them in resourcing their enterprises and establishing strategic alliances. However, it seems that they have learnt to cope with and mitigate these disadvantages through learning to not belong and in doing so, challenge and subvert the masculinized culture. Not belonging brings empowerment to the entrepreneurial learning process, contributing to the theory of belonging. Furthermore, Kubberød et al. (2021) propose the notion of by-passing as a different variant of coping with peripheral status, which seeks to make gender irrelevant. The research draws upon empirical evidence from the entrepreneurial learning of nine women opportunity entrepreneurs in the high-technology sector in Norway. It employs a qualitative phenomenological approach, with retrospective and in-depth interviews to capture and analyze the entrepreneurs’ lived experiences and learning histories. Gupta and Etzkowitz (2021) grounded in a post-structural feminist perspective, exploring the interconnection of women entrepreneurs with their socio-cultural and institutional context. The findings highlight the significant influence of context in shaping opportunities and addressing gender-related challenges in entrepreneurship. Positive outcomes are observed in experiences with academic incubators, contributing to improved gender dynamics and the cultivation of an emerging entrepreneurial culture.

3.1.2 Research Area 2: “Growth and Development of Female Entrepreneurs”

Different studies have concluded that entrepreneurship has documented differences in male and female entrepreneurs’ growth ambitions including Reichborn-Kjennerud and Svare (2014), Gunawan et al. (2021), and Dai et al. (2019). The sample included both genders from middle social class. Further delving into entrepreneurship reveals gender-based drivers, exposing variations in motivations and practices between female and male entrepreneurs. The materials also pioneer an exploration of gender diversity within new venture teams, establishing a positive correlation between increased gender diversity and heightened innovation performance, underscoring the growing influence of women in shaping entrepreneurial skills. The studies conclude that the

findings substantiated that women and men have similar qualities as entrepreneurs, but women's ambitions and values tend to be different to those espoused by men. This influences their growth strategies. Additionally, Cesaroni and Sentuti (2015) conduct a study on bank loans and the differences in gender. They consider three hypotheses. First, if men and women entrepreneurs ask for new bank loans during the crisis. Second, if they obtain required bank loans at the same conditions and lastly, if there are other variables, other than gender, that influence access to bank credit. The analysis of Italian men and women entrepreneurs facing an

Table 4: Cluster analysis table

Bibliographic map			
			
Cluster	Authors	Year	Citations
Cluster 1 (9 items - red)	Alda-Vidal C.; Rusca M.; Zwarteveen M.; Schwartz K.; Pouw N.	2017	12
	Ekinsmyth C.	2014	58
	Gupta N.; Etzkowitz H.	2021	13
	Kubberød E.; Jones S.; Pettersen I.B.	2021	5
	Kumari M.	2020	7
	Martin L.M.; Wright L.T.	2005	69
	May D.; Hosch-Dayican B.; Leisyte L.; Lensing K.; Sigl L.; Terkowsky C.	2015	3
	Ozkazanc-Pan B.; Clark Muntean S.	2018	59
	Pablo-Martí F.; García-Tabuenca A.; Crespo-Espert J.L.	2014	15
Cluster 2 (7 items - green)	Agnete Alsos G.; Ljunggren E.; Hytti U.	2013	182
	Cesaroni F.M.; Sentuti A.; Buratti A.	2015	25
	Dai Y.; Byun G.; Ding F.	2019	61
	Gunawan A.A.; van Riel A.A.C.R.; Essers C.	2021	15
	Reichborn-Kjennerud K.; Svare H.	2014	32
	Shukla T.; Chauhan G.S.; Saumya S.	2018	13
	Striebing C.; Kalpazidou Schmidt E.; Palmén R.	2019	3
	Alonso-Galicia P.E.; Fernández-Pérez V.; Rodríguez-Ariza L.; Fuentes-Fuentes M.D.M.	2015	33
Cluster 3 (6 items – light blue)	Chhabra M.; Dana L.-P.; Ramadani V.; Agarwal M.	2022	9
	Gilmartin S.K.; Thompson M.E.; Morton E.; Jin Q.; Chen H.L.; Colby A.; Sheppard S.D.	2019	25
	Iman, A. Nazarov, Z. Obydenkova, A	2022	10
	Martin L.; Wright L.; Beaven Z.; Matlay H.	2015	39
	Uribe-Toril J.; De Pablo J.; Ruiz-Real J.L.; Pires Manso J.R.	2019	8
	Fraser S.	2019	4
	Kuschel K.; Lepeley M.-T.	2016	30
Cluster 4 (5 items – light green)	Lichy J.; Farquhar J.D.; Kachour M.	2020	3
	Paoloni P.; Secundo G.; Ndou V.; Modaffari G.	2019	7
	Ratten V.	2016	68
	De Rosa M.; Bartoli L.; Charatsari C.; Lioutas E.	2021	5
Cluster 5 (4 items – violet)	Lawton Smith H.; Meschitti V.; Le Roux J.; Panton M.; Baines N.; Poulouvassilis A.; Henry C.	2020	
	Ranga M.; Etzkowitz H.	2010	84
	Wang Q.	2023	2
	Cadenas G.A.; Cantú E.A.; Lynn N.; Spence T.; Ruth A.	2020	25
Cluster 6 (2 items – turquoise)	Kuschel K.; Ettl K.; Díaz-García C.; Alsos G.A.	2020	51
Cluster 7 (2 items – orange)	Hampton A.; McGowan P.; Cooper S.	2011	49
	McGowan P.; Cooper S.; Hampton A.	2013	3
Cluster 8 (2 items – acid green)	Alsos G.A.; Haugum M.; Ljunggren E.	2017	2
	Jha S.K.	2018	21

economic recession indicates limited gender-based differences in accessing credit during the crisis. While some small differences persist, particularly in women encountering greater challenges in securing requested funding, other variables such as age, education, banking history, and industry involvement show minimal impact on credit access. The study suggests that, overall, these factors do not significantly influence entrepreneurs' access to credit during economic downturns.

3.1.3 *Research area 3: "Female Entrepreneurs and Leadership"*

In this cluster, there are some relevant studies focusing on the images of entrepreneurs that tend to reflect male stereotypes, together with the nature of socialisation processes that can generate barriers to female entrepreneurship, creating a "glass ceiling" effect. Martin et al. (2015) collect data on 15 female entrepreneurs with businesses that had progressed beyond the initial start-up phase were selected from national databases. They find that the ability of women to withstand challenges may stem from their readiness to embrace established male models of conducting business and a determination to demonstrate their capabilities by adhering to these standards. Unlike male practitioners, who were often readily acknowledged as skilled entrepreneurs, women encountered additional obstacles in gaining acceptance and credibility due to their perceived "unusual" status. This is also supported by Alonso-Galicia et al. (2014) who show that the influence of close social groups is perceived differently by men and women, particularly as regards the support received for academics' attitudes and perceptions of control over the development of entrepreneurial intention. Lastly, Iman et al. (2022) explore gender dynamics in entrepreneurship within post-Communist societies, utilizing data from 11,617 private firms across 25 Eastern Europe and Central Asian states. The findings reveal that female owners exhibit a heightened inclination for introducing new marketing strategies compared to males. Additionally, the presence of top female managers positively correlates with firm innovation, particularly in the context of increased democratization, which acts as a transformative force in reducing gender disparities across diverse innovative practices.

3.1.4 *Research Area 4: "Women Entrepreneurs in Digital Start-ups"*

As in our study, Kuschel and Lepeley (2016) and Paoloni et al. (2018) use a systemic literature review to highlight the potential of emerging digital technologies. This emerging digital era emphasizes their significant role in enhancing opportunities for women in entrepreneurship. These technologies serve as valuable tools in overcoming constraints faced by women entrepreneurs and contribute to the creation of a more conducive network environment. Furthermore Ratten (2016) tries to understand the role of female entrepreneurs who are intending to start an informal business by focusing on the role of knowledge and innovation. Female entrepreneurship and the role of customer knowledge development, innovation outcome expectations and culture on intentions to start informal business ventures. Lastly, Lichy et al. (2020) investigates how women entrepreneurs use social networking sites (SNS) in marketing their businesses in Lebanon. The authors use a two-phase research design of, first, a panel of specialised business commentators and, second, digital qualitative data collection that enabled access to hard to reach informants. The study shows that women entrepreneurs leverage Social Networking Sites (SNS) to optimize networking for prospecting, communicating, and building relationships with stakeholders. Additionally, SNS plays a role in supporting family units by providing an extra income source and facilitating connections.

3.1.5 *Research Area 5: "Gender Dimension of Technology, Innovation, and Entrepreneurship"*

The study of De Rosa et al. (2021) delves into innovation adoption among Italian female-owned farms, exploring how support services and farmers' entrepreneurial mindset shape these patterns. It emphasizes the necessity for gender-specific policies in rural Italy to address diverse innovation approaches, recognizing the crucial role of understanding gender dynamics within technology, innovation, and entrepreneurship. In the same direction, Ranga and Etzkowitz (2010) spotlight the growing acknowledgment of women's contributions in innovation, technology, and entrepreneurship, previously confined to feminist studies. Their study explores persistent challenges hindering women's presence in scientific and entrepreneurial roles, highlighting their often-overlooked impact in technological advancements and showcasing a significant instance of women leading a major technological innovation during the shift to a Knowledge Society. This evidence is in line with the research of Wang (2023) that concluded that the gendered resilience of these businesses within the realm of technology, innovation, and entrepreneurship amid the pandemic's challenges. Finally, the research piece of Lawton et al. (2020), highlights the gender disparity in academic entrepreneurship, focusing on STEM fields' underrepresentation of women and their challenges in commercialization. It sheds light on commercial activities

at Birkbeck, University of London, revealing men's dominance in leading research grants and factors like networks and organizational support influencing commercial success, offering key insights for universities and investors.

3.1.6 Research Area 6: "Entrepreneurship Gender Gap and Education"

In this cluster aggregates articles that point out the need for further research to address gender gap and pave the way toward gender equality in STEM-driven entrepreneurial ventures. Likewise, Cadenas et al. (2020) in their study underscore the gender disparities in STEM-related entrepreneurship, pointing out the underrepresentation of women in this domain due to systemic biases and social structures. It advocates for bridging this gap by merging insights from women's entrepreneurship and gender dynamics within STEM, emphasizing factors affecting women's participation in STEM-based entrepreneurship. Furthermore Kuschel et al. (2020) discuss the challenges faced by underrepresented students in accessing entrepreneurial education within STEM fields and the implementation of a social entrepreneurship program named "Poder" to address this. It showcases the program's success in significantly enhancing various skills and attitudes among diverse students, highlighting its effectiveness in promoting career development and addressing educational gaps and systemic issues within entrepreneurship and STEM education.

3.1.7 Research Area 7: "Networking and Female High-Tech Entrepreneurship"

This cluster includes papers that investigate the networking and women involved in high-tech entrepreneurship. Hampton et al. (2011) addresses the lack of research on female entrepreneurial networks within male-dominated high-tech sectors. Through qualitative interviews with female entrepreneurs in Science, Engineering, and Technology (SET) fields in Northern Ireland, the study explores the nature, composition, and evolution of these networks over the business lifecycle. It highlights the importance of understanding network quality for female entrepreneurs in SET-based ventures, offering insights crucial for government interventions aimed at enhancing networking effectiveness and supporting women in high-tech entrepreneurship, an area relatively unexplored in existing research on female entrepreneurship. Moreover, McGowan et al. (2013) highlights the significance of networking in high-tech entrepreneurship, especially for women who are underrepresented in technology-based sectors. It notes the lack of comparative research on how male and female entrepreneurs develop and utilize networks, emphasizing the importance of understanding these dynamics for enhancing female engagement in high-tech entrepreneurship. This study employs qualitative methods to explore the nature and quality of entrepreneurial networks among both genders, aiming to uncover patterns and implications that could aid in improving female participation and success in high-tech ventures.

3.1.8 Research Area 8: "Gender Equality in Entrepreneurship Ecosystem"

The studies classified in this cluster considered gender equity in the entrepreneurship ecosystem. Particularly, the first study of Alsos et al. (2017) explores the implementation and impact of a policy initiative, Norway's Program for regional R&D and innovation, aimed at fostering gender balance in regional entrepreneurial ecosystems. The research assesses the relationship between planned gender initiatives and the actual development, finding limited progress in achieving gender balance despite ambitious goals and initiatives. The study highlights a lack of effective tools and limited coherence between policy goals, implemented activities, and reporting requirements. It suggests that while the ecosystem approach addresses industry and firm levels effectively, it lacks measures to involve women effectively. The conclusion emphasizes the complexity of fostering an economic ecosystem suitable for women solely through policy efforts, advocating for a more comprehensive approach addressing gender balance and offering practical tools to achieve these goals. Meanwhile, in the research conducted by Jha (2018), it is emphasized that to fulfill the potential of numerous opportunities, substantial funding, and skilled workforce, the ecosystem must prioritize value creation overvaluation, provide education for young entrepreneurs, encourage a culture accepting of purposeful failures, address India's distinct challenges, and ensure inclusivity within the startup landscape, particularly focusing on gender equality in entrepreneurship.

4. Conclusions and Implications

In conclusion, the research clusters present a comprehensive exploration of various dimensions surrounding women in entrepreneurship, with a specific focus on technology, growth strategies, leadership, digital start-ups, the gender dimension of technology, networking, and the broader entrepreneurship ecosystem. The findings shed light on multifaceted challenges and opportunities that women encounter in their entrepreneurial journeys.

Empowering Women and Technology: The intersection of communication technologies and digital literacy in empowering women entrepreneurs is a critical area of study. This intricate interplay forms the foundation for redefining not only how women engage with technology but also how technology can catalyze their entrepreneurial success. As digital literacy becomes increasingly integral to entrepreneurial ventures, understanding how women harness these technologies becomes paramount. Exploring the specific platforms, applications, and strategies that resonate with women in business provides nuanced insights into their preferences and challenges in navigating the digital realm.

Coping Mechanisms - The Strategy of "Not Belonging": Delving into the coping mechanisms adopted by women entrepreneurs, particularly the strategy of "not belonging," unveils a profound aspect of their resilience. This strategic approach suggests that women entrepreneurs navigate structural disadvantages by forging their own paths and challenging traditional norms. Further research can dissect the nuances of this strategy, exploring how it evolves over time and its impact on entrepreneurial decision-making.

Contextual Influences and Tailored Support Structures: The acknowledgment of contextual influences on women entrepreneurs underscores the need for customized support structures. An in-depth examination of various contexts — be it socio-cultural, economic, or institutional — provides a roadmap for tailoring support mechanisms. Understanding how different contexts shape the entrepreneurial journey can inform the development of targeted interventions and policies that resonate with the diverse needs of women entrepreneurs.

Positive Outcomes and Academic Incubators: The positive outcomes observed in experiences with academic incubators offer a glimpse into the transformative potential of structured support systems. Investigating the specific elements within academic incubators that contribute to women's success unveils best practices and models for replication. Academic institutions, policymakers, and industry stakeholders can draw inspiration from these success stories to foster an environment where women entrepreneurs thrive.

Female Entrepreneurs and Leadership: Overcoming deeply ingrained stereotypes requires a concerted effort to challenge traditional perceptions. The influence of social groups on women's entrepreneurial journeys emphasizes the critical role of support networks and mentorship programs. Efforts to redefine accepted norms and celebrate the unique contributions of female entrepreneurs are vital for dismantling barriers to leadership.

Women Entrepreneurs in Digital Start-ups: The transformative role of emerging digital technologies in dismantling constraints faced by women entrepreneurs is evident. Leveraging social networking sites not only optimizes business interactions but also underscores the pressing significance of digital skills in navigating the complexities of the contemporary entrepreneurial landscape.

Entrepreneurship Gender Gap and Education: Bridging the gender gap in STEM-driven entrepreneurial ventures necessitates a comprehensive approach. Addressing systemic biases and implementing impactful social entrepreneurship programs is crucial for empowering diverse students and reshaping attitudes within STEM education.

As implications we highlight the need for ongoing research in women's entrepreneurship, emphasizing:

1. Longitudinal Studies: Explore the dynamic evolution of women entrepreneurs over time, revealing the impact of external factors on their trajectories.
2. Technological Adoption: Investigate how rapid technological changes influence women entrepreneurs, shaping their business landscape and providing new growth avenues.
3. Policy Evaluation: Assess the effectiveness of existing policies supporting women in entrepreneurship, offering insights for refining strategies and interventions.
4. Institutional Support: Examine the role of institutions in supporting women entrepreneurs, with findings informing the creation of more conducive environments.

Addressing these areas can enhance our understanding of challenges and opportunities, contributing to policies fostering gender equality. Ongoing collaboration among academia, policymakers, and industry is crucial for creating an environment where women thrive as entrepreneurs.

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Adapting Organizational Inclusivity Through Empowering Gender-Diversity

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Abstract: With an increasingly diverse workforce, organizational efficiency needs to consider the measurement of sustainability through the empowerment of social identities. When organizational leaders intentionally foster a culture that values their gender-diverse stakeholders, organizational efficiency increases. This article reviews how organizational leaders are able to increase their productivity, efficiency and overall organizational sustainability through adapting to inclusive practices. Sharma (2019) notes that initiatives to enhance diversity, equity, and inclusion can significantly enhance a company's performance, resonating particularly with newer generations of employees who seek meaning and purpose in their work. The organization's environment has the opportunity to facilitate a stronger stakeholder-focused culture which emphasizes inclusivity. Through the evaluation of Diversity, Equity and Inclusivity principles as well as analyzing the intersectionality of Gender-Diversity, this article highlights how organizational inclusivity must empower its stakeholders. Social Identity Theory presents how individuals are able to thrive through their authenticity. This leads to workplace leaders being presented with the organizational need of adapting to include equitable practices for inclusivity. As social identity is a prevalent part of employee's psychological-safety, organizations need to measure their efficiency through efforts of inclusivity. Workplaces must value the psychological-safety of all of its stakeholders in order to thrive as an entire organization (Frazier et al., 2017). Current research demonstrates the need for organizations to practice alignment of stakeholders and collaboration for productivity (Zhenjing et al., 2022). However, the gap in current research presents that gender identity is not currently considered as a social identity that needs inclusivity efforts in the workplace. When organizations adapt their practices to enable all stakeholders to thrive through inclusive efforts, overall organizational efficiency increases. Stringer (1999) discusses how the facilitation and implementation of change as part of action research projects can help create systemic changes. This type of change to the systems of the workplace through equitable practices for gender-diversity would create change for future generations in the workplace.

Keywords: Organizational Efficiency, Gender-Diversity, Social Identity Theory, Empowerment

1. Introduction

As new emerging diverse employee populations continue to contribute to the growing workforce. Gender-diversity must be considered for efforts of inclusivity. Gender-diversity encompasses the intentional effort of diversifying a workforce through different social identities, and other underrepresented gender minorities (Keller et al., 2021). This can include those who identify as transgender, gender-expansive, queer, as well as cis-gender (not transgender identifying), when the social dominant group is not cis-gender identifying.

Sexism is a prevalent issue when organizations are seeking to improve their inclusivity efforts. Similar to experiences of sexism faced by cis women, Trans Feminine individuals also experience a pay gap. This is represented by a pay decrease of approximately 30% after transitioning (Carpenter et al., 2020).

Similar to inequitable workplace systems, workplace discrimination can exist in many forms preventing practices of inclusivity from existing. Those who are gender-diverse risk negative workplace psychological safety. A result of both cultural biases and a lack of policy defending the social identity of individuals (Martinez et al., 2017). Social identity must have a psychologically-safe workplace to exist successfully. This study is centered on the research question: how do gender-diverse individuals experience organizational inclusivity?

2. Review of Literature

Han & Roh (2020) discuss how job satisfaction influences how team members interact with an organization and the need for psychological safety. When this is overlooked, teams have lower satisfaction, alignment, and communication. Dowell et al. (2019) discuss how collaboration and alignment are needed in order for organizations to have more robust communication and better performance. Other researchers have presented that productivity and value are attributed to how one identifies in an organization and their level of trust and comfort (Arasli et al., 2020).

Other trends in research discuss how work efficiency is impacted by discrimination leading to anxiety and depression. In these examples, we can refer to the research by Cavanagh et al. (2021) to determine how policies, practices, and interventions determine how discrimination impacts employees' mental health. Workplace

psychological safety influences not just individuals but entire systems. Clark et al. (2020) argue that there is a greater cost for society as a whole when these issues are not acknowledged or addressed. There is a need for workplace psychological safety to be addressed at a foundational level. Volevakha et al. (2021) states that workplace psychological safety is a basic human need, which is why it should be a priority and an integral part of organizational policy. In workplaces where psychological safety is not a priority, there is a risk of negative performance for the overall organization (Clark et al., 2020). For organizations to have an inclusive workplace culture, participants must engage in collaboration and effective information sharing (Dowell et al., 2019).

3. Gender Diversity

Gender-Diversity can include anyone who identifies as a gender, outside of the norm of a social dominant group. Matsuno & Budge (2017) present that these issues extend to those who identify as gender expansive or non-binary, making up to 1/3 of the transgender community. As younger generations of gender-diverse individuals openly transition while already being hired or working in an environment, new lived experiences emerge. As a result of this, Beauregard et al. (2018) discuss how workplaces still exclude protections for gender-diversity in workplace policies. The lack of visibility has contributed to the stigma and discrimination faced by this group. Huffman et al. (2020) emphasize the need for more research to contribute to workplace lived experience accounts of the gender-diverse population. This study demonstrated how organizations who fail to adapt to gender-diversity impact their own organizational wellbeing. This aligns with (Martinez et al., 2017), who argue the need for more research and visibility to be conducted as it can predict work outcomes for gender-diverse workgroups. Other scholars argue that policing against gender-diverse bodies needs to be prioritized (Bolivar, 2017). The different variations of acknowledgment of the visibility of the community have impacted the way research, policies, and how gender-diversity is generally represented (Parmenter et al., 2020).

4. Workplace Contract Theory

A workplace psychological contract exists when stakeholders have trust, voice, and expectations with their organizations (Guo, 2017). Research by Wen et al. (2022) demonstrates that a violation of workplace psychological contracts among employees can lead to consequences in performance. Some employees may have negative feelings that convert to incivility, which can occur at any available opportunity for revenge. This research highlights the areas of negative repercussions and the impact of workplace contracts not being met. Counterproductive behavior can be a direct result of a breach of the workplace psychological contract. Parr & Howe (2021) discuss how probing questions or inappropriate comments by coworkers can be a breach of job expectations or workplace contracts. This may occur when stakeholders are not perceived or treated equally. Ghani et al. (2020) discuss how often, when employees experience negative or abusive behavior from their coworkers or management, misalignment and negative work performance are the result. This can be both intentional and unintentional. Arasli et al. (2020) define psychological contract violation as an indicator of potential favoritism, insecure job climate, or turnover intention. A positive workplace psychological contract would include employees feeling secure in the future of their organizations where they can be truthful in their identity and voice concerns, or organizations run the risk of a detrimental habit of information hiding (Ghani et al., 2020).

5. Employee Disengagement and The Cost to Organizations

When evaluating the impact of psychological safety in the workplace, the cost of employee disengagement is an indicator that has a financial impact. Mueller (2019) discusses how detrimental behaviors and reduced stamina contribute to organizations losing both employees and money. The concept of short-term benefits accompanied by long-term costs is often displayed by employees who are disengaged due to reasons such as low psychological safety or workplace contracts being breached. Research by Rasdi et al. (2021) presents that greater levels of financial insecurity and burnout are associated with greater levels of work disengagement. This pertains to both organizations as well as individuals. The psychological contract theory of reciprocal obligations between employees and the organization impacts the engagement level within the organization (Azim et al., 2020). This is also where financial implications take place. Deviant behavior, increasing or decreasing, has lasting effects.

On the contrary impact, other research suggests that high engagement can lead to positive team performance. In a study by Bakker & Albrecht (2018), predictors were discussed for team success and drivers of motivation. Employee engagement was demonstrated to be viewed as a good predictor of important employee, team, and organizational outcomes. Other research, such as Mueller (2019), discusses how environmental circumstances

and the individual's perception of these contextual factors is what contributes to the engagement of employees and its cost to organizations, such as organization costs like impaired logical reasoning, cognitive impairment, and foolish and disproportional risk-taking. Organizations that value crucial decision-makers need to consider the cost of disengaged employees. Disengaged employees may engage in avoidance, as well as poor coping mechanisms for conflict (Mostafa et al., 2021). In organizations that experience attrition as a threat, disengagement of employees has a considerable cost. Research by Rasdi et al. (2021) shows that the result of disengagement created a culture of resignation. This included organizations with employees who needed and wanted solutions to problems but did not feel a workplace safe enough to be engaged and seek resources.

6. Equity in the Workplace

Equity in the workplace looks different for different stakeholders. The term "equity" has been conceptualized as fairness, where individual or community needs are considered (Lanfranconi et al., 2020). Additional research demonstrates that psychological safety is a crucial determinant of equity in the workplace (McCluney et al., 2017). Equity encompasses numerous forms of intersectionality and identity. Organizations that value equity in the workplace traditionally have candidates who apply due to numerous factors. While organizations that lack equity face issues with both applying and hiring candidates (Flory et al., 2021). Another issue is that if intersectional identities lead to intersectional discrimination, then multiple discrimination may affect candidates' job search (Staiger et al., 2018). This contributes to similar demographics being perpetuated in the workforce (Isaacs, 2020). This research also demonstrated that skills, productivity, work, and leadership are judged differently on the basis of gender alone. This system creates inequity in the workplace. When experiences of equity involve prejudice, it can be defined by the person experiencing it as having more conscious feelings of negative affect (Stephens et al., 2019)

Equity encompasses multiple historically marginalized groups. For example, research by Isaacs (2020) discusses the narrative of female-identifying people. This entails how female-identifying people are significantly less likely than men to be promoted to senior management roles. In comparison, other researchers like Chaudhry (2020) discuss the intersectionality of being Black Transgender and Female identifying as it relates specifically to the sexual and class exploitation of all black women. Equity efforts in the workplace need to be inclusive to all demographics to be effective for all stakeholders. When equity is present in the workplace, intersectional identities are acknowledged, and resources are made present through previous intentional efforts. In research presented by Stephens et al. (2019), equity in the workplace is made present by actions taken to reduce workplace bias. However, it is important to note that different understandings of equity or equality and corresponding practices impact how perceived disparities are potentially perceived (Lanfranconi et al., 2020).

This requires multilevel interventions, such as transformational leadership interventions that are made with the intention of disrupting bias across all organization levels. Research by Onyeador et al. (2021) suggests that equity in the workplace looks like preparing stakeholders to engage with responses from dominant group members and to engage in implicit bias training.

7. Methods and Data Analysis

A dual-methodological approach comprising interpretative phenomenological analysis (IPA) and hermeneutic phenomenology was used for this study. Through semi-structured interviews as the primary investigative tool, the study sought to capture the nuanced lived experiences, reflective insights, and meaning-making processes of gender-diverse empowerment. The overarching objective was to explore the contextual dynamics surrounding the experience of empowerment derived from the need of efforts of inclusivity within organizational structures for eleven gender-diverse participants. A supplementary analytical lens was applied to scrutinize the influence of Transformational Leadership Theory and Intervention on the psychological safety of participants. The selection of an interpretive phenomenological approach was predicated upon its participant-centric and meaning-making attributes. This methodological choice was grounded in established frameworks and guidelines within qualitative research, drawing upon the works of Creswell (2017), Miles and Huberman (1994), and Saldana (2015).

The methodology of this study encompassed the utilization of Zoom Auto Transcription for the transcription of audio recordings. The obtained transcripts were meticulously examined in Data Analysis. Verification of the accuracy and fidelity of responses was ensured through the dissemination of transcripts to study participants and bracketing by the lead researcher. The organizational and coding process of the interview transcripts was executed through InVivo software to facilitate systematic data analysis. A thematic analysis methodology was

employed to discern patterns and commonalities in the responses and collective experiences of interviewees. Value-coding and phenomenological themes were used. This systematic analytical process afforded a comprehensive evaluation of the meaning-making responses provided by interviewees, thereby furnishing invaluable insights aligned with the overarching research objectives of the study.

8. Participants

This study examines gender identity within a complex spectrum. Participants remain anonymous through assigned numbers. Limitations include a small sample size due to individuals comfortable discussing workplace discomfort, trauma, or discomfort without causing further harm. Access is limited to those willing to disclose their gender identity. All 11 participants provided oral consent, and their recordings were deleted after coding, aligning with Creswell & Creswell's (2018) recommendation for qualitative research sample sizes. For IPA studies, a sample size ranging from 3 to 10 is appropriate (Creswell & Creswell, 2018). Small sample sizes, as suggested by Pietkiewicz and Smith (2014), enhance the richness and understanding of each participant's world. Assigned numbers protect intersectional identities during the discussion of data findings.

9. Findings

The three core themes that were developed demonstrated the most consistent patterns of meaning-making across the narratives of all 11 participants. Data analysis revealed three emerging themes from the participant's narratives. The first theme discusses the organizational need to adapt to inclusivity. The second theme presents the cost of not adapting to organizational inclusivity. The third theme identifies how transformational leadership interventions empower gender-diversity.

10. Need for Adapting to Inclusivity

Table 1: First Theme: Organizational Need for Adapting to Inclusivity

Organizational Need for Adapting to Inclusivity	
Representative Quote	Interpretation
Participant 10: I know of people who have left their jobs due to discrimination and the difficulty that those individuals then have to endure in finding other means of employment is akin to criminality.	The risk of not adapting to inclusivity includes losing employees and high rates of turnover for gender-diverse individuals.
Participant 11: I need a work environment that honors my identity and truth. A place that lets me feel seen and heard and wants to celebrate me. Without that, I don't have a desire to be a part of that environment.	Empowering gender-diversity requires organizational adaptation that celebrates all identities.

In the mentioned excerpts, Participants Ten and Eleven discuss how their experience with an organization without inclusivity efforts facilitated their quitting process. Their previous organization's lack of implementing efforts of inclusivity has impacted both their psychological safety as well as ability to do their workplace responsibilities. This workplace environment is discussed by both participants that does not facilitate organizational growth, nor authenticity.

In this excerpt on Table 1, Participant Eleven describes their account of having management not "honor" their identity. To provide additional context, Participant Eleven mentioned in their interview that this quitting resulted in them taking their book of business to another organization. When organizations are not willing to treat their stakeholders with inclusive-centered processes, it leads to resentment and low morale. Research demonstrated by Cannonier & Galloway (2020) shows that in unfavorable work environments, there is a greater risk of demotions, discrimination, and termination of employment where the reasons do not document issues related to job performance. This demonstrates how lack of inclusivity ultimately resulted in stakeholders quitting and benefiting a different organization in the same industry.

11. The Cost of not Adapting to Organizational Inclusivity

Table 2: Second Theme: The Cost of not adapting to organizational inclusivity

The Cost of not adapting to organizational inclusivity	
Representative Quote	Interpretation
Participant 10: Discrimination in the workplace produces low self-esteem and a hazardous culture that negatively impacts the bottom line Participant 4: This would occur every day. It was jokes in zoom meetings they would just be so angry and going back and forth about people who listed pronouns in signature and coworkers would be so upset about how people identify and they would say I identify as a pineapple...It would be 30 mins out of an hour long meeting and it would really take the meeting off topic all the time. It was enjoyment to them.	Organizations experience a financial impact for enabling discrimination, The cost of lack of gender-diverse empowerment is real company time that converts to dollars after prolonged time periods.

The theme of “cost” for organizations that do not adapt for inclusivity is present in all eleven participants. All participants discussed how social identity has contributed to organizational financial impact through workplace experience. In participant ten’s account, they describe how their experience of discrimination in the workplace has impacted their psychological-safety and in turn impacts the culture and bottom line of their organization. When people do not

In Participant four’s account, they describe how through multiple team meetings a week, a team of five executives would constantly spend time making jokes about people putting their gender-identity or pronouns in their email signature. The total time amounted in being 30 minutes out of 60 minute long meetings, five days a week, across five team members. This results in an on average 50% lower productivity rate across an entire team due to not adapting to inclusive efforts for gender-diversity. When organizations empower their stakeholders, instead of enabling “othering”, organizational inclusivity can occur. These efforts have been shown to boost productivity and promote workplace loyalty and performance (Kundu & Mor, 2017). While these accounts both highlight the positive and negative effect of this, the phenomenon of the relationship between discrimination existing in the workplace in relation to how an organization is impacted financially is revealed. Contrarily, it also demonstrates how when workplaces value inclusivity there is also opportunity for growth and higher profits.

As shown in Table 2, Participant Ten mentions in their interview that “discrimination in the workplace produces low self-esteem and a hazardous culture that negatively impacts the bottom line.” They discuss this experience as it relates to the context of workplaces losing employees due to them facing discrimination. However, on the other side of this perspective, the theme of diversity being necessary in an organization to create positive financial impact was shared by Participant Four.

12. Need for Transformational Leadership Intervention

Table 3: Third Theme: Need for Transformational Leadership Intervention

Need for Transformational Leadership Intervention	
Representative Quote	Interpretation
Participant 1: I had one coworker pull everyone aside to make sure use the right pronouns. The original store manager didn’t feel comfortable correcting other employees and didn’t stand up for anyone and didn’t have the competence or guts to correct people or issue any warnings or ramifications. Participant 5: Being in a place that is ostracizing and othering makes me feel disconnected from my body and anxious mentally. This is how work makes me feel on the very worst days, when my identity is erased, or terrible things are happening in the news to my community that I cannot talk to my colleagues about. For this reason, I would appreciate community and visibility at work,	Leaders must make interventions in order to adapt their organization to inclusivity. Transformational Leadership Interventions can impact how their stakeholders experience their role, and contribution to the organization’s performance.

The emerging theme as present in Table 3 of “Need for Transformational Leadership Intervention” demonstrates an example of how participants in the study could have benefited through leadership intervention in their workplace. While Participant Five expressed feelings of being “anxious” and “being in a place that is ostracizing”, Participant one discusses how their manager didn’t stand up for them. These narratives represent how managers, clients, and coworkers can help facilitate an “equitable” treatment for everyone in the workplace through interventions. Specifically for management and leaders, a common recurring theme is using this intervention period to adapt other stakeholders to inclusivity.

Participant five describe how their identity feels “erased” as a result of individuals othering them in the workplace. In this account the focus is put on “visibility” as being a changing point for a different experience. While this account focuses on the inequity of gender-identity, it also highlights how leaders can better adapt their organization for future workforces by promoting visibility and inclusivity efforts.

13. Discussion

Organizations need to address how to create workplace psychological-safe environments for everyone’s identity. The participants in this study bring to life how there is a direct relationship of organizational efficacy through time and energy. These narratives capture the lack of organizational efficacy, as it relates to workplaces not adapting to inclusive efforts for their employees. The findings of this study also demonstrate the actual impact on the organizations’ own bottom line. Instead of organizations failing to adapt, gender-diverse empowerment practices could be implemented to create environments that encourage all stakeholders to thrive. This would lead to future positive “Organizational Financial Impact” and prevent cases of discrimination, job loss, and overall deductions from organizations’ “bottom line” from occurring. The conclusions that are evident from the analysis align with the concept of inequity, and lack of inclusivity leading to less psychological-safety in the workplace (Herndon & McCline, 2017). The salient evidence-based points effectively addressed how gender-diverse discrimination can exist at all levels of the workplace. To prevent this impacting an organization, organizational leaders must make interventions to adapt. The problem of lack of identifying gender-diversity as a category that exists in the workplace inclusivity culture currently, has facilitated this lack of organizational efficiency for everyone.

The findings of this study contribute to how leaders understand organizations as they relate to equitable and inclusive practices. Transformational Leadership change can occur when there is buy-in from all stakeholders at all levels (Thompson et al., 2018). Leaders must be informed and ready to make intentional efforts so that everyone experiences workplace psychological-safety.

14. Final Remarks

The purpose of this study was to understand how the empowerment of gender-diversity impacted a workplace by exploring how individuals experience their identity as it relates to efforts of inclusivity and psychosocial safety. These emerging themes emphasize the need for leadership intervention as it relates to protecting the psychological-safety of different social identities in the workplace, while benefiting the organization. As a result, recommendations have been advised to further the growth of the study of gender-diversity.

15. Recommendations

The recommendations for future studies include acknowledging that different gender identities exist and hold relevance for organizational empowerment and efficiency. As the discovered limitations present the nuances of different gender identities, it is notable that workplaces need to create changes as they specifically relate to emerging identities in the workplace.

15.1 Inclusive Environments

Leaders must create workplace environments that facilitate workplace inclusivity. This is not possible when inequitable treatment and processes exist. Workplace assessments and surveys can be used to evaluate current inclusivity efforts. The processes begin with pre-hiring practices and evaluating current policies that limit gender expression and bias.

15.2 Limit Bias Through Connection

An additional recommendation from the findings suggests that leaders must invest in intentional practices to limit biases associated with intersectional social identities. This can be done through storytelling methods, educational workshops, and team collaboration.

15.3 Transformational Leadership Intervention for Changed Culture

Based on my findings, it is apparent that Transformational Leadership could be a solution for organizational efficiency. A culture that values an appreciation for inclusivity and group alignment requires focusing on the individuality of stakeholders. Transformational leaders can increase their team's performance by increasing actions that value stakeholder diversity.

These recommendations are supported through the theme analysis of how participants experienced their workplaces with the intersectionality of gender-diversity. If implemented, these recommendations could have a direct impact on how gender-diversity psychological safety is experienced in the workplace. This recommendation also implies that by creating more work environments that are psychologically safe for gender diversity, other elements of diversity in the workplace will be able to thrive.

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Gender through Media: Images of Contemporary Masculinity in Two Pakistani Movies

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Abstract: Gender and its media representations inform us about a specific culture. This research paper is an in-depth qualitative study of the representations of contemporary masculinity and queerness in the Pakistani media and popular culture. The paper analyzes two Pakistani movies: Sarmad Khoosat's *Zindagi Tamasha* (Circus of Life) (2019) and Saim Sadiq's *Joyland* (2022). The aim of the study is to explore the concept of masculinity in the Pakistani society and its media representations in popular culture and cinema. Masculinity is interlinked with physical appearance, social norms and religious values in the Pakistani society, whereas queer behaviour is generally condemned because of cultural stereotypes and religious injunctions. The study analyzes the impact of social customs and stereotypes on the perception of masculinity in the male characters with special focus on the queer inclinations manifested in their behaviour. The analysis of the two movies is conducted through contemporary masculinity theories to identify current manifestations of masculinity in the Pakistani society through the media representations. The findings of the research indicate that contemporary masculinities in the Pakistani society and media depict a wide range of variation from hegemonic masculinity to hybrid masculinity, inclusive masculinity and queer masculinity.

Keywords: Contemporary Masculinity; Hegemonic; Inclusive; Hybrid; Queer.

1. Introduction

The field of critical studies on men and masculinities is an emergent area of studies. Various definitions of masculinity and several theories on masculine identities are abounding in academia currently. Brian Wallis, Maurice Berger, and Simon Watson state in their book *Constructing Masculinities* that masculinity cannot be perceived as a "monolithic entity, but as an interplay of emotional and intellectual factors – an interplay that directly implicates women as well as men, and is mediated by other social factors, including race, sexuality, nationality, and class" (1995 p. 3). Whitehead and Barret define masculinity as "the behaviours, languages, and practices, existing in specific cultural and organizational locations, which are commonly associated with men and thus culturally defined as not feminine" (Whitehead & Barret, 2001, pp. 15-16). The aim of masculinity studies is not to "reinforce patriarchy" but to "challenge the myth that men in general benefit from it" along with celebrating "a multiplicity of masculine identities" (Hobbs 2013 p. 2). The current paper is a qualitative analysis of two Pakistani movies, Sarmad Khoosat's *Zindagi Tamasha* (Circus of Life) (2019) and Saim Sadiq's *Joyland* (2022). The purpose of the study is to understand the various forms of masculinity in contemporary Pakistani society as depicted in indigenous cinematic representations. The study aims to bridge the gap in the identification, analysis and categorization of currently prevalent masculine identities and forms in the Pakistani society and media representations. It is also directed towards adding to scholarly literature on Pakistani film industry.

Worldwide, there are changes in perceptions of masculinity. A study by Connor et al. analyzed middle class men between 16 and 25 in 33 scholarly papers to identify contemporary Western masculinities and the performance of masculinity according to the four criteria of emotional intimacy, inclusivity, physicality and resistance (Connor et al, 2021, p. 15). Their study posits that most young men "challenge orthodox masculinities" depicting an influence of Inclusive and Hybrid masculinities (Connor et al, 2021, p. 15). The present study examines the influence of contemporary Western masculinities in Pakistan. The paper analyzes the male characters according to the concepts of hegemonic masculinity, hybrid and inclusive masculinity, queer masculinity, caring masculinity and toxic masculinity. By situating the Pakistani representations and perceptions of masculinity within a broader context, the paper links local concerns with global trends.

Since Pakistan is an Islamic state the ideals of masculinity are also influenced by religion along with race, class and sexuality (Sara Ali, 2022, p. 28). In a study by Maleeha Aslam, *Islamism and Masculinity*, the author states that aggressive masculinity, generally considered as hegemonic masculinity, has been the hallmark of Muslim men before and after partition (Ahmed 2014 p. 140). The impact of Muslim countries' culture on Pakistani masculinity is also visible in the form of physical displays of religiosity like men keeping beards and women wearing long cloaks (Ahmed 2014 p. 143). In order to appropriate the study within a local context, the paper adopts a masculine identity scale for Pakistani context developed by Sara Imtiaz and Anila Kamal (2023).

2. Literature Review

Gender is a fluid and contested area of study with variations in its interpretation, representation and performance. This section highlights the notion of gender performativity, some key theories of masculine gender interpretation and its representation in media.

One of the ways to interpret gender can be gleaned from the theory of performativity proposed by Judith Butler. According to Butler, gender is not inherent, rather dependent on external cultural factors, so it is performed and hence changeable. Butler states that the “expressions of gender” are not based on any “gender identity”, rather the “identity is performatively constituted by the very “expressions” that are said to be its results” (Butler 1990 p. 25). There are a number of theoretical perspectives related to masculine identities in academia, all of which describe different types of performances of male gender like the perception and performance of masculine gender as hegemonic, hybrid, inclusive, queer, caring or toxic.

One of the foundational theories of masculinity is Raewyn W. Connell’s theory of hegemonic masculinity. Connell analyzes the Western cultural model based on two power structures, that of men’s domination over women and hegemonic masculinity’s domination over “subordinated and marginalized masculinities” (Connell 2005, p. 77-81). The key characteristics of hegemonic masculinity are power, aggression, authority, physical prowess, competition and heterosexuality (Connell 1987, p. 186-187).

Connell’s theory is challenged by Demetrakis Demetriou’s concept of hybrid masculinity. Hybrid masculinity incorporates elements of “marginalized and subordinated masculinities” (Bridges, 2014, p.246). Demetriou’s notion of hybrid masculinity focused on the assimilation of gay culture into heterosexual male practices to produce “new, hybrid configurations of gender practice” that perpetuate the dominance of men over women (Demetriou, 2001, pp.350-351). Scholars have considered the impacts of hybrid masculinity in three ways. Some believe that it has no significance other than a localized variation; others believe that it is prevalent across cultures and has lessened inequality in men’s relations; a third school-of-thought asserts that hybrid masculinity causes changes in systems of power without challenging them (Bridges, 2014, pp. 247).

In another model of inclusive masculinity, Eric Anderson arranges masculinities horizontally rather than vertically to prove that contemporary masculinities mitigate inequalities and are more inclusive rather than exclusive (Bridges, 2014, p. 248). Another category of masculinity is queer masculinity defined as “ways of being masculine outside hetero-normative constructions of masculinity that disrupt, or have the potential to disrupt, traditional images of the hegemonic heterosexual masculine” (Robert Heasley, 2005, p.310). Heasley has proposed the category of “straight-queer men” to give linguistic and theoretical credence to the gay/ queer experiences of straight men (p.312). Heasley calls his attempt to create a space for queer masculinity a “queering of hegemonic hetero- masculinity” (Heasley, 2005, p.320). He has suggested a typology of five categories of queer- straight males (Heasley, 2005, p.315). Yet another framework to view masculinity is the concept of caring masculinity which is a “pro-equality masculinity” (Kluczynska, U., 2021 p. 11). It is based on the provision of care to one’s family, community and oneself and also maintaining close inter-personal relationships (Kluczynska, 2021 p10).

Another emerging term which has been in vogue for some time now is toxic masculinity. The term was coined in the 1980s and has been rapidly used since 2014 (Harrington 2020 p2). The term has been used in different contexts. Feminists have applied the term to homophobia, misogyny and violence by men (Harrington 2020 p5). In a research by Terry Kupers, the author maintains that “toxic masculinity involves the need to aggressively compete and dominate others and encompasses the most problematic proclivities in men” (Kupers 2005, 713-714).

The representation of masculine gender in Pakistani films is lesser study area of research. A greater number of scholarly works on gender in films is available for the South Asian or Indian cinema. There is a dearth of research on Pakistani film industry, often studied under South Asian films. So, it will be useful to understand the larger South Asian context of gender representation in films.

In a study by Gita Rajan on the representation of masculinities in South Asian cinema, the author analyzes three Indian films, finding shifts in representations of masculinity. The films portray society’s “chauvinism and homophobia” (Rajan 2006 p 1111), “cultural patriarchy” (Rajan 2006 p 1112) and “different kinds of heterosexual masculinities” in contrast to the poor depiction of homosexuality (Rajan 2006 1119). Rajan’s study is limited in its scope as it is only focused on Indian films. It would have been a portrayal of South Asia had the researcher conducted a comparative analysis of Indian, Pakistani, Bengali and other films.

Another researcher, Sangeeta Datta, studies the “process of gender representation in Indian cinema” specifically (Datta 2000 p.72). She analyzes Bollywood films of the eighties and nineties from a national and global perspective (Datta 2000 p. 75), asserting that the nationalist agenda behind the films is interlinked with the female body (p 73). Works by women filmmakers promoted “female subjectivity” and the “female gaze” (p73). Besides, the genre of female avenger films depicted women’s physical vulnerability and rape scenes, possibly predicated on “sado- masochistic pleasure” (p 75).

In the Pakistani context, Shahjehan Saleem Siddiqui’s work on gender representation in Pakistani film industry analyzes three Pakistani movies. Siddiqui finds that the balance of power between the sexes has changed. While gender stereotypes persist in these films, the identities of characters also signal a shift away from traditional views (Siddiqui 2014 p 44). Siddiqui finds that male gender is no longer hegemonic and female gender has its own voice while queer representation can become “possibly better” (Siddiqui 2014 p 52).

Another work by Zarbab Toor, Dr. Farah Kashif and Dr. Urooj Fatima Alvi examines gender contestation in Pakistani TV dramas using multimodal analysis based on representational, interpersonal and textual meanings (Toor, Kashif & Alvi, 2023, pp.159). They also included a questionnaire to test the impact of media representations on the minds of people. Most participants depicted a strong influence of media, considering the negative media images of women and real women as the same (Toor, Kashif & Alvi, 2023, p.175). The researchers affirm that these are contested images of women and challenge this depiction by terming it a “false reality” (Toor, Kashif & Alvi, 2023, p.176). In short, there is a lacuna in literature on masculine gender in Pakistani cinema. The present study aims to fill the lacuna in literature on masculine gender in Pakistani cinema specifically and the existence of various kinds of masculinities in Pakistani society generally.

3. Theoretical Framework

The current paper will utilize the contemporary Western ideologies of masculinities along with a home-grown model of measuring masculinity ideologies. The Western masculine ideologies used are hegemonic, hybrid, inclusive, queer, caring and toxic masculinity. The Pakistani psychometric scale for measuring masculine ideologies is proposed by Sara Imtiaz and Anila Kamal.

According to this psychometric scale, 421 participants including 268 men and 173 women between 19-51 years were taken as sample (Imtiaz and Kamal, 2023, p.19) to identify prevailing ideologies related to masculinity present in contemporary Pakistani society. The item pool was generated by creating statements that reflected specific male ideologies of physical, mental and emotional strength, sexuality, competence, power and control, physical demeanour, roles and responsibilities, and male privilege (Imtiaz and Kamal, 2023, p. 25). Participants were asked to respond to the item bank statements on a five-point scale ranging from ‘strongly agree’ to ‘strongly disagree’. The researchers have developed a 31-item scale comprising 13 items on male privilege and power, 10 items on traditional roles and responsibilities, 5 items on effeminacy and 3 items on restricted emotionality (Imtiaz and Kamal, 2023, pp.19-20). The researchers have mentioned some of the characteristics related to each of the four domains (pp. 19-20). The current study mentions those characteristics in tabular form for ease of understanding and analysis.

Table 1: Pakistani masculine ideologies scale (Imtiaz and Kamal, 2023, pp. 19-20)

Male Privilege and Power	Traditional Roles and Responsibilities	Effeminacy	Restricted Emotionality
Provision of dignified food serving Intensive financial investment Exercising influence/power on women Preserving family honor Authority in the domain of sexuality Authority in the domain of finances Unquestionable liberty	Men’s role as provider Men’s role as protector Frontline responsibility taker Pressure handler Executor of heavy work Executor of outdoor tasks	Distance from feminine outlooks and demeanour Avoiding feminine clothing Avoiding fashion Avoiding gossip/ backbiting Avoiding spending time on self- grooming	Abstinence from disclosing vulnerable emotions Avoiding public crying Avoiding mourning at the death of loved ones

The proposed model of analysis for the current paper is:-

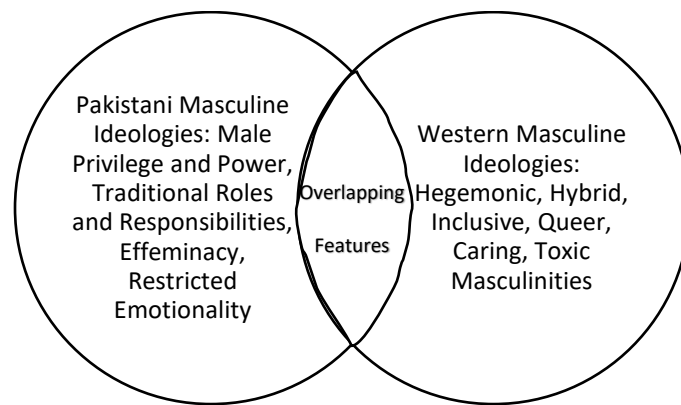


Figure 1: Proposed model of analysis/ Theoretical framework

4. Zindagi Tamasha (Circle of Life) (2019/ 2023)

The Pakistani movie *Zindagi Tamasha* (ZT), winner at the 24th Busan International Film Festival, is directed by Sarmat Khoosat, written by Nirmal Bano and produced by Kanwal Khoosat. The 2019 film was originally set to be released on 18th March, 2022, but it was banned by the Pakistan censor board due to its controversial portrayal of sensitive issues and has just now been released on You tube in 2023.

The protagonist Rahat Khawaja is a prominent, middle-class, elderly man of the neighbourhood where he is famous for reciting *Naats*, poems that praise the Holy Prophet (PBUH). Professionally, he is a real estate agent and property dealer. Rahat has three daughters all of whom are married. Only Sadaf lives nearby and visits her parents frequently. Rahat's wife is paralyzed, so Rahat does all household chores including looking taking care of his bed-ridden wife. He is depicted as the ideal old man with prestige, health, financial stability and well-settled children. His relationship with his sick wife is based on care, love and respect as is evident through their conversations and his acts of service. The film also depicts Sadaf's husband, Danish, a handsome young man who is the secondary male character in the film. Throughout the movie, he lends help to his wife and her parents on various occasions. Other prominent male characters include the neighbours, specially a shop-keeper, Usman. Besides, the film also portrays transgenders and gays.

The movie opens with Rahat reciting a melodious *Naat*. Then, the film shows Rahat buying food on his way to home where he has dinner with his wife and daughter, Sadaf. Throughout the movie, Rahat is portrayed as a dedicated husband and caring father, contrary to any overbearing or domineering stereotypical representation. Rahat is involved in a number of acts of service for his wife. He performs his home chores lightly and cheerfully. In various domestic scenes, he is shown performing different tasks like combing his wife's hair and cooking for the two of them. At the occasion of *Eid Milad*, the birth of Prophet Muhammad (PBUH), believed to fall on the twelfth of the third lunar month, Rahat Khawaja recites *Naat* annually and cooks a dessert, *halwa*, for distributing amongst his neighbours. Before going outside on one occasion, Rahat takes his wife's opinion and shakes hands with her lovingly and endearingly. Concerned for her well-being, he reminds her that he has charged her cell phone should she need help of any kind. All these character traits depict characteristics of caring masculinity in Rahat. Rahat also has traits of inclusive masculinity as he associates with transgenders openly. He also gives regular financial support to poor transgenders living in his neighbourhood. This reflects his openness towards people having different sexualities.

The conflict in the movie is Rahat's ostracization by his neighbouring community due to his dance at a wedding. The viral video of his dance turned people including his neighbours, childhood friends and his daughter, against him as they cannot perceive of a man who recites *Naat* to be able to dance so evocatively or an elderly and fatherly gentleman behaving so vulgarly. Friends and acquaintances stop talking and associating with him for exhibiting feminine traits. Some men gossip behind his back about his association with transgenders, calling him a "rotten egg" (Khoosat Films, 2019). Rahat's character subverts traditional gender roles and male power and privilege as he is very caring and supportive for his wife. The irony is that people do not criticize him for doing house-hold chores as gendered stereotypes dictate women to be responsible for home tasks. But the same people condemn him for engaging in a performing arts activity out of fun and begin to consider him as effeminate and gay. Rahat does have highly restricted emotionality, one of the indicators of traditional Pakistani masculine ideology. He does not cry at his wife's death, nor does he depict sorrow at his boycott from community. He does

show outward signs of agitation, but these are limited to finger tapping, pondering, discussing with Usman the treatment he's receiving, being silent and avoiding people. There are no emotional outbursts except once when he becomes angry at a *Maulvi sahib*, cleric, who insists on Rahat to make a sincerely apologetic video for general public and also threatens Rahat with a false blasphemy charge at another occasion.

During his ostracization, posters on male reproductive health pop up anonymously outside his house, affirming the notion that society links sexuality and power with being a man. The hegemonic tendencies of the community are evident in their violence against the transgenders and implications about Rahat's sexuality when the latter visits transgenders for helping them in their time of need. Rahat is also mistaken for being gay by Usman. Thus, displaying the traits of singing and dancing signify effeminacy in him, making him a non-conformist to traditional gender roles and ideological stereotypes associated with being a Pakistani male. Usman takes him to a gathering of gay men who meet discreetly twice a month to express their sexual orientation without fear of social judgment. However, Rahat has no tolerance for homosexuality, becoming angry at being perceived as gay. He considers it a sin, calling Usman a follower of the nation of Prophet Lot (Khoosat Films, 2019). So, there's no trace of hybrid masculinity in his character. His homophobia and anger at the posters outside his home publicly implying decreased sexual health, are traits of hegemonic masculinity in his personality. Usman's perception of Rahat as gay adds a slight touch of queer masculinity also to his personality

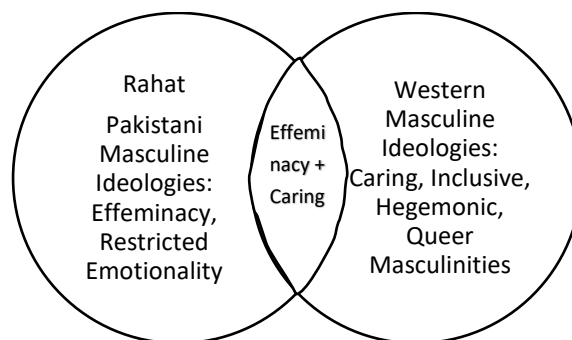


Figure 2: Dominant Pakistani and Western masculine ideologies in Rahat's character from *Zindagi Tamasha* (2019)

Besides Rahat, Danish has the role of mediation between his wife and her parents. He also arranges a set-up for an apologetic video to help Rahat rectify his gauche diplomatically. He has an open-minded attitude unlike Sadaf who distances herself from her father. The attention and importance given to Danish reflects the privilege he is getting because he is the son-in-law, thus his character depicts male power and privilege. He pacifies his own mother after the viral video in defence of Sadaf and her parents, showing an open-minded and protective attitude. He goes shopping for household supplies after his mother-in-law's funeral, depicting men's execution of outdoors tasks. He also takes care of his in-laws like a helpful son. These traits depict the traditional gender roles and responsibilities expected of a male. His character can be said to depict these two categories of the Pakistani masculine ideology. He can also be classified as performing his masculinity in a caring way towards his family. However, there is insufficient screen time given to Danish to observe the shades of other Western masculine ideologies in his personality. The cleric who threatens Rahat is an example of a hegemonic male who asserts his superiority over another male by virtue of his heterosexuality and pseudo-religious facade which Rahat had exposed by giving details of his financial corruption. In short, the film *Zindagi Tamasha* (2019) portrays various forms of masculinity like caring masculinity, inclusive masculinity and hegemonic masculinity.

5. Joyland (2022)

Joyland is a Pakistani film written and directed by Saim Sadiq. The film has won awards at 2022 Cannes Film Festival. It was temporarily banned due to its "highly objectionable" content (Nicholson, 2023).

The protagonist is a young, unemployed, middle-class male, Haider who is the "younger, gentler son" of a "white-haired bully", Amaan (Nischolson, 2023). Saleem is Haider's older brother who is quite the "macho" (Nischolson, 2023). Throughout the movie, Haider's polite tone, low volume and courteous style are a hallmark of his decency and softness. He is a man who can take blame for a girl's no as he goes to meet his wife-to-be, Mumtaz, to assure her that there's no pressure on her for agreeing to an arrange marriage and that he would say no if she is afraid to speak her mind. He is portrayed as playing with his nieces and lulling them to sleep, cooking food with his sister-in-law, Nuchi, as he is home while Mumtaz is at her job. Nuchi relies on Haider's

help a lot in caring for the children and lending help in the kitchen. Due to his acts of service to his family and relationships with his nieces, he can be classified as depicting caring masculinity like Rahat Khawaja.

Haider also shows effeminacy like Rahat when he could not slaughter a goat despite his father's orders and Mumtaz took the lead in cutting off the head of the goat. He does not conform to the categories of male privilege and power and traditional gender roles just like Rahat Khawaja. He doesn't have restricted display of emotion as he breaks down and cries in front of his wife, instead of trying to go.

The conflict in the movie is that Haider, a married man, falls for the transgender woman and theatre dancer, Biba. Once he gets a job as Biba's background dancer, Haider's father decides that Mumtaz should start doing household chores along with Nuchi as her husband is now earning. Mumtaz, a fiercely independent and vivacious girl, feels bound and suffocated within the conventional gender norms dictating the domestic space. On the other hand, Haider starts giving more attention and time to Biba. When his wife needed him the most physically and emotionally during her pregnancy, Haider was unavailable. In his relation with Mumtaz, Haider is the cheating husband who is a hegemonic male with undue sexual liberty. In regards to his interaction with Biba, Haider depicts queer tendencies and is a straight queer man as Heasley has proposed.

Along with Haider, another prominent character is that of his father. The father's character is symbolic of hegemonic masculinity, enjoying male power and privilege as he is the leader of the household, making decisions for the family. He is afraid of going against social norms by getting re-married to a widow thus affirming that men want to preserve their image in the eyes of other men and society in general. Nicholson asserts that "suppression and restraint" are the dominant themes in the film and "every man... is terrified to become the target of gossip — a paranoia that sometimes seems to be only in their heads" (2023). Saleem's character also depicts masculine hegemony as he told his wife to leave her job after marriage, desired for a male child and kept cursing Mumtaz for taking her life and killing his brother's unborn male child (Joyland, 2022). He is also afraid of breaking social norms, fearful that the mourners would hear his wife's loud bickering. Besides, the background dancers having a lecherous obsession with Biba's sexuality are representative of toxic masculinity.

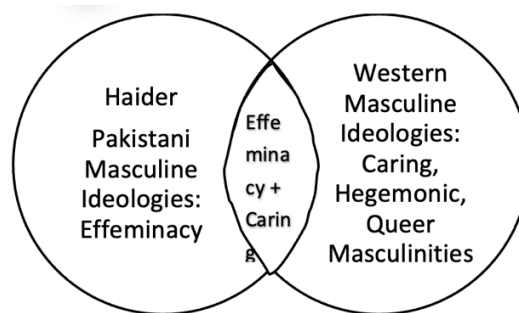


Figure 3: Dominant Pakistani and Western masculine ideologies in Haider's character from Joyland (2022)

6. Discussion and Conclusion

In *Zindagi Tamasha*, hegemonic masculinity is overpowering as displayed by the attitude of the neighbours and the cleric, threatening to displace other forms of masculinity like caring masculinity and inclusive masculinity. Hegemonic masculinity is depicted in the cleric, the neighbours and a small fraction is also exhibited in Rahat's personality due to his homophobia. Caring masculinity is predominantly present in Rahat's character and also present to some extent in Danish. Rahat's character also has traces of inclusive masculinity as he does his best to make the transgenders feel included by helping them and even relying on their help when he himself is ostracized. The reverse in the situation is depicted when the transgender helps Rahat to distribute the dessert. This signifies a change in people's perception of Rahat's status as a hegemonic male who subscribes to masculine power and prestige just because of his sex. For them, Rahat has performed his gender in an effeminate and queer way, thus losing his moral, sexual and social superiority.

In *Joyland*, the dominant mode of masculinity in the protagonist is caring and queer masculinity along with a trace of hegemonic masculinity. Other masculinities depicted in Saleem and his father's character are also hegemonic, whereas the men mocking Biba can be classified under toxic masculinity. There is similarity between Rahat and Haider and also a similarity between the prevalence of culture more than religion. The comparative study of both films has highlighted that current trends in Pakistani society and cinema are under a shift with

more focus on inclusive, caring and queer masculinities. These are the predominantly emerging masculinities in the otherwise hegemonically masculine and patriarchal Pakistani culture.

7. Limitations and Scope for Future Research

The present research is limited to the analysis of two films with a focus on only the masculine gender. Future studies can broaden the corpus and incorporate the analyses of more than one gender. Besides, the strength of the suggested framework is that it creates a balance and middle ground between local and global perceptions of masculinity. So, it can also be used in literary studies, film studies and other inter- disciplinary fields for understanding contemporary Pakistani masculinities in a better and more holistic way.

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Attitudes Toward Gender Quota Legislation on TMT-level Positions: Men Believe That Gender Balance Will Sort Itself Out in Due Course.

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Abstract: In 2010, Iceland became the second country in the world after Norway to enact a minimum 40% gender quota for corporate boards. The legislation did not pass without resistance, and concerns were voiced that gender quotas undermined competitiveness and merit-based selection. The legislation had the effect of improving the gender imbalance on corporate boards. Nevertheless, the expected trickle-down effect on the top management team (TMT) level has not materialized; women face apparent exclusion from senior executive positions, and men hold 22 out of 26 CEO positions at listed companies. Women hold 31.6% of TMT-level positions in listed companies, and women business leaders in Iceland have started calling for a gender quota on TMT-level positions. This study aims to measure public attitudes toward interventions to close the gender gap and ensure equal opportunities for men and women to reach top management positions. The study focuses on attitudes toward gender quota legislation on TMT-level positions, with a requirement of at least 40/60% gender balance, identified in qualitative interview studies with board members representing all listed companies in Iceland. We find gender differences in the attitudes toward the TMT-level quota in conjunction with beliefs about equal opportunities for men and women to be hired as CEOs, beliefs about the effect of gender quota legislation on merit-based hiring, and beliefs about the rate of progress toward gender balance. The study contributes to the literature on closing the gender gap by exploring public attitudes toward a legislative intervention that has not been the focus of research so far.

Keywords: Gender Equality, Gender gap, Merit-Based Hiring, Quota Legislation, TMT Level

1. Introduction

Iceland tops the World Economic Forum's Gender Gap Index, having closed 91.2% of the gender gap. Nevertheless, gender disparity in the top echelons is still considerable, and Iceland is in 14th place, having closed 79.6% of the gap in economic participation and opportunity. Moreover, when it comes to legislators, senior officials, and managers, Iceland is in 54th place, having closed only 60.2% of the gender gap (World Economic Forum, 2023). Increasing the gender balance on the boards of the largest firms to at least 40% female representation has not sufficiently impacted the gender ratio of CEOs hired since the enactment of the legislation (Óladóttir et al., 2019). Similar trends have been observed in Norway (Bertrand et al., 2019). Women board members maintain that the selection criteria favor men, female candidates in the recruitment process are devalued, and women who want or may want to seek CEO positions have not received equal opportunities to gain relevant experience (Christiansen et al., 2021). Studies show that Icelandic women business leaders support demand-side interventions to close the gender gap (Einarsdóttir et al., 2019), even legislated gender quotas for executive positions, since gender quotas for boards do not seem to be producing the anticipated spill-over effects (Óladóttir et al., 2021).

According to Sharma and Chawla (2021), gender diversity on boards has been gaining attention from scholars and practitioners alike, and findings on the effects of increased gender diversity on boards have not been clear-cut. A gender-diverse board has a positive impact on firm performance (Wiley & Monllor-Tormos, 2018), on corporate social responsibility and shareholder value (Dawar & Singh, 2016), and on corporate governance (Orazalin, 2019). Considerable debate has occurred, for example, in the European Parliament, on whether gender quotas on corporate boards are the means to balance the gender ratio (The European Commission, 2016).

Recent study in Iceland has shown that women business leaders find the gender imbalance in top management team (TMT) positions unacceptable and call for disruptive interventions (Óladóttir et al., 2021). Further studies indicated that female board members feel disempowered to influence gender disparity and experience their efforts to promote female candidates as thwarted by their male colleagues (Christiansen et al., 2021). Óladóttir et al. (2019) identified an intervention supported by women that included legislation paralleling the board gender quota legislation of 40/60 percent representation for companies with over 50 employees, but on the

executive level of companies. The women rationalized this intervention as necessary since not only is the executive level very influential in the day-to-day operations of firms, but the executive level is also where new CEOs are sourced from (Gunnarsdóttir et al., 2023; Óladóttir et al., in press).

This paper reports on a survey measuring public attitudes toward the enactment of gender quotas on TMT-level positions, beliefs about equal opportunities for men and women to attain CEO positions, beliefs about the influence of gender quota legislation on merit-based hiring, and beliefs about whether it is taking too long to achieve gender balance in top-management-teams.

2. Background and Context

The eradication of gender inequality in the world remains elusive, and according to the World Economic Forum's *Global Gender Gap Report 2021*, COVID-19 has set the world back so much that it will take more than 135 years to reach full gender equality (World Economic Forum, 2021). Equality is assessed on a scale where 100% denotes perfect equality; currently, the world average is 68.6%. Iceland has made the most significant progress towards closing the gender gap, scoring 91,2% (World Economic Forum, 2023). Despite the advancement of women in various areas of society, formal gender equality, increased education, and increased employment in recent decades, women's power and influence in the private sector remain limited, indicating a persistent glass ceiling that women encounter when seeking positions of power in companies. Women have historically been significantly underrepresented on boards of directors in Icelandic companies, spurring demands for gender quotas (Óladóttir et al., 2021).

In 2010, the Icelandic Parliament enacted legislation stipulating that either gender should constitute at least 40% of the board of directors in companies with more than 50 employees. The act took immediate effect for official public limited companies, but public limited companies were given a grace period until September 2013. This made Iceland the second country in the world, after Norway, to implement such quota legislation. These gender quota laws have significantly affected the gender composition of corporate boards; in 2010, the women's representation on the boards of listed companies in Iceland was 16% but rose to 48% in 2013 when the law had fully taken effect (European Institute for Gender Equality, 2019).

Men continue to outnumber women as board chairpersons. In 2000, women chaired 10% of the boards at medium-sized companies – those with 50 to 99 employees – and that proportion increased to only 13% in 2017. The most significant increases were at large companies, where the proportion rose from 6% in 2000 to 18% in 2017, and at the largest companies, where the proportion of female board members rose from 0% in 2000 to 13% in 2017 (Statistics Iceland, n.d.; Óladóttir et al., 2019). In 2024, women represented 46% of board members of listed companies in Iceland, and all boards met the quota, with either gender representing at least 40% of the board.

According to OECD statistics (2021), Iceland had the highest proportion of female board members globally in publicly listed companies, at 47,1%. France came second, with 45.3%, and Norway was third, with 41,5%. In 2023, the situation has changed; New Zealand is leading now with 46%, France is second with 45,2%, and Iceland is in third place with 44,8%, which leaves Norway number four with 43,2% (OECD, 2023).

The proportion of top management positions held by women is out of step with the rest of Icelandic society because labor market participation among both men and women has consistently been high in Iceland and is among the highest in OECD countries. Women entered the labor market at an increased rate in the 1970s, and by 2018, 78% of women participated in the labor market, while 85% of men participated (Statistics Iceland, n.d.). This has been aided by a generous parental leave system, guaranteeing the right of parents to return to their jobs after childbirth and the right to childcare for young children. These policies aim to provide both parents with greater equality of opportunity.

Women's chances of leadership positions in Icelandic companies appear inversely related to company size. According to data from Statistics Iceland (n.d.), women represent 24% of CEOs of companies with 1-9 employees, 19% of 10-19 employees, 16% of 20-49 employees, 17% of 50-99 employees, 12.7% of 100-249 employees and 14.6% of large companies with 250 or more employees (Statistics of Iceland, n.d.). Women in listed companies represent 24.3% of the executive management team and 5% of the CEO positions.

In 2024, women represented only 21% of all CEOs in the country and 15,4% of the CEOs of companies listed on the Nasdaq stock exchange in Iceland (Statistics Iceland, n.d.) Gender quota laws for corporate boards, enacted in 2010, were intended to close the gender gap in corporate leadership. They have balanced the gender ratio on corporate boards but have not had the expected spillover effect on CEO appointments (Óladóttir et al., 2021);

findings in Norway were similar (Bertrand et al., 2019). The top management teams in Icelandic corporate hierarchies remain highly homogeneous, primarily comprised of men of similar ages, backgrounds, education, and origins, and who even tend to reside in the same neighborhoods (Einarsdóttir et al., 2020; Óladóttir et al., 2019).

2.1 Gender Quota Legislation

Progress toward gender balance in the upper echelons of the corporate world has been slow, and the battle to close the gender gap in economic participation and opportunities is ongoing. Although research results are not uncontested (Adams, 2016), the business case for gender diversity in top management teams has been extensively researched and established (Ellis & Eastman, 2018; Seierstad et al., 2017; Terjesen et al., 2009). Positive impacts of increased gender diversity include improved company performance (Chen et al., 2019; Wiley & Monllor-Tormos, 2018), improved governance (Orazalin, 2019), more equity-based pay for directors (Adams & Ferreira, 2009), greater creativity, increased shareholder value, improved corporate social responsibility (Dawar & Singh, 2016), and improved global economic growth (McKinsey Global Institute, 2015). McKinsey's study of 1000 companies found that organizations in the highest quartile of gender diversity were more likely to outperform other companies on profitability (Dixon-Fyle et al., 2020). Conversely, a global study (Gruszczyński, 2020) found that women's presence on boards is not significantly related to firm performance.

According to Catalyst (2020), men are two to three times more likely to be in a senior management position than women. Of the more than 6.7 million management positions in the 27 European Union (EU) member states, men occupy about 4.3 million (63%) and women about 2.5 million (37%) (Eurostat, 2020). In 2019, just over a quarter of directors in listed companies within the EU (28%) and just under 18% of senior executives were women. In Standard & Poor's (S&P) 500 companies around the world, 37% of first or mid-level managers are women, but women occupy just 4.6% of CEO positions (Sharma & Chawla, 2021).

Slow progress towards gender balance on corporate boards has put increased pressure on countries to adopt more radical approaches. Many countries have resolved to take proactive steps toward gender equality in the boardroom and have adopted various strategies: specific legislation, gender-based quota systems, soft quotas, reporting board gender composition, corporate governance codes, and sanctions (Humbert et al., 2019; Sharma & Chawla, 2021; Terjesen et al., 2015; Terjesen & Sealy, 2016). The European Commission (2021, p.1) has described legislative quotas for boards as "motors of change," as they appear to be succeeding.

Gender quotas involve a target representation, a deadline to achieve that target, and sometimes penalties for noncompliance (Terjesen et al., 2015). Two approaches to state intervention for gender equality on boards are the most common. The first is gender quotas, also called "hard quotas" or affirmative action (Chambers, 2023), most often stipulating a percentage minimum or maximum representation of each gender. If they are not met, the result can be penalties, and whether companies favor specific laws or not, they are obliged to follow them (Terjesen et al., 2015). Germany, Finland, Italy, Norway, and Iceland are among the countries that have enacted hard quotas concerning the gender composition of corporate boards. Another approach is "comply or explain," also called "soft quotas," which sets a goal or code of ethics supported by the government to provide equal opportunities. Some countries that have introduced soft quotas to increase gender balance on corporate boards are Canada, the UK, and Australia (Chambers, 2023). Board gender quotas vary considerably between countries (Mensi-Klarbach & Seierstad, 2020; Terjesen et al., 2015), for example, in terms of duration, percentage, type of company, and penalties (Biswas et al., 2023; Terjesen et al., 2015).

The Act on Gender Quotas on the Boards of Directors of Companies was enacted in Iceland in 2010 and came into full effect in 2013. The legislation has been hotly debated (Axelsdóttir, 2019; Axelsdóttir & Einarsdóttir, 2017; Rafnsdóttir & Þorvaldsdóttir, 2012; Terjesen & Sealy, 2016) and women are generally more supportive of gender quotas than men (Axelsdóttir et al., 2023; Einarsdóttir et al., 2019).

When the explanations for support or opposition to the use of interventions for gender equality, such as gender quotas, have been studied, a common thread is doubts about women's leadership competence and the supply of qualified women for executive positions (Baird, 2023; Einarsdóttir et al., 2019; Gunnarsdóttir et al., 2023). Previous research in Iceland has also found that male and female managers have different beliefs about what explains the underrepresentation of women in corporate leadership and regarding gender quota legislation (Einarsdóttir et al., 2019). Women's qualifications for leadership positions have been doubted, and men have been found more likely than women to believe that women have less desire and competence to take on leadership positions (Rafnsdóttir & Þorvaldsdóttir, 2012). Axelsdóttir and Halrynjo (2018), however, did not find such clear-cut gender differences in beliefs about the explanations for the gender imbalance in TMT positions.

This study is a part of a larger research project. In the qualitative phase of the project, we interviewed men and women on the boards of all listed companies in Iceland (Óladóttir et al., in preparation). What we found was that men and women had different beliefs about the structure of inequality, and their tolerance towards the duration of this inequality also varied. Men were much more likely to state that interventions were not necessary to achieve gender equality, that the necessary changes were well underway, and that gender balance would be achieved organically in due time. Women, on the other hand, were more likely to describe selection processes for upper-echelon positions that exclude and devalue women and felt that there was an urgent need for interventions to eradicate inequalities inherent in the process. There was some indication of differences in men's and women's perceptions of opportunities being equal for men and women to attain CEO positions, and men were much more likely than women to voice concerns that interventions such as gender quotas would undermine merit-based hiring. We therefore hypothesize:

(H1) Men are more likely than women to believe that the opportunities for men and women to be hired as CEOs are equal.

(H2) Women are more likely than men to believe that it is taking too long to achieve gender balance at the TMT level.

(H3) Women are more likely than men to support legislation on gender quotas in TMT-level positions in companies with over 50 employees.

(H4) Men are more likely than women to believe that a gender quota on TMT-level positions will negatively impact the hiring of the most competent candidates.

3. Methodology

A random sample of 2,500 panel members was drawn from the Internet panel of the Social Science Research Institute (SSRI). The panel is comprised of adults aged 18 years or older, who were randomly drawn from Iceland's national registry. The sample was weighed in terms of gender, age, and residence to ensure that the results give the most accurate representation of the population.

A total of 1,027 participants participated in the survey: 506 women (49.3%) and 521 men (50.7%). Descriptive statistics for all variables included in the analyses are shown in Table 1.

We asked participants to respond how much they agreed or disagreed with these four statements on gender quotas and balance at the TMT level: *Men and women have equal opportunities to be hired as CEOs*, *It is taking too long to achieve gender balance at the TMT level*, *The government should implement laws on gender quotas in executive-level positions in companies with over 50 employees*, and *Gender quota laws on executive-level positions will negatively impact the hiring of the most competent candidates*. The answers ranged from 1 (strongly disagree) to 5 (strongly agree). We also asked about age category and highest level of education (see Table 1).

Table 1: Descriptive statistics

	Mean	SD	Min.	Max.
Men and women have equal opportunities to be hired as CEOs	3.25	1.38	1	5
It is taking too long to achieve gender balance at the TMT level	3.55	1.20	1	5
The government should implement laws on gender quotas in TMT-level positions in companies with over 50 employees	3.00	1.29	1	5
Gender quota laws on TMT-level positions will negatively impact the hiring of the most competent candidates	3.19	1.27	1	5
Female	.49	.50	0	1
Age				
18-25 years	.12	.33	0	1
26-35 years	.20	.40	0	1
36-45 years	.18	.39	0	1

	Mean	SD	Min.	Max.
46-55 years	.16	.37	0	1
56-65 years	.15	.36	0	1
66-75 years	.11	.31	0	1
76 years or older	.07	.26	0	1
Education				
Elementary	.25	.44	0	1
Secondary	.38	.49	0	1
University	.37	.48	0	1

4. Findings

We performed independent samples t-tests to evaluate our four hypotheses. As predicted by hypotheses 2 and 3 respectively, women were more likely than men to believe that it is taking too long to achieve gender balance at the TMT level, $t(928.79) = 12.44$, $p < .001$, $d = 0.79$, and to support legislation on gender quotas in TMT-level positions in companies with over 50 employees, $t(929.60) = 12.02$, $p < .001$, $d = 0.78$ (see Table 2). The Cohen's d effect sizes indicate that for hypotheses 2 and 3, the standardized mean difference between men's and women's scores for each statement is large (Funder & Ozer, 2019).

Table 2: Attitudes toward gender quotas by gender

	Women			Men		
	Mean	SD	N	Mean	SD	N
Men and women have equal opportunities to be hired as CEOs	2.84	1.38	490	3.66	1.26	497
It is taking too long to achieve gender balance at the TMT level	4.00	0.95	485	3.12	1.26	499
The government should implement laws on gender quotas in TMT-level positions in companies with over 50 employees	3.47	1.11	470	2.54	1.28	478
Gender quota laws on TMT-level positions will negatively impact the hiring of the most competent candidates	2.85	1.21	467	3.53	1.24	483

Conversely, as predicted by hypotheses 1 and 4, men were more likely than women to believe that the opportunities for men and women to be hired as CEOs are equal, $t(974.72) = 9.74$, $p < .001$, $d = 0.62$, and to believe that a gender quota on TMT-level positions will negatively impact the hiring of the most competent candidates, $t(947) = 8.57$, $p < .001$, $d = 0.56$. Although the effect sizes for hypotheses 1 and 4 are somewhat smaller than for hypotheses 2 and 3, they were still large and medium, respectively.

5. Discussion & Conclusion

This representative study sought to determine gender differences in beliefs about equal opportunities for men and women to attain CEO positions, in perceptions about whether it is taking too long to achieve gender balance at the TMT level, in attitudes toward the enactment of gender quota legislation on TMT-level positions, and in beliefs that a gender quota on TMT-level positions will negatively impact the hiring of the most competent candidates.

The findings indicate that there were clear differences in the beliefs and attitudes of men and women regarding all four questions. Women were much less likely than men to believe that men and women have equal opportunities to be hired as CEOs in Icelandic companies. These results support the findings from the qualitative interview studies (Christiansen et al., 2021; Gunnarsdóttir et al., 2022; Óladóttir et al., in press) and are in line with the survey results from women business leaders in Iceland (Óladóttir et al., 2021).

When it comes to perceptions about the progress of gender equality, women were much more likely than men to feel that it is taking too long to achieve gender balance at the TMT level. Their feelings reflect that women

are keenly aware of the state of the gender gap in economic participation and how, at the rate changes are happening, it will take longer than they are willing to accept to achieve gender balance (World Economic Forum, 2021, 2023). Men's responses indicate that they believe that gender parity is not taking too long, which corresponds to Óladóttir et al. (in preparation) results where men were more likely to state that there was no need for interventions to achieve gender equality – gender balance would sort itself out in due course.

Men were much less likely to be supportive of the enactment of gender quota legislation for TMT-level positions, which is in line with the findings from the interviews and many previous studies on attitudes toward gender quota legislation (Axelsdóttir et al., 2023; Axelsdóttir & Halrynjo, 2018; Óladóttir, 2021, in preparation; Rafnsdóttir & Þorvaldsdóttir, 2012). Women were quite supportive of the enactment of gender quota legislation on TMT-level positions, which rhymes quite well with their stance on the lack of equal opportunities and the slow rate of progress towards gender balance.

In line with previous research on attitudes toward gender quota legislation (e.g., Einarsdóttir et al., 2019), men were more likely than women to view gender quota on TMT-level positions as a threat to merit-based hiring. Although women did not view the quota as negatively as men did, they nonetheless tended not to reject this statement outright.

The findings suggest that, on population level, women feel that equality of opportunities for men and women to advance to CEO positions has not been achieved, and the progress toward gender parity in the upper echelons is too slow. They appear willing to consider interventions such as gender quota legislation on TME-level positions. However, they do not appear to firmly reject the adverse effects that the quota legislation might have on merit-based hiring. Conversely, men appear to believe fairly strongly that gender balance in opportunities for CEO positions has been achieved, and they are much less likely than women to perceive the progress toward gender parity in TMT-level positions as too slow. Men do not appear to support the enactment of gender quota legislation at the TMT level, and they tend to firmly believe that such legislation would undermine merit-based hiring.

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The Future of Women in Technology : Challenges and Recommendations

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Abstract: When only women turn up to a panel on challenges for women in technology, how do we then reach out to industry, academia and government to encourage them to listen to the current challenges experienced by women in tech. Technology is rapidly changing and we are seeing women disadvantaged by less training opportunities, lack of role models, perceived penalties for taking time off to have children or discharge caring responsibilities as well as the risk that their jobs are subject to more automation. Multiple workshops at the Institute of Science and Technology highlighted significant challenges for women in tech, the data from our empirical study illustrates these challenges in detail. With the workplace still male dominated and the landscape changing rapidly, women have a significant role to play and we need to ensure that role is not only facilitated but the existing challenges are mitigated. This is a discussion paper with empirical data that illustrates challenges currently experienced by women in tech and how we can move forward to ensure not only equal opportunity but remove some of the challenges currently experienced. In this paper we have not considered the same impact on men who take career breaks for reasons of caring responsibilities.

Keywords Women, Technology, Challenges, Gender Bias, Women in Tech, Gender, Ai, Technology, Challenges, Professionalism

1. Introduction

Over the last few decades, we have seen numerous initiatives put in place to try to ensure women have a fair pathway to success in the workplace. This has included policy generation, spotlights on EDI and sometimes, as in reverse engineering boards, some positive discrimination. However, what has been missed in this landscape is the critical provision of tools to enable women to take up opportunities. The understanding of the specific challenges facing women in the technological workplace has been missed. This is highlighted by Neveen et al. "there is no ambition gap. Roughly the same percentage of women and men—62% and 67% respectively—were trying for a promotion" (Neeven, 2021). We can also see that the existing initiatives are not having enough impact as discussed by the Global Gender Gap Report "Overall, the global share of women in leadership roles as illustrated in this data is 31%, although shares vary by industry. In 2022, only select industries have levels near gender parity in leadership, such as Non-Governmental and Membership Organizations (47%), Education (46%), and Personal Services and Wellbeing (45%). At the other end of the range are Energy (20%), Manufacturing (19%) and Infrastructure (16%)" (Global Gender Gap Report 2022). The largest driver for female progression in the workplace being within businesses that were already highly represented "for example, women make up 62% of total workforce share in the Personal Services and Wellbeing industry, but only 45% of leadership share" (Global Gender Gap Report 2022). The biggest step for women, and one where most failure is seen, is the initial promotion step "For every 100 men promoted from entry level to manager, only 87 women are promoted, and only 82 women of colour are promoted" (Women in the Workplace 2022, McKinsey).

One of the main issues we chose to examine in this paper is caring responsibilities. In the Women in Tech group at the Institute of Science and Technology this discussion arose quite often. This is highlighted by Rocha et al. "several researchers report the impact of gender on software development teams, especially in relation to women. In general, women are under-represented on these teams and face challenges and difficulties in their workplaces. When it comes to women who are mothers, these challenges can be amplified and directly impact these women's professional lives, both in industry and academia" (Rocha et al., 2023). In addition, "one analyst said "millions of mums" were being forced to "pay the price" of a less secure career. The new research found that "mums who are employed were more likely to work part-time". ('Mothers "paying the Price" for Career Breaks', 2021). This is problematic for continuity and consistency of a career. "This doesn't just take a toll during the early years with young children, but throughout the rest of their working life" ('Mothers "paying the Price" for Career Breaks', 2021). Many websites have sections on how pregnancy and childcare can stall careers, the NCT (UK National Childbirth Trust) states that "The honest answer is that the evidence suggests becoming a

mother does affect a woman's career". The NCT also states that if a woman chooses to return to work on reduced hours "it might affect how quickly you make the jump to your dream job. In one large UK study, "26% of men versus 13% of women were promoted or upgraded their jobs within five years of having a child" (Trust, 2022). It is worth noting that no solutions are given to this issue and the advice is to consider one's priorities: "it's worth taking time to consider your priorities to help you make informed, achievable choices about what you want out of your career and family life". (Trust, 2022). This does not seem acceptable in a world where women are known to not have the same opportunities as men due to a larger share of caring responsibilities but yet there is no apparent solution despite knowing teams and innovation suffer without equality and representation (Linked in, 2023). However a contributing factor to this situation is shown in a CIPD study "73% of men surveyed believe there's a stigma attached to taking extended paternity leave" and "95% of men agreed that workplace culture needs to be transformed to normalise men taking extended paternity leave" (CIPD, 2020). To compound this the CIPD founds that "Very few new fathers/partners and mothers have taken up the right to shared parental leave in the last two years, according to our sampled organisations. If we compare our findings with 2016, we see a downward trend in take-up" (CIPD 2022).

In addition to caring responsibilities women still face daily challenges in the workplace. In a survey by Ivanti on challenges faced by women in technology the following was found; "63% of women felt that they were not taken seriously due to gender perceptions. 42% felt that they had no female role model and 40% said they felt there was a gender pay gap" (Ivanti, 2018). However, Ivanti had no actionable recommendations for women.

One of the largest problems can be that the right people aren't listening. At a recent summit in the REAIMS defence conference in the Hague at a panel on challenges faced by women in defence there was poor attendance and no men or high-level decision makers attended. The people required in the room are not there. It must be a discussion between all members of society not just between women and not just perceived as 'targeting' men.

1.1 Studies on the rate of change in disparity between male and female leaders

Over the past five decades, the representation of women in leadership positions within the fields of science, technology, engineering, and business (STEM & Business) has experienced notable shifts (Linked in, 2023). The following examines the evolving landscape, highlights significant research studies, explores predictions for addressing gender disparity, and identifies factors impacting those predictions. An example of where positive action has been taken to address the disparity and how that has impacted on progress is also considered.

2. Key Research Studies

Several influential research studies have shed light on the representation of women in leadership positions:

2.1 The Davies Review (UK):

Launched in 2011, the Davies Review focused on increasing female representation on corporate boards in the UK. It set a target of achieving 25% female representation by 2015, which was successfully achieved and subsequently raised to 33% by 2020. (*Women on Boards*, 2020)

2.2 Catalyst's "Women in STEM" (US):

Catalyst, a research and consulting organisation, has conducted extensive studies on gender diversity in STEM fields. Their research highlights the challenges faced by women in advancing to leadership positions and emphasises the importance of inclusive policies, mentorship, and promoting a supportive work environment. (*Women in Science, Technology, Engineering, and Mathematics (STEM) (Quick Take) | Catalyst*, 2022)

2.3 European Commission "She Figures" (Europe):

"She Figures" is a comprehensive biennial report published by the European Commission. It provides statistical data and analysis of gender equality in research and innovation across Europe, addressing women's representation in leadership roles and the broader research landscape. (*She Figures 2021*)

3. Case Studies: Addressing the Change Factors – an Example of Positive Action

The Nobel Foundation has begun actively supported research and analysis on gender disparities in Nobel laureates. Initiatives taken include the following:

- Expanded Nomination Pool:
- Gender-Sensitive Evaluation Processes

Some of these initiatives, including actively seeking out and considering more female nominees might be viewed as positive discrimination so more detail on this would be required before the initiative could be judged a success. The Nobel Committees have stated that the use of these initiatives has led to diversity increasing within

the Nobel Committees. Actively seeking out women has led to a more comprehensive and inclusive assessment of achievements across various fields. (*Gender Bias in Nobel Prizes | Humanities and Social Sciences Communications*). There has been a subsequent rise in the number of female laureates and role models.

Have any of these initiatives had an impact? We discuss this in the next section.

4. Methodology

Using a survey platform mailchimp, mailing lists and social media posts we surveyed women working in technical disciplines. The survey was conducted to determine how women felt about their experience as a female in the STEM world. 79 responses were received 78 were from women and 1 was a man. We were unable to do branching on this survey so some felt the survey was stereotypical. In the future we would use branching to determine who had childcare and who had general caring responsibilities. However, most respondents did answer from a point of view of any caring responsibilities or not.

5. Demographics:

The respondents were from a global base with the majority being UK based. Most respondents were quite highly qualified (BSc or above) and in technical or managerial roles.

6. Results

In response to questions on job security related to AI the majority attitude was positive and many felt their jobs would not be automated. The majority of respondents want decisions made about them by AI to be explained to them. This explanation should explain all of the contributing factors and variables in the decision-making process. However, 44% were worried about subsequent discrimination by AI. Pertinent points were made that a right to review should exist for all decisions and powers should exist to revoke a decision.

When asked if they experience challenges related to your gender in the world of tech, over 40% responded yes and around 5% chose 'prefer not to say'. Below are some key comments to illustrate the challenges faced by respondents.

Some key comments

ID	Comment
14	In my experience, older men do not like to be managed or challenged by a woman of equal or higher rank/experience
17	Anyone understanding what is involved with being the carer for a 90 year old and offering reasonable adjustments - a previous appointment, undermined for 7 years by a senior colleague who resented that I was capable
20	Not directly but as a parent I have restrictions that non-parents and dads who don't do the majority of the childcare, forget about. E.g. organising important meetings close to the end of the working day or during school holidays.
24	When pregnant, I was unable to do certain aspects of my role within the lab as dealing with nasty chemicals. Childcare can be a tricky subject.
25	People attempting to pay me less because of my gender. Far lower investment prospects for start-ups and ventures due to investment gender bias. Bias in offers of publishing deals, wherein men are offered higher fees, and more likely to have 'big ideas' backed, among other things.
68	Male technicians and engineers hear our words and check for themselves anyway, despite us almost always being correct; sometimes even lying and gaslighting to cover themselves.

When asked whether the respondent has experienced discrimination or bullying in the workplace, 51% have reported experiencing some type of discrimination and a similar percentage have reported experiencing some type of bullying.(Fig 2&3)

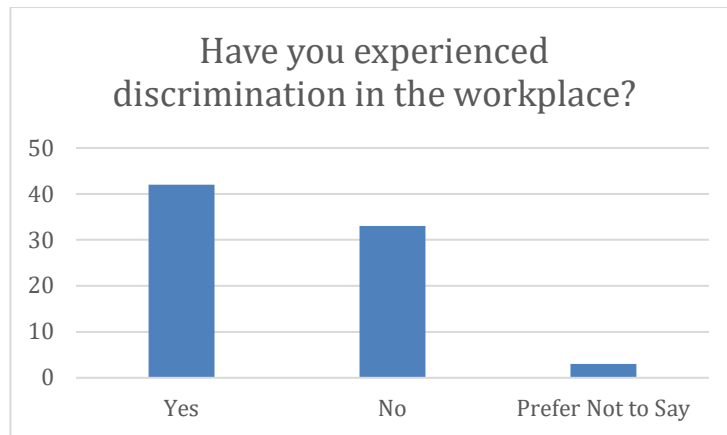


Figure 2 : Have you experiences discrimination in the workplace



Figure 3 : Have you experienced bullying in the workplace

When asked if their workplace has creche or childcare facilities or some support with this the following results were recorded. In fig 4 & 5 it can be seen that 50% had no access to workplace facilities and 32% had no support at work for childcare responsibilities such as, for example, emergency leave, parental/maternity leave or flexi time. This can lead to conflict because a parent would have to leave if there was an issue with the child having to come home from nursery, be taken to medical appointments or similar and this would not be a choice for a parent whether there was a policy on this at work or not. This does show there is more progress to be made and that nearly half have no support or facilities provided at work leaving them to make their own arrangements which may mean that the childcare facility is a distance from the workplace, doesn't have places or is unaffordable. Key comments are below.

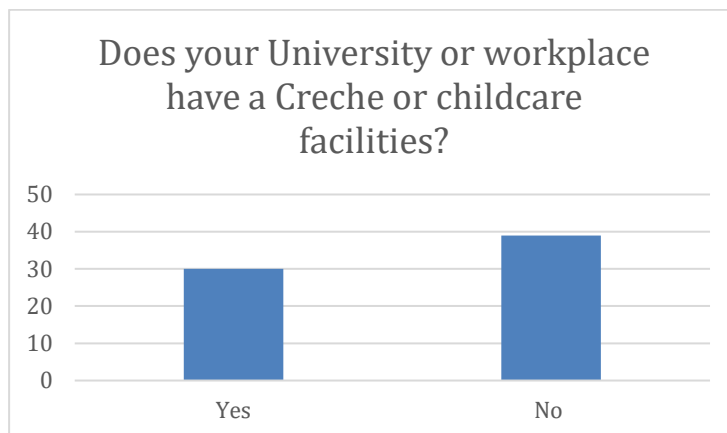


Figure 4 : Does your university or workplace have a crèche or childcare facilities

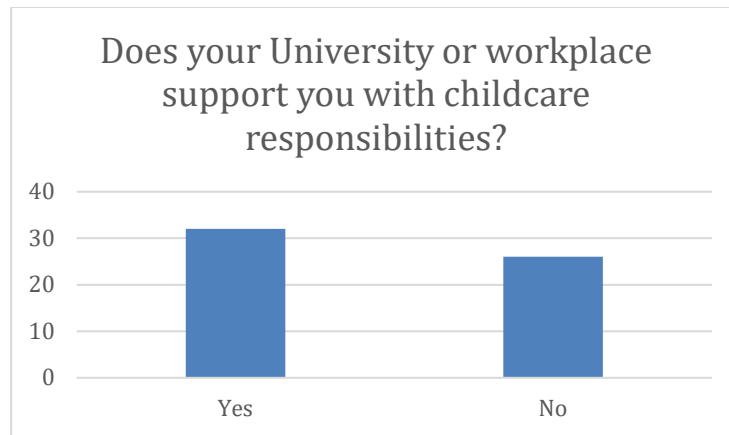


Figure 5 : Does your university or workplace support you with childcare responsibilities

Some key comments

ID	Comment
2	flexible working policy
15	We have domestic leave of 4 days that can be taken at short notice to deal with family emergencies
18	when our children were younger my managers then were supportive, but when my daughter was one (over 20 years ago) I was not permitted to work part time and had to quit my job. When I did come back, they brought me back on a lower grade. I felt doubly cheated
21	I am able to work flexibly if needed. My line manager trusts me to make sure I'm working my contracted hours. I was able to get a jobshare so I can work part time hours.
25	When a child is sick or schools are on strike it is not suggested that we can work from home. Most work is lab based but some admin/PPD/results can be completed at home. When a colleague asked if she could stay home with a sick child she was told to take a day off as she could not use her allocated parental leave days, even though she had days left! Something about parental leave only used in emergency last minute i.e. if child sent home from school.
50	We do have flexi-time so I can set my own working hours to some extent, but still have core hours when I am supposed to be at work, which coincide with school start and finish times.
54	University has a nursery, but it is oversubscribed so I use one closer to home (I have a long commute).

When asked if your university or workplace provide opportunities for you to attend conferences or events with support for childcare. Nearly 60% had no opportunities or support. Women are clearly disadvantaged here by not receiving help to undertake professional development activities that could aid promotion and be a rich source of information and training for them in their role.

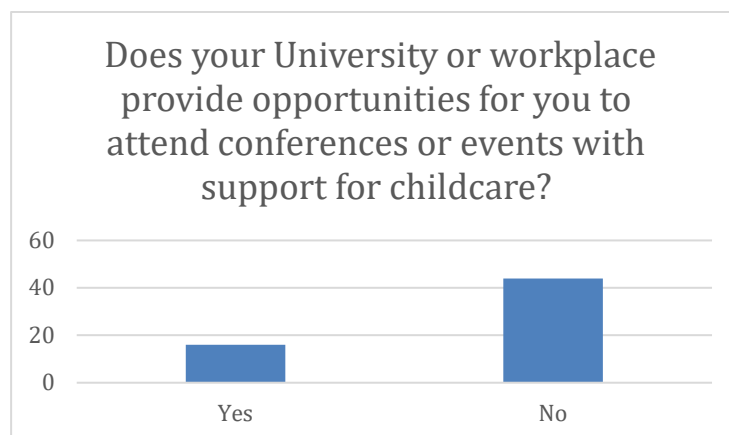


Figure 6 : Does your university or workplace support provide opportunities for you to attend conferences or events with support for childcare

Athena Swan is seen as a new initiative that has brought best practice in equality and diversity to universities with a focus on helping women break down barriers to progressing their careers. However, approximately 25% find it not to be working as envisaged. Some key respondent comments follow. Some respondents believe the initiative to be a good theoretical exercise, but the practical application is either not having the intended results or not working for all people it should work for.

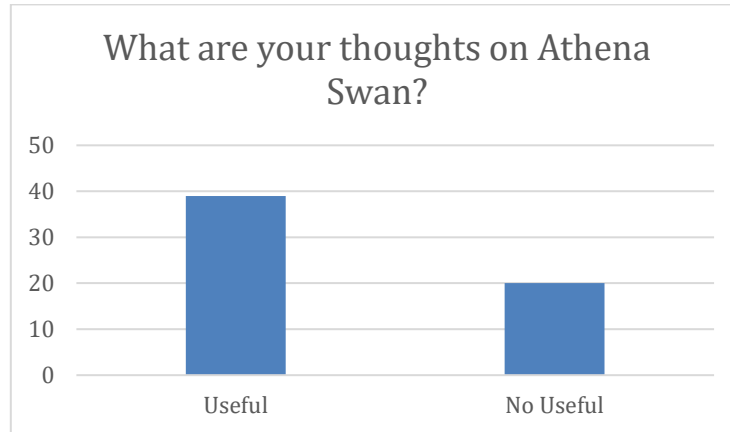


Figure 7 : What are your thoughts on Athena Swan

Some key comments

ID	Comment
7	Useful, seems like box ticking exercise for positive metrics
11	It's a great idea and when I see it I feel hopeful as it signals that the organisation strategy has decided to apply and dedicate resources to equity in the workplace. But it's still more of a compliance exercise. I would love for Athena Swan to be intersectional (I.e. to be about protecting the most vulnerable from harm. Not just women. Women are important, but white women have different needs than black women - and white women can also cause harm, for example. A.S. would pair its baseline care for women with checklists for racism, ableism, homophobia etc.).
15	I have had to miss conferences/networking events due to lack of childcare, and missed meetings scheduled outside of core hours due to school pick up responsibilities
18	Tech staff in my institution have consistently been side-lined, even from the Silver award. Very disappointing.
21	I've seen no difference in the workplaces which have Athena Swan and those that don't. The size of the University has more impact on what childcare options they provide.
48	In my previous position with silver Athena Swan it was still impossible to get maternity leave during a 2-year postdoc and no other postdoc lengths were offered. Brilliant women were not able to contribute without unfair sacrifice.
50	Athena Swan is only useful when it is adhered to by all.
54	One child in nursery 4 days a week costs us half of my take home pay, after commuting costs there isn't much left!
55	Lack of childcare in core hours - hasn't affected me, but I do feel hindered when it comes to networking events as they are all afternoon/evening events. Athena Swan has been good to network and create a community of women who understand the subject specific struggles of navigating work as a woman
70	They have only just started looking at women in particularly in the technical role. It is more of a tick box and takes a great deal of work that isn't easy in these days of grant application or safety and teaching commitments. Fundamental, I think that the training is not evenly applied across all of those who submit and I definitely have worked in institution that can put gold on the door but bully and harass their staff.

We asked what respondents consider the top three barriers to women in tech. Respondents stated the following:

1. Lack of understanding of women specific challenges
2. Caring responsibilities
3. Childcare Costs

We also asked what other challenges women had faced in their career and used an open text field to let respondents express themselves. The comments below cover areas from poor workplace culture, poor communication, lack of best practise implementation and gender bias.

Some key comments – Other issues which have prevented you progressing in your career

ID	Comment
7	Pay lip service to menopause but no physical space/action
11	A lack of solidarity. Men not being to handle their feelings. Other women pulling the ladder up behind them. A general disinterest in changing the systems, institutions and policies that cause harm in the workplace. Despite better wellbeing outcomes leading to a more effective, and potentially loyal, workforce. Look at the recent Russell Brand allegations - women were removed from the workplace, stripped of opportunities, to keep him in post.
15	I have had to miss conferences/networking events due to lack of childcare, and missed meetings scheduled outside of core hours due to school pick up responsibilities
16	People not thinking outside the box
18	Ongoing culture where predominantly it is women out doing the men with the patriarchal culture who seem to do well. Men don't like to be challenged by women, still.
21	The presumption that women will provide the majority of childcare. Having to take a career break due to having children. The lack of part time jobs at higher levels. Fixed term contracts postdocs.
33	Not children perse, but pregnancy and maternity leave does not help
44	Opportunities that are relevant for career progression
50	All day training courses which don't take into account school times are impossible to attend.
70	I have heard it many times, your female, you can't be dyslexic, dyspraxic or suffer from ADHD or aspergers - oh we do! There weren't many like me but now there are, so something is changing. Sometimes there are less women tech than there are women professors... when is that pointed out
75	Lack of respect - opinions seem less valid because I am a woman. Suggestions I have made being ignored but then if they are repeated by men they are accepted.
76	Gender bias

In order to determine if we had missed any key issues we asked whether there were any other issues you feel have constrained your career because of your gender. The areas covered include poor progression, poor managers, societal based gender discrimination, a resulting lack of confidence and investment in women's continuing professional development.

ID	Comment
2	Menopause
4	How to make a career work with being in a specialist area with family/partner living further away and me having to work away in a week - uncertain how this works when start a family.
7	Unsupportive managers
10	Opportunity for leadership roles: Women are less likely to be perceived reliable and appropriate for playing a leadership role and get involved in decision-making.
11	I love my career and I am very lucky. I see other women facing truly abhorrent treatment and all I can do is be there for them.
15	Discrimination and infantilisation from male colleagues and superiors
18	Teachers who hold the view that girls won't have good careers/results if they do science subjects - no promotion of apprenticeships/alternative science careers other than university
25	I feel that I am lacking in confidence, which may be my personality and the way I was brought up that affected this but I think women in general lack confidence compared to men. We need to ensure we instil confidence in young women to ensure they don't get bustled to the side by male counterparts.
28	There has been little to no encouragement in my career that suggests I could be more until recently. Which ultimately led to me not realising my own potential and therefore staying in the same place and position for almost 12 years. I have only ever seen male colleagues progress into management.
30	Having to take career breaks to have children. The year off each time was amazing personally but it was also a year of lost career development and learning that men don't face.
33	not been take serious
44	Having sexist or misogynistic line managers early on in my career in the early 1990's didn't help.
48	I'm most environments I have been in, women in the workforce still take on the emotional labour in team dynamics. They tend to raise the money for gift collections, recognise struggling team members, support mailing list communications, and organise extracurricular activities. In a gender-equal environment these activities are usually undertaken in addition to an equal or greater distribution of other work duties.
52	Just being overlooked in general.
54	I have encountered some women in academic leadership roles who are not so supportive as technical colleagues.
70	I wasn't allowed to go to diamond light as there wasn't a fund for technician - particularly women - as you are expected to share a bedroom with a colleague. more as I get older, access funds to keep you up to date with your qualification is hard to come by and that is also against less time with caring responsibilities. We should have a fund for make it easier to make adaption in the work place to cut down on manual handling... gas cylinder are 70kg+, hard to push up a slope and they are taller than you.
77	The expectation that women pick up administrative tasks and any 'soft skill'/people related business, advance ED&I, get involved in improvements etc which has no glory attached to it.

7. Discussion

Over the last 50 years, the representation of women in leadership positions within STEM & Business sectors in the UK, US, and Europe has witnessed notable changes. Research studies have illuminated the progress made, identified challenges, and proposed strategies to address gender disparity. Sustained efforts to foster inclusive cultures, improve education and skills development, and implement supportive policies are crucial for achieving gender equality in STEM & Business leadership in the future. Whilst some examples can be cited (eg. the Nobel Foundation) where the disparity is being successfully addressed there are still many environments where progress is painfully slow and where many barriers to women still not only exist but cause harm to women. Athena Swan was heralded as a ground-breaking policy designed to further equality within the HE sectors but the implementation seems to be sporadic and disparate. Some respondents found that it made no difference, and some found that, despite its implementation, they were still treated poorly even when the institution advertised they were Athena Swan compliant. EDI washing is similar to greenwashing in that committees or institutions advertise the implementation of best practice but make few changes to accomplish equal working practices. This shows that good ideas are hard to implement, especially in the field of equal opportunities. Holding institutions to account might encourage them to implement policy more thoroughly and robustly.

Ongoing challenges for women in the workplace, specifically women in tech are still very much present and holding hardworking women back from the career they deserve. Some challenges detailed by the respondents of this study relate to societal barriers and preconceptions, treatment at work, lack of understanding of their specific challenges, lack of workplace flexibility and lack of policy implementation. In addition, men are disadvantaged by cultures of presenteeism and lack of awareness towards shared parental leave. This means they are sometimes unable to support women even where they would like to. This leads to further sexist issues towards men. The sheer cost of childcare or caring for someone can be too much and can lead to resignations.

Sexism and misogyny, even despite movements like 'metoo' continues to exist as does the expectation that women take on administrative roles or 'caring roles' in the workplace. One interesting aspect is mentioned by a respondent that when some women do manage to break the ceiling they continue on their upward trajectory and ignore those trying to accomplish the same. Women supporting women has historically been poor due to societal pressures to encourage competition between women so this is something that has to change from within society itself in addition to the sexist and misogynistic issues discussed above. Overall women have been neglected in terms of research into women's health, women's lived experience and their challenges. This lack of investment, research or even willingness to discuss women has left society unable to fully understand or integrate with women. Too many aspects of women's lives are either taboo or not discussed. This impacts on women themselves where a lack of research impacts many challenges women face such as childbirth, childcare, menopause and menstruation. This then leads to a lack of communication and understanding that almost sidelines women and leads to so-called easier solutions such as positive discrimination. Instead of creating new policies and forcing equality perhaps the way forward is to open the discussion, get to know women and integrate them into society and the workplace as fellow human beings with a right to equal conditions.

8. Recommendations

There are many recommendations that could be made but the most significant for the results of this paper are as follows:

- Challenges around returning continuing professional development can be mitigated with welcoming facilities at conferences such as childcare provision, breastfeeding rooms, chairs at the back so parents can bring their children but leave if required and many other small adjustments. This needs a cultural shift to achieve.
- Board level data has to be actionable in order to recruit and establish female role models, recruit fairly in promotional opportunities for women and to understand the unique challenges women face to determine the blockers.
- Societal language and narrative around women needs a cultural shift to change. This includes aspects such as unconscious bias, faulty assumptions and bias.
- Create more female role models and give them recognition. "Female role models will play a key role in gender diversity, especially in male-dominated sectors like technology. They inspire other women and create pathways for women to break into the industry" ('How to Support Women in the Tech Sector in 2022', 2022).
- Debunk myths around male and female career paths ('How to Stop IT Being a Boys Club', 2020). Ensure policy is implemented and used as it should be and within the originating spirit, holding those to account who claim to uphold the policy but, in practise, do not.

- Listen to women discuss their specific challenges and lived experience in order to mitigate barriers.
- Caring responsibilities and their impact on the careers of carers needs more actionable research that is then formed into policy and implemented.

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Gender Equality in ASDC: Unravelling Societal Challenge in Educational Attainment and Economic Empowerment, Inheritance Access, and Workplace Dynamics in Malaysia

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Abstract: This study investigates the nuanced intersectionality of gender equality within the context of Autism Spectrum Disorder Condition (ASDC) individuals. Contrary to Feminism, which advocates for gender equality and women's rights. While existing research has predominantly focused on the clinical aspects of ASDC, this study delves into the educational attainment and economic empowerment, inheritance access and workplace dynamics that impact individuals with ASDC, with a particular emphasis on gender-related disparities. The research encompasses ASDC in-depth analysis of access to resources, including property, inheritance, workplace, and sources of income, evaluating the extent to which individuals with ASDC, particularly women, face barriers in obtaining and managing. This study integrates a qualitative insight from ASDC, their families, teachers, and relevant stakeholders. 50 participants of ASDC individuals aged 14 to 57 years old contributed to the study and only 17 participants were selected for structural interview sessions. The study aims to contribute valuable perspectives to the existing literature on gender equality by unravelling the multifaceted challenges faced by women with ASDC in various societal domains. Finding underscore the critical need for targeted educational programs, innovative employment models, and curriculum adaptation within the Malaysian TVET program to enhance employability and independence for ASDC women. The study advocates for a comprehensive, multi-faceted approach to remove systemic barriers and promote gender equality, emphasizing the potential of women with ASDC as agents of change in their communities.

Keywords: Gender Equality, Autism Spectrum Disorder Condition (ASDC), Female Autism, Education, Economic Empowerment, Workplace Dynamics

1. The Intersection of Autism and Gender in Self-Definition

1.1 Autism: A Gendered Concept.

Gender inequality is a pervasive issue within the autism community, often overshadowed by the focus on the condition itself. However, current research has highlighted the unique challenges faced by individuals with autism spectrum disorder based on their gender identity (Sedgewick, 2020; Blair et al., 2020). This intersection of autism and gender has drawn increasing attention from clinicians, researchers, and advocates alike. The study shown that there are differences in the way ASDC presents in males and females, with females being underdiagnosed or receiving diagnoses later in life due to difference in the way they express their symptoms (Hume, K. et al., 2021; Lai et al., 2015). This underrepresentation has led to a lack of research on the unique challenge faced by individuals with ASDC who are female or non-binary. This is due to the misconception that autism predominantly affects males, leading to underdiagnosis and misdiagnosis in individuals whose gender does not align with this stereotype (Gesi et al., 2021). Consequently, there is a need to understand how societal expectations and norms around gender can impact the experiences of individuals with autism.

This study examines the additional difficulties experienced by women with ASDC due to societal expectations based on gender in Malaysia. These expectations affect how parents, educators, and professionals perceive and respond to their behaviours (Bargiela, 2015; Cheslack-Postava et al., 2014). The presence of gender-conforming hobbies among females with ASDC, such as a preference for reading, crafts, or animals, might make it more difficult to identify ASDC features, therefore making the diagnosis procedure more complex (Davidson & Tamas, 2016; Duvekot et al., 2017). The presence of misunderstandings and the internalization of symptoms highlight the significance of exploring how gender and ASDC intersect to shape self-identification and experiences of ASDC.

Recent statistical analysis of ASDC in Malaysian cases has shed light on the gendered nature of the condition (Eow, S.Y., 2020). The research findings indicate that there is a significant gender disparities ASDC diagnoses, with males being diagnosed at a much higher rate than females (Kaman et al., 2023). This pattern aligns with global trends, reflecting the underrepresentation of females in ASDC diagnoses. The underdiagnosis of females in Malaysia raises concerns about the potential lack of support and resources available to meet their specific needs.

Additionally, the societal expectations and norms around gender in Malaysia may influence the experiences of individuals with ASDC, particularly those who are female or non-binary (Yee et al., 2020; Asahar et al., 2021). These expectations can impact their access to resources, support, and inclusion in the community. As such, it is imperative to consider the intersection of gender and ASDC in the Malaysian context to provide tailored interventions and support services that address the unique challenges faced by them across diverse gender identities.

This study utilized a qualitative research approach, which was based on an epistemological basis that combines feminism, education, leadership, and workplace dynamics within an ASDC development paradigm in particularly women individuals. These important ways of thinking about knowledge are crucial for examining dominant cultural stories, with the goal of clarifying the intricate relationship between educational and leadership concepts and how they impact human experiences (Turi, M., 2015). This research aims to question traditional ASDC assumptions and give more attention to the perspectives of marginalized groups who are frequently ignored or not given enough importance in mainstream discussions. It adopts a feminist developmental strategy to achieve this goal (McPartland, 2011; Parr, J. R. 2011).

Addressing this notable gap, the current study presents the lived experiences of ten Malaysian females and seven males diagnosed with ASDC, delving into the intricate ways in which gendered expectations influence their experiences of ASDC, their self-perception, and overall well-being. The findings from this study illuminate that these women grappled with reconciling societal expectations, especially those related to femininity, from an early age. The challenge to adhere to stereotypical feminine ideals was a recurrent theme, indicating a profound discord between their inherent identities and the external societal norms (Cridland et al., 2014; Davidson et al., 2014).

As these females progressed into later stages of life, they reported a diminishing pressure to conform to these gendered expectations, instead embracing their unique individualities and behaviors. This evolution highlights a significant shift in their self-conception, moving away from societal conformity towards self-acceptance (Hull et al., 2017).

Understanding the statistical prevalence and gendered experiences of ASDC in the Malaysian population is essential for informing policies and practices that promote gender equality within the autism community. By recognizing the gender disparities and societal influences on the individuals with ASDC in Malaysia, we can work towards creating inclusive and supportive environments that cater to the diverse needs for this special populations.

1.2 Rationale

The aim of this research is to examine the contributions of women with ASDC to the social, educational, and workplace dynamics within their communities. This study seeks to understand the ways in which ASDC women engage with and influence their societies, particularly in the context of promoting gender equality and contributing to sustainable development in their country. The specific aims of the study are delineated as follows:

1. This study explores how women with ASDC strengthen interpersonal relationships, enhance education, empower economically, facilitate inheritance rights, and contribute to better workplace conditions in their communities. The research seeks to reveal how these women conserve and improve essential societal features, revealing their vital role in community development and social growth.
2. To examine the role of gender equality affects the ASDC community and evaluate its significance in reaching the country's goals for sustainable development.
3. This investigation aims to shed light on the unique positions and potential of ASDC women as agents of change in their communities, emphasizing their contributions towards creating more inclusive, equitable, and sustainable societies.

2. Method

2.1 Methodology

This study emphasizes the mixed-method approach to investigate the dynamic educational attainment, economic empowerment, inheritance access and workplace integration for ASDC. The mixed-mode method allows a comprehensive understanding of the complexities and nuances of the experiences of individuals with ASDC in various spheres of life.

To achieve the study aims, a qualitative semi-structured interview has been utilized to capture the live experiences. The study focuses on ASDC patients, families, educators, employers, and healthcare providers. Semi-structured interviews record ASDC people's personal experiences and issues with education, employment, inheritance, and social integration. Thematic evaluation can reveal narrative patterns and themes from these interviews. Additionally, quantitative measures of questionnaires assessment have been employed to gather numerical of demographic population, educational outcomes, economic empowerment, employment rates, and financial independence among individuals with ASDC. Quantitative data will be collected through surveys and standardized assessments to gather numerical information on educational attainment, employment status, income levels, and access to inheritance for individuals with ASDC. A comparative analysis of the quantitative data of ASDC and neurotypical individuals has been conducted to identify disparities and trends.

2.2 Methods

The eligibility criteria for participant selection in this study were that individuals be male and female, with minimum of seven (7) years of age or older, residing in Malaysia, diagnosed with autism spectrum disorder (ASDC), and self-identifying as 'high functioning'. Although the term 'high functioning' is a subject of dispute within the ASDC community since it has the potential to oversimplify and misinterpret the complex experiences of individuals with ASDC, it was used in this study as a commonly accepted, if informal, descriptor (Linton et al., 2014). Participants were invited to express their viewpoints and describe their personal experiences with this label, thereby shedding light on the inherent intricacies and difficulties connected with it.

To enhance engagement, a dedicated online group discussion was established, serving as conduits for disseminating study-related information and fostering a beneficial connection between participants, teachers, families, and the researcher. Participants were given the freedom to select a suitable place and arrangement for the interviews. Significantly, there were small rewards provided to encourage participation, guaranteeing that involvement was optional and driven by a sincere desire to contribute to the research.



Figure 1: Teacher-Researcher-Participants discussion session upon conducting the data collection.

2.3 Participants

The population's demographic characteristics are presented in Table 1. The participants involved in this study voluntarily disclosed that they had been officially diagnosed with ASDC. The contributed participants' ages ranged from 9 to 40 years, with an average age of 47.4 years and a standard deviation of 5.3 years. All subjects, except for one, reported being diagnosed during the past five years. It is essential to emphasize that the study did not independently validate the official diagnosis, nor did it give a self-report screening instrument to confirm ASDC diagnoses. To ensure confidentiality and preserve the anonymity of participants, pseudonyms were employed throughout the analysis phase.

Table 1: Participant Demographics

Participants (coded)	Age	Gender ^a	Diagnosed ASD severity ^b	Co-occurrence condition	Marital status	Highest Education Level	Current Employment
RA	14	F	SL 2		Single	Not Schooling	No
QA	19	F	SL 1		Single	Secondary	Yes
HA	15	F	SL 1		Single	Not Schooling	No
CR	9	F	SL 1		Single	Primary	No
FI	21	F	SL 1	Not Reported	Single	Secondary	Yes
ZU	32	F	SL 1	post-natal depression, anxiety	Married with two children	Not Schooling	Yes
MA	24	F	SL 2		Married with no children	Not Schooling	Yes
JE	17	F	SL 1		Single	Secondary	No
LA	40	F	SL 2	Asperger's	Single, divorced with no children	Not Schooling	Yes
AS	16	F	SL 3	Anxiety, depression, eating disorder, social anxiety, obsessive-compulsive disorder, attention-deficit hyperactive disorder	Single	Not Schooling	No
IK	21	M	SL 2		Single	Secondary	Yes
MU	29	M	SL 2	LD, Anxiety	Social Single	Not Schooling	Yes
IF	25	M	SL 2	LD, Anxiety, Obsessive-Compulsive	Social Single	Not Schooling	Yes
FA	20	M	SL 2	Anxiety, Social	Single	Secondary	Yes
IQ	18	M	SL 1	ADHD, LD	Single	Secondary	Yes
IZ	18	M	SL 1	ADHD, LD	Single	Secondary	Yes
KH	27	M	SL 1	LD	Single	Primary	Yes

^a M = male; F = female.

^b SL = Support Level; SL 0= None; SL 1= Mild/Requiring support; SL 2= Moderate/Requiring Substantial support; SL 3= Severe/Requiring Very Substantial support

3. Findings and Discussion

3.1 Theme 1: Educational Attainment and Economic Empowerment: Addressing Societal Challenges for Women with ASDC

Gender biases and stereotypes significantly affect the self-efficacy and aspirations of women diagnosed with ASDC, shaping their educational pursuits and access to economic opportunities (Giarelli et al., 2010). This theme offers a nuanced exploration of how gender biases and societal stereotypes impact individuals differently, based on gender. Drawing upon the lived experiences and testimonies of participants in this study, we observe a complex interplay between gender norms and the challenge faced by ASDC, particularly women, in accessing education and economic empowerment.

"School seemed fun for my friend, and I really wanted to join in on the sports, but I couldn't. I always say it's important for women here to get an education because it makes finding a job so much easier."..... (HA)

"School is fun, I join the sports, but I didn't enjoy it. The laugh at me when I fall to ground" (IK)

"I can read Malay Language, though my teacher thinks my writing needs work. At school, I was bullied and felt left out by friends from other communities, and even in the city, people stared at me strangely."..... (CR)

The statements from participants highlight a poignant disparity in educational experiences between genders, exacerbated by societal biases towards individuals with ASDC. For instance, HA expresses the desire to partake in educational and extracurricular activities but feels restricted by societal expectations and her ASDC. Similarly, CR's statement sheds light on the bullying and isolation experiences by woman with ASDC, not only from their peers but also from broader societal interactions, underscoring the additional barriers they face in educational environments.

Those experiences, however, contrast with the male participant, IK, who, despite facing all challenges such as bullying, still finds school enjoyable and participate in sports. The discrepancy may reflect a broader societal tolerance for neurodivergent behaviours in men than women, where stereotypes and expectations of conforming to normative behaviours can be more stringent for women (Giarelli et al., 2010).

"I don't go to school, my mom buy all my needs" HA

"I got no money; I don't know what to purchase for myself" CR

"I go shopping with my mon. I choose myself what to buy" IK

Economic empowerment narratives further elucidate gender disparities. HA's reliance on her mother for financial support highlights a dependency that may stem from limited access to education and economic opportunities. CR's statement about not having money or understanding how to manage purchases reflects a lack of empowerment and independence, issues that are often magnified for women with ASDC due societal prejudices and lack of supportive structures.

Conversely, IK's experience of shopping independently suggests a greater level of autonomy and economic empowerment. This could be attributed to gendered expectations that encourage independence in men, potentially affording them more opportunities to develop autonomy and financial literacy from young age.

3.2 Theme 2: Gender Disparities: Advocating for Equitable Inheritance Rights and Challenges on ASDC Equality

Central to this investigation is the exploration of how educational attainment among individuals with ASDC influences their access to essential resources such as property, inheritance rights, and financial services. This inquiry is particularly pertinent in understanding the systemic obstacles that obstruct women with ASDC from securing and managing these crucial assets, shedding light on the wider socio-economic impediments faced by this demographic. The assessment of the statement from ASDC regarding their understanding and perceptions of property rights and inheritance illuminates the complex interplay between gender, ASDC, and socio-legal awareness. This comparative analysis reveals distinct nuances in the experiences and understanding, suggesting that both gender and ASDC significantly shape their own perspectives on economic empowerment and legal awareness.

"I understand my rights completely, even with my ASD diagnosis, and I know they're the same as anyone else's, men included." (LA)

"I don't know that my parent's house can be my house if she's gone " (QA)

"I work hard so I can buy my own house, and just like my brothers and sisters, I should be able to inherit what my parents leave behind, but I don't know how." (IF)

My parents' house. No, I don't know whether I can still stay in the house if they are no longer here, I don't know how to live without them." (MU)

LA's assertion exemplifies the aspirations and challenges faced by women with ASDC. Her statement reflects a strong sense of right awareness and self-advocacy. This declaration not only indicates a high level of self confidence in her legal understanding but also recognition of gender equality in legal rights. This awareness is pivotal for empowerment and advocacy among women with ASDC, as highlighted by (Kinnear, et al., 2016), who emphasize the importance of legal literacy for individuals with disabilities in asserting their rights.

In contrast, QA's expression of uncertainty concern underscores a gap in knowledge about inheritance laws that could significantly impact her future security and independence. This reflects findings by (SL Odom et al., 2014), who suggests that individuals with disabilities often face challenges in accessing information that is critical for their legal and economic empowerment, particularly in the context of inheritance.

IF' statements mirror the confusion evident in QA's sentiment but introduces a proactive approach towards economic independence. This reflects the gendered expectation of self-reliance traditionally associated with men but also reveals a lack of specific knowledge about inheritance process, a concern echoed in the literature on disability and socioeconomic inclusion (Wehmeyer et al., 2017).

MU's concern points to an underlaying anxiety about the future that extends beyond the legal realm into emotional dependence and stability. This highlights the intersection of socio-emotional support needs and legal awareness of ASDC, as discussed by (Blackhurst, et al., 2022), emphasizing the importance of holistic support systems.

The comparison reveals that while both genders express concerns about their understanding of property rights and inheritance, there is a notable difference in their responses. Women's statement suggests a keen awareness of gender equality in rights but reveals gaps in specific knowledge about inheritance. In contrast, men's statements reflect a traditional emphasis on self-reliance on economic independence but similarly display a lack of detailed understanding of inheritance laws. The findings underscore the necessity for tailored educational and support services that address both gender-specific challenges and their unique needs. Enhancing legal literacy among ASDC, particularly regarding property and inheritance, is critical for fostering independence and security.

3.3 Theme 3: Social Psychology and Workplace Dynamics for ASDC Inclusion

In Malaysia, individuals diagnosed with ASDC face significant barriers to entering and retaining employment, leading to high rates of unemployment and underemployment (Rai, D. et al., 2014; Howlin et al., 2004; Roux et al., 2013; Shattuck et al., 2012; Taylor et al., 2015). The economic and societal benefits of increasing workforce participation among this group, as well as among people with other disabilities, are substantial, indicating a potential for broad societal improvements (Buescher et al., 2014; Fleury et al., 2009; Knapp et al., 2009). Additionally, employment plays a crucial role in enhancing the physical and psychological well-being of individuals with ASDC (Chen et al., 2015; Creed and Macintyre, 2001; Feather and O'Brien, 1986).

Table 2: Participants' Jobs and Individual Attribute

Job Classification ^a	Participants (coded)	Gender ^b	Age	Previous Work Experiences ^c	Co-occurrence condition
Office and administrative support	JE	F	17	1	
Food preparation and serving related	QA	F	19	2	LD
	FI	F	21	2	
	LA	F	40	20	LD, Asperger's
Sales and related	MA	F	24	2	
	IK	M	21	1	
Education, training, and library					
Arts, design, entertainment, sports,					

Job Classification ^a	Participants (coded)	Gender ^b	Age	Previous Work Experiences ^c	Co-occurrence condition
and media					
Helpers–production workers	MU	M	29	3	LD
	IF	M	25	2	LD, Anxiety, Social Anxiety, Obsessive-Compulsive
	FA	M	20	3	Anxiety, social anxiety
	IQ	M	18	1	ADHD, LD
	IZ	M	18	1	ADHD, LD
Computer and mathematical					
Agricultural, Fishery and Plantation	KH	M	27	5	LD

^a Classified according to O*NET Online (2019) “job family”, Scott et.al (2019).

^b M = male; F = female.

^c Number of former workplaces; ADHD = attention deficit hyperactive disorder; LD = learning disabilities.

The evaluation of statements provided by individuals with ASDC offers valuable insight into nuanced experiences of employment and entrepreneurship within this community, particularly in relation to social psychology and workplace dynamics. This study analysis focuses on comparing the perspective of male and female participants to understand better the intersectionality of gender, ASDC, and national vocational aspiration.

"In our place, men and women share the same beliefs and follow the same traditions. Taking care of kids is everyone's job, not just the men, and I can say and do whatever I want." ... LA

"My dad said growing trees can bring in some extra money. I work and even started my own business to make my own cash, just like my friend who makes money by selling chickens." (MU)

Entrepreneurial pursuits and social integration-MU's statement highlights the role of entrepreneurship as a pathway to economic self-sufficiency and autonomy. This entrepreneurial spirit is emblematic of the search for meaningful and fulfilling vocational opportunities that accommodate their needs and preferences, as discussed by (Hillier, A., et al., 2007), who underscore the importance of self-employment for individuals with ASD as means to circumvent traditional employment barriers.

KH's experience of working within his community underscores the significance of social support and understanding in the workplace. His statement reflects the benefits of inclusive workplaces that attend to the diverse needs of employees, as highlighted by (Lorenz, T., et al, 2016), emphasizing the role of support networks in enhancing employment outcome for ASDC.

"I can't work with people who look me as a stranger, but I can work on my own small business." ... MA

"I've work with normal people but it's better for me to work with my own community, we can share everything to each other. The teacher helps me a lot to do the work task." (KH)

MA's declare her preference for entrepreneurship as a means to circumvent social exclusion in the workplace echoes the sentiments expressed by MU, suggesting a gender-neutral trend among ASDC towards seeking autonomy and understanding through self-employment.

Both male and female participants underscore a common inclination towards entrepreneurship as a strategy, for achieving vocational success and economic independence, reflecting a broader trend within the ASDC community. This suggests that the challenge associated with traditional employment-such as social exclusion, misunderstanding, and the need for adaptive work environments-transcend gender differences.

However, the emphasis on community support and understanding as critical factors in workplace success points to the importance of social integration and acceptance in enhancing vocational outcomes for individuals with ASDC. This is particularly evidence in KH's statements, which highlight the benefits of working within their own supportive community context.

The findings suggest the need for more inclusive and flexible opportunities that can accommodate the unique needs and preferences of ASDC, regardless of gender. Enhancing workplace inclusion and support mechanism can significantly impact the vocational trajectories of men and women with ASDC, as evidenced by the positive

outcomes associated with entrepreneurship and community-based employment.

4. Conclusion

The study underscores the urgency of addressing the systemic barriers that disproportionately affect women with ASDC, from educational access and economic empowerment to inheritance rights and workplace inclusion. As we move forward, a comprehensive, multi-faceted approach is essential. This shall include:

- Developing inclusive education program specifically address the need and aspirations of women with ASDC, focusing on empowering them to understand and assert their inheritance and property rights.
- Promoting entrepreneurship and innovative employment models that accommodate the unique talents and needs of women with ASDC, while fostering supportive community and workplace environments.
- The Malaysian TVET program, focusing on practical skills, is well positioned to support individuals with ASDC, particularly women, by offering vocational training tailored to their unique needs. This alignment enhances their employability and economic independence. For optimal impact, the program must adapt its curriculum and support services to the learning styles and social challenges specific to women with ASDC. Such adaptations could significantly contribute to breaking employment barriers, promoting gender equality, and fostering sustainable development in Malaysia by empowering this underrepresented group to achieve vocational success and social inclusion.

Ultimately, the empowerment of women with ASDC hinges on our collective commitment to creating a society that value and uplifts all its members, recognizing the immense potential within everyone, irrespective of their neurodivergence. By embracing these recommendations, we can pave the way for a future where woman with ASDC not only thrive but lead in preservation and development of their communities.

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Declarations

Research involving human participants *Yes*

Informed consent *Yes*

Conflict of interest *On behalf of all authors, the corresponding author states that there is no conflict of interest.*

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The Education Impact on the Innovativeness of Female Entrepreneurship: a Systematic Literature Review

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Abstract: The women's education and its potential impact on entrepreneurship and innovation represent a growing interest in socioeconomic academic research (Paoloni and Manzo, 2023; Pereira, 2020; Bishu and Alkandry, 2017). The present paper makes a systematic literature review based on the topic of Gendered Education and Innovation in female entrepreneurship, considering the evolution over almost the last two decades and the current state of the art. The study is based on the Scopus database. It examines articles, books, and indexed conference proceedings that have focused on the influence of women's education on their entrepreneurial journey and innovative capabilities. The studies having in Abstract, Title, or Keywords "education " AND " innovation " AND " entrepreneur* " OR "enterprise*" AND "gender" are 257. Source types, year of publication, field of research, source title, keywords, country/territory, and language classify studies. After this, the most cited studies were analyzed to answer the RQs. The studies reviewed show a positive correlation between women's level of education and the likelihood of engaging in entrepreneurial activities. Education provides technical and managerial skills, boosts self-confidence and expands networking, facilitating access to resources and opportunities (de las Mercedes Barrachina Fernández et al., 2021; Gupta et al., 2009). From a theoretical point of view, the research contributes to gender studies about female entrepreneurship, focusing on the relationship between education and innovation. Analyzing how education influences women's entrepreneurship can help identify and address educational and socio-cultural barriers that limit women's access to entrepreneurship and active participation in innovation. From a managerial perspective, the results of such research can inform public policy, guiding government and organizational efforts in promoting specific educational programs that encourage women's entrepreneurship and innovativeness. Promoting women's innovativeness and entrepreneurship can contribute to overall economic development, as greater inclusion of women in the business landscape can lead to increased diversity, competitiveness and innovation (Minniti and Nardone, 2007; Morton et al., 2016; Pereira, 2019; Pereira and Salaris, 2019;).

Keywords: Innovation, Female Entrepreneurship, Gender, Education, Gender gap

1. Introduction

Research on disparities based on gender began in the early 1900s, witnessing a significant surge in the 1970s (Oaxaca, 1973), and saw an even greater expansion in recent years (Atena and Tiron-Tudor, 2019). In any work environment, the gender gap manifests as differences between women and men in aspects like job market presence, job participation, unemployment, disparities, among others (Pereira and Salaris, 2019). Historically, women have encountered various challenges in the job market, often perceived as having a less strong commitment to their work, accompanied by higher rates of absence and job change (Kiros and Abebe, 2020). In the past hundred years, particularly in recent decades, most developed countries have seen a reduction in the gender gap. The growing prominence of women in labor markets has led to significant shifts in developed economies. However, disparities in areas like wages, promotion opportunities, and employment continue to exist (Pereira, 2019). Women's entrepreneurship is crucial for economic growth, especially in developing economies, and for promoting social inclusion and combating poverty and discrimination. They significantly contribute to entrepreneurial activity, job creation, GDP increase, reduction of poverty and social exclusion (Cardella et al., 2020). However, the proportion of women pursuing entrepreneurial careers is lower than that of men, with a more significant disparity in more developed countries (Modaffari and Manzo, 2019; Pereira 2019).

Cultural stereotypes and social roles assigned to men and women can explain the gap between male and female entrepreneurship. Stereotyped, male-centred visions of business discourage women from engaging in entrepreneurial activities and create societal barriers. Men and women face different challenges in accessing various forms of capital, such as institutional, family, and financial support (Modaffari et al., 2023). In particular, literature suggests that women's enterprises (WEs) are less attractive to investors due to structural characteristics (Alesina et al., 2013), personal decisions (Heilman, 2001), and stricter credit policies (Cesaroni and Sentuti, 2016). These businesses are typically smaller, newer, and have less capital (Cesaroni and Sentuti,

2014). Fear of failure and self-efficacy are further significant barriers for women in pursuing entrepreneurial careers (Dohmen and Falk, 2011). Their limited debt is also attributed to poor financial literacy (Sena et al., 2012), a preference for small businesses (Morris et al., 2006), or work-life balance (Cliff, 1998). Banks favour larger, established companies for loans, leading to WEs relying more on personal financing (Bellucci et al., 2010; Coleman and Robb, 2009;). Despite these challenges, women are adept at creating value through new ideas (Burgess and Tharenou, 2002) and collaboration (Kuhn and Villeval, 2015), building strong networks (Paoloni et al., 2022), which enhances market awareness and innovation (Jia et al., 2020). Previous research recognized that the gender gap in entrepreneurship is largely influenced by a significant educational disparity (Paoloni and Manzo, 2022), affecting not just women's entrepreneurial ambitions, but also their business performance (Kuschel et al., 2020) and their innovativeness (Modaffari and Manzo, 2022).

The present study aims to deepen the relationship between the education received by women and the innovativeness of female-led enterprises. With this aim, the present analysis wants to answer the following Research Questions (RQs):

RQ1: According to the existing literature, what are the trend topics concerning women's education and entrepreneurial innovation?

RQ2: Can the education received by women affect female entrepreneurship in terms of innovation?

RQ3: What thriving future research areas is possible to identify?

The research is based on a systematic literature review (Papaioannou et al., 2016; Petticrew and Roberts, 2008; Tranfiel et al., 2003) focused on the topic of Gendered Education and Innovation in female entrepreneurship and carried out through Scopus database. The final sample, involving research having in Abstract, Title, or Keywords "education " AND " innovation " AND " entrepreneur* " OR "enterprise*" AND "gender", is composed of 257 documents.

The work is structured as it follows. Section 2 defines the literary background from which our analysis is carried out. Section 3 defines the methodology. Section 4 exposes the results of the SLR, answering RQ1. Section 5 discusses their answering RQ2. Section 6 summarizes conclusions and future research, answering RQ3.

2. Educational Impact on the Innovativeness of Female Entrepreneurship: Introductory Framework

Entrepreneurs, regardless of gender, generally possess a higher level of education compared to non-entrepreneurs (Dolinsky et al., 1993). However, the comparative educational levels between female and male entrepreneurs are not definitively established. For example, Cowling and Taylor (2001) observed that in the United Kingdom, female entrepreneurs typically have a higher educational background than their male counterparts. Conversely, male entrepreneurs tend to attain higher levels of postsecondary education compared to female entrepreneurs. Meanwhile, several other studies, including those by Brush (1992), and Burke et al., (2002), indicate no significant correlation between education levels and the likelihood of becoming self-employed.

The first studies focusing on the educational impact on the innovativeness of female entrepreneurship was published 1996, when Crant (1996) revealed that the desire to start a business correlates with factors such as gender, educational background, having an entrepreneurial family member, and especially a proactive personality (Crant, 1996). From that year, even the subsequent literature collectively suggests that education plays a crucial role in enhancing the innovativeness of female entrepreneurship by providing interdisciplinary knowledge, fostering entrepreneurial attitudes, valuing diversity (Harris and Gibson, 2008), adapting to global trends, and offering practical skills and training (Meyer et al., 2007). Research on women entrepreneurship has significantly expanded during the two first decades of 21st century. This field is interdisciplinary, addressing the importance of entrepreneurial education, social entrepreneurship, and socio-cultural contexts as tools to overcome gender gaps.

3. Data Base and Methodology

The present paper applies a systematic literature review according to Papaioannou et al. (2016), Petticrew and Roberts (2008) and Tranfiel et al. (2003) based on the topic of Gendered Education and Innovation in female entrepreneurship, considering the evolution over almost the last two decades and the current state of the art. The study is based on the Scopus database, from 1996 to 2023. It examines articles, books, and indexed

conference proceedings that have focused on the influence of women's education on their entrepreneurial journey and innovative capabilities. It considers the studies having in Abstract, Title, or Keywords "education " AND " innovation " AND " entrepreneur* " OR "enterprise*" AND "gender", and according to this search resulted in 257 publications. The last extraction was made on 22nd November 2023. Source types, year of publication, field of research, source title, keywords, country/territory, and language classify studies. Following this process, the principal factors influencing the Gender Gap in the marketplace were examined based on the findings of the reviewed literature, and the most cited studies were analyzed to answer to the four proposed RQs:

RQ1: According to the existing literature, what are the trend topics concerning women's education and entrepreneurial innovation?

RQ2: Can the education received by women affect female entrepreneurship in terms of innovation?

RQ3: What thriving future research areas is possible to identify?

4. Women's Innovation and Education: Systematic Literature Review

The period under analysis, in the Scopus database, using the search about the education impact on the innovativeness of female entrepreneurship found a total of 257 publications. Most of these publications are articles in journals (161), conference papers (32), book chapters (25), conference reviews (23), 1 editorial, and 1 retracted.

Figure 1 shows the trend of literature focusing on the educational impact on the innovativeness of female entrepreneurship. The trend was stable from 1996 until 2008, then it met two increasing phases, from 2009 to 2012, and from 2014 to 2022. Between 2012 and 2014, instead, the annual publications on this topic slightly decreased.

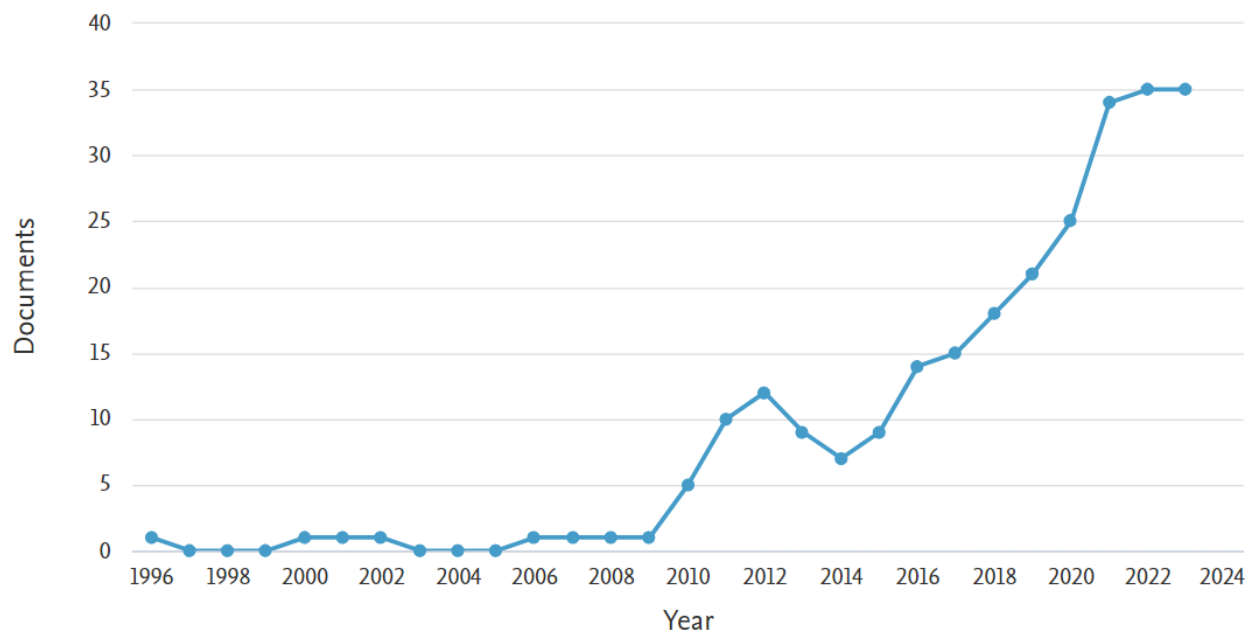


Figure 1: Number of publications between 1996 and 2023 (Scopus Database)

According to the field of research, most of the publications were in the field of Business, Management and Accounting (116); Social Sciences (114); Economics, Econometrics and Finance (64); Computer Sciences (46); and Engineering (44) (Table 1).

Table 1: Number of publications by field of studies (Scopus database)

Field of Studies	Number of Publications
Business, Management and Accounting	116
Social Sciences	114
Economics, Econometrics and Finance	64
Computer Science	46
Engineering	44

Field of Studies	Number of Publications
Environmental Science	22
Decision Sciences	19
Psychology	14
Energy	14
Medicine	6
Agricultural and Biological Sciences	6
Arts and Humanities	4
Earth and Planetary Sciences	3
Biochemistry, Genetics and Molecular Biology	3
Mathematics	2
Pharmacology	1
Neuroscience	1
Multidisciplinary	1
Material Sciences	1
Immunology and Microbiology	1
Health professions	1

According to the source title, the Journals with more publications were: Sustainability Switzerland (11); Frontiers in Psychology (9); Education and Training (5); International Journal Of Gender And Entrepreneurship (5); Ciriec Espana Revista De Economia Publica Social Y Cooperativa (4); African Journal Of Science Technology Innovation And Development (4); Journal Of Industrial Engineering And Engineering Management (3).

About the keywords that are more common in the publications under the topics in analysis, these are Gender (49), Entrepreneurship (45), Innovation (43), Education (33), Engineering Education (22), Students (18), Entrepreneur (17).

The authors' affiliation countries/territories with more publications are: United States (with 57 publications), China (26), Spain (26), United Kingdom (15), India (11), Portugal (10), Mexico (9), Australia (6). After that, Italy, Germany and Canada, each with 7 publications; South Africa, Malaysia, France each with 6 publications; United Arab Emirates, Czech Republic, Brazil (5); Taiwan, Romania, Pakistan, Nigeria, Indonesia, Hong Kong, Finland (4); Uganda, South Korea, Serbia, Netherlands, Iran, Denmark, Colombia (3).

About the language of publications, most of the publications were published in English (247 publications), Spanish (9), Chinese (3), French (1).

In terms of the topics mainly covered, in the extracted sample of research analyzing the intersection between the two variables "innovation" and "education," it is possible to see that the authors often consider subcategories of either variable. Those most often treated are summarized in Table 2.

Table 2: Summary of main subject studies about Educational impact on female enterprises innovativeness (Authors elaboration)

Subject of Study	Content	Some Authors
Type of Innovation		
Technological Innovation	Studies involved in this category focus on the implementation of new digital technologies and/or involve areas of computer science or STEM.	Ge et al., 2022; Liani et al., 2023; Pallissery, 2022; Serrano et al., 2023;
Social Innovation	Social innovations may include new business models, organizational processes, products, or services that focus on sustainable solutions that have a positive impact on society.	Kim, 2023; León-Pozo et al., 2021; Sahni et al., 2023; Suseno and Abbot, 2021.
Entrepreneurial intention	These studies consider the innovative drive that leads men and women to choose to pursue entrepreneurship	Bijedić et al., 2021; Elliott et al., 2021; Guelich, 2022; Sánchez Cañizares and Fuentes García, 2010.
Generic Innovation	These researches refer generically to the concept of innovation in the context of a business organization, without specifying its type, source, or mode of implementation	Exposito et al., 2023; Gaies et al., 2023; Mickey and Smith-Doerr, 2022.
Type of Education		
Specific entrepreneurial training	These studies investigate the impact on innovation of specific training courses delivered in-house by companies or other organizations	Harris and Gibson (2008); Portuguese Castro and Gómez Zermelo, 2020; Tortia et al., 2022.
Higher education	This level of education includes various types of programs and institutions, such as universities, colleges, technical institutes, and vocational schools.	Erić-Nielsen et al., 2019; Gaies et al., 2023; Vázquez-Parra, et al., 2021.
Culture	These studies consider the cultural aspect of education, thus the education that, voluntarily or involuntarily, comes from families, society, and institutions	Crant (1996); Exposito et al., 2023; Zhang and Du, 2023.

5. The Relationship Between Education and Female Entrepreneurship Innovation

The accumulated research highlights the complex influence of education on female entrepreneurship, particularly in fostering innovation and entrepreneurial drive. Bijedić et al. (2021) examine how gender disparities, career trajectories, and human capital aspects impact the flow of innovations, noting that women tend to produce fewer inventions, possibly due to gaps in educational or systemic support for female innovators. Further research, like Liani et al. (2023) shed light on women's obstacles, including limited resource access and prevalent gender stereotypes, often discouraging them from entrepreneurial endeavors. Historically, female entrepreneurs have been shown to secure less funding than their male counterparts (Brush et al., 2009) and are more inclined to use personal finances for startup ventures (Coleman and Robb, 2009). This financial gap contributes to an increase the gender gap when considering entrepreneurial intention. This underrepresentation of women is even more pronounced in high-tech sectors, due to the fewer number of women earning STEM doctorates compared to men (Blume-Kohout, 2014; Serrano et al., 2023), and is further compounded by the reluctance of technologically skilled women to take up leadership roles in IT due to the sector's inherent challenges (Pallissery et al., 2022). Pallissery et al. (2022), in their study on Indian companies, identify key factors that deter women's engagement in entrepreneurial innovation in high-tech sectors, emphasizing the cultural factors that exacerbate the gender gap in entrepreneurship, especially in technologically advanced companies. They point out that traditional family structures and patriarchal norms in India limit women's professional opportunities, as family duties often hinder their ability to take on significant roles like IT company board management. The study also notes that women with modern views and strong qualifications are frequently overlooked by male IT executives who are reluctant to accept female leadership. Additionally, it observes that training programs in IT companies need to be revised to prepare women for leadership roles, and stringent share qualification criteria for directorships in publicly traded companies are substantial hurdles for aspiring women leaders (Pallissery et al., 2022). These insights underscore the necessity for educational strategies that impart entrepreneurial skills and tackle the broader social and cultural barriers women face. For example, fear of failure has been identified as a significant deterrent for women initiating entrepreneurial activities (Cañizares and García, 2010). Entrepreneurship education can mitigate this fear, fostering more innovative entrepreneurial activities, positively influencing entrepreneurial intent, and helping bridge the gender gap in entrepreneurial identity (Elliott et al., 2021; Guelich, 2022). Studies also suggest that implementing regulations against gender discrimination in both public and private sectors could foster an environment conducive to entrepreneurial culture among women (Ge et al., 2022).

In the context of global disparities and social injustices exacerbated by globalization, social innovation emerges as a critical mechanism for addressing inequities and empowering communities (León-Pozo et al., 2021). León-Pozo et al. (2021) analyze the social innovation level in women's enterprises, considering variables like the entrepreneur's life profile, collaborative capacity, originality of the initiative, and social impact. They find that women entrepreneurs' educational level and socioeconomic status significantly influence their potential for social innovation. Nonetheless, individual cases show that ethics, values, and a genuine desire for social change can drive women to innovate, regardless of their socioeconomic status.

Hechavarría et al. (2017) investigate gender dynamics in social entrepreneurship. They find that women increasingly participate in social entrepreneurship, driven by societal needs and personal values. This participation often reflects a desire to address specific social issues disproportionately affecting women. Shaw and Carter (2007) explore motivations behind women's engagement in social entrepreneurship. Their study reveals that women often enter social enterprises to pursue economic and social goals, frequently driven by personal experiences or recognition of unmet social needs. Women's participation in this field is often driven by personal experiences, societal needs, and the desire to address specific social challenges. Educational programs, supportive policies, and inclusive environments are crucial in empowering women to engage in and contribute to social innovation fully. As such, understanding and addressing the barriers while leveraging the unique strengths of female entrepreneurs is critical to fostering a more equitable and socially innovative entrepreneurial landscape. Studies by Ahl (2006) suggest that education and gender-specific training programs can significantly enhance women's entrepreneurial skills and their propensity to engage in social innovation. These programs can even help overcome barriers like fear of failure and lack of technical know-how (; Portuguez Castro and Gómez Zermeño, 2020; Tortia et al., 2022).

6. Conclusions and Future Research

Previous studies have recognized education as a relevant source of the entrepreneurial gender gap (Bijedić et al., 2021; Modaffari and Manzo, 2022). This study, based on a systematic literature review, aimed to observe how the relationship between education and innovation has been addressed in the literature. To answer RQ1, from the research, it is possible to decompose the two macro variables of innovation and education. Based on the object or purpose of the innovative process, the main foci emerging from the literature are the intention to start a business, the desire to innovate the organization, technological innovation, and social innovation (Hechavarría et al., 2017; Liani et al., 2023;). On the other hand, depending on the context in which it is generated, education may involve high levels of education, specific training courses, or general cultural education. As for the relationship between these two variables (RQ2), what emerges is that education plays a pivotal role in female entrepreneurship and innovation (Elliott et al., 2021; Guelich, 2022). Educational strategies focusing on entrepreneurial skills can help mitigate female entrepreneurs' barriers, fostering innovation and bridging the gender gap in entrepreneurial identity. Supportive policies and training programs tailored to women's needs are crucial for their full engagement in entrepreneurial and social innovation activities (Ge et al., 2022; Palliserry et al., 2022).

Answering RQ3, based on the present analysis, some future areas of research that seem interesting are:

1. Deepening how educational policies influence women's entrepreneurship, particularly in STEM areas. This could include studying the effect of mentoring initiatives, women-specific scholarships, and entrepreneurship skills development programs.
2. Exploring how education in emerging technologies (such as artificial intelligence, blockchain, etc.) can be structured to attract and support more women.
3. Delve into the topic of social innovation to see if commonalities can be identified in the educational paths of entrepreneurs and women entrepreneurs pursuing various sustainability goals.

The study's primary limitation arises from the sampling phase, as the results are confined to the data obtained from the SCOPUS database; however, it is improbable that using a different database would lead to significant changes in the outcomes. Additionally, despite being methodically and carefully executed to maintain uniformity across all components, the coding process might still need some oversights and coding inaccuracies. Executed to maintain uniformity across all components, might still contain some oversights and coding inaccuracies.

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Pedagogical Strategies for Female Students in IT Disciplines to Promote Gender Equality: the Case of Five European Universities

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Abstract: Once Female students in Informatics and Technology (IT) and Computer Science degrees at European higher education institutions, in the 21st century, represent a smaller percentage compared with male students, this paper investigates the main reasons that may explain this fact, as well as presents new pedagogical strategies for female students in IT courses. These strategies derive from understanding stereotypes, perceptions, cultural implications, and propositions for inclusive IT education; and are relevant for supporting IT students' equality and success. Further, good lecturing in general together with positive reinforcement with students lays a crucial foundation for supporting all students in IT. The present research was developed in five European universities: Croatia, Italy, Slovakia, Poland, and Portugal. Starting from a literature review on the topic was developed a questionnaire that was applied to a sample of IT students in these five universities. The results were analyzed to define some new pedagogical strategies. These allowed us to conclude about the main reasons for the decision of female students to choose to study IT programs and higher education institutions develop pedagogical strategies more adequate and more attractive to female students, as well as to contribute to increased employability and successful integration in the labor market.

Keywords: Female Students, HEIs, IT, STEM, Gender Equality, Strategies, CodeIn.

1. Introduction

The need for Information Technology (IT) and Computing Science education is recognized as being of central relevance for meeting current social and economic challenges, as well as for developing a scientifically, mathematically, and technologically literate citizenry. In many countries, however, there are gender differences in the participation and achievement of women in IT and Science, Technology, Engineering, and Mathematics (STEM) education and careers.

This paper is part of the European project Cloud cOmputing for Digital Education Innovation (*CodeIn*) and aims to investigate the best pedagogical strategies for female students in IT disciplines in European higher education institutions (HEI), considering the students from five European universities: University of Aveiro (Portugal), Šibenik University of Applied Science (Croatia), LUISS University (Italy), Technological University of Lodz (Poland), Technologic University of Zilina (Slovakia). Based on this sample is studied the current situation through the application of a questionnaire and, based on the obtained results, are described new pedagogical strategies for female students in IT disciplines through understanding stereotypes, perceptions, and cultural implications, and also through suggestions for inclusive IT education.

This paper is organized as follows. After this introduction, section 2 presents the literature review of female IT students, centered on the framework of female IT and STEM students, the gender differences, the importance of understanding stereotypes of female students in IT; and the most common issues in STEM education and gender differences in IT. Section 3 defines the methodology. Section 4 exposes and discusses the obtained results of the survey on pedagogical strategies for teaching female students that were run among HEI students on different levels of study distance learning in the five European countries. And, finally, Section 5 summarizes the conclusions, limitations, and future research.

2. Literature Review

2.1 Framework in Female IT and Computer Science Students

The framework to support female IT and STEM students' research can be based on several models. Yates and Plagnol (2022) state the model of Cheryan et al. (2017), which is based on three elements, that combine fields unappealing for women: i) the masculine culture, ii) the lack of early exposure for women, and iii) women's lack of belief in their ability to succeed. However, this model does not aim to offer a comprehensive overview of the experiences of women in these fields, and there are some aspects of women's experiences in STEM that are not considered in the framework. According to Ayre et al. (2023) and Fouad et al. (2011), the framework does not cover the experiences of some sexism, microaggressions, and sexual harassment that women in STEM fields report as well not refer to women's struggle to see how to best manage their careers within STEM fields (Yates & Skinner, 2021).

2.1.1 *The Domination of Masculine Culture*

A stereotyped society and "gendered organizations" (Acker, 1990) have contributed to a better understanding of female's experiences in STEM organizations and the barriers they face to career progression (Yates & Skinner, 2021). The term "gendered organization" refers to organizational cultures that purpose to be fair and meritocratic, assuming that all employees are apprehended to the same standards and given the same opportunities, but, in reality, it favours men, establishing standards and opportunities that are better suited to men.

A 'gendered classroom' extends this notion, referring to a classroom that is assumed to be gender-neutral but which is tailored to male students (Yates & Skinner, 2021). The existing literature suggests that this concept of the gendered classroom can be applied to STEM education as useful to understand the experiences of female students.

Considering that female students are more motivated by communal goals and males by agentic goals, a pedagogical style and a learning environment appealing to agentic learners positively discriminate the male students (Bakan, 1966; Eagly et al., 2000; Riegle-Crumb et al., 2019). The ones motivated by communal goals are drawn to supportive relationships and collaboration and want to see a pro-social purpose to their activities. Those motivated by agentic goals are encouraged by competition, appreciate autonomy and independence, and are motivated to learn for their interests. Females tend to choose more communal learning environments (Brotman & Moore, 2008), characterized by supportive relationships (Meyers-Levy & Loken, 2015; Tamres et al., 2002), with clear guidance from tutors (Aylor, 2003; Frymier & Houser, 2000; Menekse et al., 2020), and where the curricula are more significative (Giannakos et al., 2017). These common needs, more often related to females, may not always be well seen in the typical IT classroom.

STEM careers have been related to several goals (Diekmann et al., 2010) and learning core skills, which represent specific targets within the technology industry (Zander et al., 2012). IT and computer courses tend to be correlated with specific goals related to autonomy, independence, and self-directed learning (McCartney et al., 2016; Thomas, 2013). On the other side, competitiveness is prevalent in STEM Education and in IT classrooms, where students demonstrate it through long hours of intense work (Hirshfeld, 2010, 2015; Sallee, 2011).

Research developed in the United States exploring the environment of IT and computer science classrooms adds weight to the idea that these provide limited support for communal learners. Barker and Garvin-Doxas (2004) in an observation study classroom found evidence of an impersonal and protected environment, as well as the establishment of informal hierarchies which led to a competitive behavior from the students. They identified certain types of discourse that stuck the development of a supportive and collaborative culture within the classroom originating a strongly defensive climate with a low level of trust and where students did not feel safe to incur mistakes, with the fear of being humiliated. According to Barker and Garvin-Doxas (2004), Östberg (2003), and Barker (2016), one important factor that may contribute to an inhospitable environment for females in IT classroom comes from stereotypes: female may feel that they are different from their own and the perceptions of a typical IT expert, and this can impact on their feelings of IT field belonging and their choices.

For Yates and Plagnol (2021), based on Beyer (2008, 2014) and Cheryan et al., (2009), the stereotypical computer and IT scientists and experts are usually male, clever, and obsessed with coding and informatics. These stereotypes are held by girls, boys, parents, teachers, and employers (Dickhäuser & Meyer, 2006; Vekiri, 2013), are deep-rooted from an early age (Master et al., 2017), and could make females feel that they will not fit in or

be successful in the field of technology. The stereotypes in these areas may reflect negatively on performance and have been shown to impact levels of interest in some STEM subjects like engineering, IT, and science and on girls' study choices at high school (Yates & Plangol, 2021).

2.1.2 Early Exposure to the Subject Fields of STEM and IT

The second element of Cheryan et al.'s (2017) model is the lack of early exposure to STEAM fields. Many children become familiar with computers through games they play as children, but much of games are characterized by their repetitive shooting, loud noises, and violent graphics, which are in large part aimed at and played by boys (Hartmann & Klimmt, 2006; Dele-Ajayi et al, 2018).

Recent evidence indicates that boys and girls spend similar amounts of time on screens throughout their adolescence, but the way they engage with technology is different: boys spend significantly more time playing video games and girls spend more time interacting with their friends on social media sites (Mullan, 2018). These differences have been shown to have an impact on their career decisions, with computer gaming being a significant positive predictor of interest and confidence in studying IT and computer science (Sevin & DeCamp, 2016). Girls who have a certain degree of early exposure develop more computer self-efficacy (Master et al., 2017) and IT interest, and have more positive stereotypes associated with technology jobs (Cheryan et al., 2013). Some studies show evidence that early exposure plays a crucial role, with the countries that have more compulsory STEM coursework also having a better gender balance in STEM jobs (Charles et al, 2017).

2.1.3 Gender Differences in Self-Efficacy

The third element of the model of Cheryan et al. (2013) explains that female under-representation in STEM fields is based on their lower levels of computer self-efficacy. According to Güler and Camp (2002), this is due to the lack of confidence in their ability to accomplish computer-related tasks is the most influential factor in the under-representation of women in IT and computer science. This difference results from women not believing in their abilities (Beyer, 2008) and men overestimating theirs (Bench et al., 2015). Women's lack of belief in their abilities has an impact on their career plans (Beyer, 2014; Dempsey et al., 2015; Rosson et al., 2011), expectations of success in the technology industry (Appianing & Van Eck, 2015), in the development of occupational identity (Carlone & Johnson, 2007; Dempsey et al., 2015), intention to study IT at school (Sáinz & Eccles, 2012), and interest in the IT and computer science fields (Margolis et al., 2000).

2.2 Most Common Issues in STEM Education

In the last decade, several studies investigated particular variables involving students' attitudes toward STEM education (Lane et al., 2022). Falk et al. (2017) concluded that females have lower interest levels in STEM compared to males, which is based on social inclusion factors as a particular reason for lower interest. Means et al. (2021), according to Lane et al (2022), state a relationship between attendance at an inclusive STEM high school or academic and motivational outcomes, based on the fact that students with prior academic achievement in inclusive STEM high schools lead the development of STEM interests and motivations. This allowed the authors to conclude that the students who attended an inclusive STEM high school compared with non-STEM schools will denote high interest in undertaking a graduate degree and a career in a STEM field. These studies highlight the need to focus on strategies to increase the social identification of young students in STEM to a better gender balance and to increase interest in STEM fields (Lane et al, 2022).

2.3 Gender Differences in IT Studies

The study by Blažev et al (2017) applied to Croatian high schools shows that students, male and female, who had previous success in STEM fields are more likely to hold stereotypical beliefs about STEM. Several factors have been proposed to positively impact stereotypical beliefs, such as the presence of girls in a classroom (Gunderson et al., 2012; Riegle-Crumb et al., 2017). Riegle-Crumb et al. (2017) stated that the presence of females in high school classes had a positive impact in reducing male peers' stereotypical beliefs. On the other side, Blažev et al (2017) concluded that the presence of female teachers had a similar impact.

In contrast, Gunderson et al. (2012) noted that gender stereotypes about female's mathematics abilities are developed, rather than improved, by teachers. Exposure to role models is many times promoted as a way of overcoming negative female stereotypical beliefs about STEM. The findings of Gladstone and Cimpian's (2021) systematic literature review focus on four recommendations for maximizing the effectiveness of role models in STEM for motivating students, considering different gender and ethnic: i) show models as competent and

successful, avoiding extreme levels of success that could instead be segregating; ii) present models as being significantly similar to students; iii) prioritize exposure to role models from groups traditionally underrepresented in STEM; iv) portray the success of the models as being achievable. For their part, Luo et al. (2021) state that primary school students' stereotypical beliefs about STEM careers can negatively influence STEM self-efficacy and career-related outcome expectations; which suggests that measures focusing on STEM career aspirations need to target STEM stereotypes, self-efficacy, and outcome expectations.

3. Data and Methodology

Based on the topics presented in the literature review in the previous section, a questionnaire was designed and applied to the students, female and male, from four different levels of study: undergraduate, graduate, post-graduate, and post-doctoral students; of the five partner's HEI: University of Aveiro (Portugal), Šibenik University of Applied Science (Croatia), LUISS University (Italy), Technological University of Lodz (Poland), Technologic University of Zilina (Slovakia). The purpose of the survey is to identify and support new pedagogical strategies for teaching to increase female students' active participation in STEM and IT courses, gender equality in an IT career graduation, and contribute to women's engagement in the digital economy.

The research was conducted among female and male students of IT degrees of the five European universities of the project, during September and October of 2023, through an electronic survey sent by email with the answers received directly in the online *Forms* platform. The questionnaire was sent to 502 students and answered a total of 107 valid answers, from 74% of male and 26% of female students.

The questionnaire comprised thirteen questions focused on the issues related to pedagogical gender strategies for teaching IT students in HEIs, in addition to personal questions to students about the study cycle level and gender. The questionnaire's questions and answers are presented in Table 1. An ANOVA test to analyse the significative differences between female and male responses was applied and is also presented in Table 1.

4. Results and Discussion

This section exposes and discusses the obtained results of the survey on pedagogical strategy for teaching female students that were run among HEI students on different levels of study distance learning coming from five different European countries.

4.1 The Results of the Survey

The following paragraphs describe the results of the survey on pedagogical strategy for teaching female students in IT applied to higher education students in five different European countries. The respondents came from five different EU countries: Croatia (18%), Italy (26%), Poland (28%), Portugal (14%) and Slovakia (2%). The questionnaire contained 13 different statements, listed below. Respondents could express their degree of agreement/disagreement with each statement according to the scale: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly Agree.

107 students answered the questionnaire, characterized, according to the IT level of studies (Q2) by 57% Undergraduate (1st cycle), 31% Graduate (2nd cycle), 7% Post-Graduate Studies (Ph.D. or 3rd cycle), and 3% Post-Doctoral studies. Of the total number of students, 26% were female and 74% male.

The questions 3 to 12 and the obtained answers are presented in Table 1.

Table 2.1: Obtained answers to Questions 3 to 12

Question	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Gender Sign.Diffs (ANOVA)
Q3: Using mixed-ability, collaborative rather than competitive group work as the preferred teaching method	3%	7%	24%	42%	22%	**
Q4: Providing diverse historical and contemporary female role model in IT and their work (guest speakers, class materials) is highly motivational	4%	5%	28%	38%	25%	**
Q5: Using gender is inclusive language when discussing occupational roles	10%	8%	28%	41%	11%	*
Q6: Using gender-inclusive teaching material will	14%	9%	29%	37%	9%	**

Question	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Gender Sign.Diffs (ANOVA)
help challenge potential stereotypes about females in IT						
Q7: Offering non-integrated curricular courses (summer school, workshops, seminars) and out-of-contact hours (online training, seminars) will encourage female students to participate more in IT programs with peers	5%	6%	28%	44%	15%	**
Q8: Teaching female students by offering workshops can strengthen their IT performance and participation	5%	3%	24%	43%	22%	*
Q9: Teachers should stay well informed of good local programs and events, contests, and other learning opportunities to promote	5%	1%	1%	53%	40%	**
Q10: Developing greater competence and confidence, as well as enthusiasm for teachers' own IT knowledge and skills is crucial for the teaching process	2%	1%	10%	50%	37%	
Q11: The High Educational Institution teachers need to grow professionally by learning more about gender issues in IT disciplines	5%	8%	24%	39%	21%	*
Q12: Students feel well prepared about the obtained skills at the High Educational Institution to develop an equal career in the labor market	3%	11%	29%	43%	12%	

Gender differences significant level: *** $p < 0,01$; ** $p < 0,05$; * $p < 0,1$

In question 13, the students were questioned about their opinion about the main obstacles for female students in IT. The majority identified as main obstacles and Figure 1.

- Gender bias, discrimination in the workplace, a lack of female role models,
- STEM studies are difficult for the majority of people,
- Male peers are perceived as more skilled,
- Lack of female followers,
- Prejudices - IT is thought of as a male job area,
- That it is a male-dominated field,
- Stereotypes about women, that they're more emotional than logical.

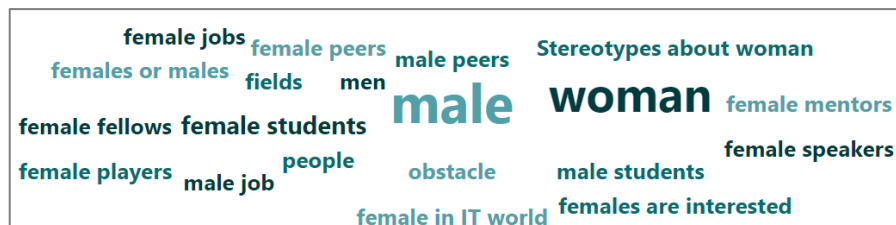


Figure 1: Main words that emerged from obstacles answers identified (Source: Forms.Office)

4.2 Main Findings From the Survey

Based on Table 1, the significative gender differences in answers focus on questions 3, 4, 6, 7 and 9. The significative gender differences, in question 3, about the use of mixed-ability, collaborative rather than competitive group work as the preferred teaching method are according to the model of Cheryan et al. (2013) and with the conclusions of Bakan (1966); Eagly et al., (2000), Riegler-Crumb et al. (2019), Meyers-Levy and Loken (2015), Tamres et al. (2002), that stated for the female motivation by communal goals drawn by supportive relationships and collaboration with pro-social purposes Communal learning environments), once male is motivated by agentic goals encouraged by competition, autonomy, and independence, guided by their learning interests.

From question 4, one can conclude that historical and contemporary female role models in IT and their work are relevant, which is confirmed by the answers and more significant to female students. When discussing occupational roles, in questions 5, 6, and 9, the use of gender-inclusive language is preferred among the majority of students, as well as the fact that teachers should stay well informed of good local programs and events,

contests, and other learning opportunities to promote. The fact that teachers show developing greater competence and confidence, as well as enthusiasm for teachers' own IT knowledge and skills is relevant and females and males are both in accordance as well as they are in accordance that is crucial the teaching involvement in the learning process to students feel well prepared about the obtained skills at the HEI to develop an equal career in the labour market.

Most of the surveyed students believe that the main obstacles are the belief that IT is still perceived as a male-dominated field, together with the fact there are not enough female followers or female role models in IT.

Another finding from the survey is that offering non-integrated curricular courses (summer school, workshops, seminars) and out-of-contact hours (online training, seminars) will encourage female students to participate more in IT programs with peers.

The answers are according to the literature review statements but with significant answers from students. With allows the development of some new strategies to attract girls to study IT and science computers and to promote and improve teaching and learning in good classroom environments as well as to empower female careers in these technological fields.

5. Conclusions

Through this paper, we have shown the major research findings concerning pedagogical strategies for female students in IT strategies. Moreover, by conducting research among female students we were able to recommend a way for educators to support and encourage females in IT and computer science disciplines. While these strategies are especially relevant for supporting females in IT, many are also important approaches for males and to promote gender equality in STEM, IT, and computer science degrees, classrooms and careers. Further, good lecturing, in general, together with positive reinforcement on stereotypes, gender and culture equality, an early exposition of students to STEM fields are of crucial foundation for supporting all students in IT. Educators need to continue to grow professionally by widening their knowledge about gender issues in IT disciplines and learning the tools how to address issues effectively. So, new strategies can do the future difference contributing to decreasing gender differences and increasing the number of female students in universities IT and computer science degrees and academic programs, like:

- Use mixed-ability, collaborative, and competitive group work as teaching methods;
- Provide and promote diverse historical and contemporary female role models in IT and their work (guest speakers, class materials) is highly motivational
- Use gender-inclusive language in teaching material and gender-inclusive environments in classrooms;
- Offer non-integrated curricular courses (summer Schools, workshops, seminars) and out-of-contact hours (online training, seminars) to promote and integrate female students in IT programs with peers and to strengthen their IT performance and participation;
- Promote and support teachers with information about good local programs and events, contests, and other learning opportunities;
- Promote tools (innovation programs) for the teachers to grow professionally by learning and teaching as well as to the development of competencies, confidence, and enthusiasm for teaching IT knowledge and skills and about gender equality issues on student curricula and future careers.

The present study has some limitations concerning general applications, once the findings are based on a questionnaire applied to five specific European universities.

For future research, is suggested a quantitative analysis of the data collected through the questionnaire complemented by interviews with some focus groups of the students of the five HEIs.

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My Perfect Partner: Using Creative Methods to Address Gender Based Violence

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Abstract: Young people aged 16-24 are most at risk of relationship abuse and intimate partner violence, The UK definition of domestic violence includes incidences of abuse between people aged 16 or over, but young people below the age of 16 are also at risk of relationship abuse. Relationship education became compulsory in schools in England and Wales in September 2020. There is increasing recognition of the need for whole school approaches to prevent gender-based violence from happening in the first place, and for equipping schools to teach relationship education and to feel more confident supporting young people affected by gender-based violence (GBV). Drawing on our experiences of delivering relationship education in both mainstream and special educational needs and disabilities (SEND) schools in England since 2012, this paper argues creative arts-based methods can be an effective tool in DA prevention and intervention. The paper explores young peoples views of healthy and unhealthy relationships, and ideals of the 'perfect partner', mediated through gender, body image and social media. We present material co-produced with young people in school, including art, drama, poetry and song. We discuss how creative methods are useful as both a research and prevention tool, and the social impact of research derived knowledge on both participants and the wider school community.

Keywords: Relationship Education, Schools, Healthy Relationships, Creative Methods

1. Introduction

Gender based violence (GBV) is a global issue which affects people of all ages. The World Health Organisation reported that 30% of women between the ages of 15 and 19 have experienced GBV in their relationships (The World Health Organization 2021). The UK GBV statistics, indicate women aged 16-24 are most at risk of violence and abuse in relationships, however, GBV can affect anyone, regardless of gender. Education is key to preventing GBV, and school-based interventions can be an important way to raise awareness and prevent and GBV amongst young people. This paper reports on a healthy relationship education project in UK schools, and the creative methods used to engage young people as part of the project.

Relationship and sex education (RSE) is compulsory in all UK primary and secondary schools since September 2020, with an increase in disclosures of sexual abuse in schools making this particularly urgent and relevant issue (Ofsted 2021). The global Covid-19 pandemic delayed its introduction, and the quality of education provided varies across schools. Parents and carers are able to withdraw children from sex education for religious reasons, but not from relationship education. RSE is only statutory until age 16, despite the school leaving age being raised to 18 in the UK in 2015.

The current UK government definitions of domestic violence (DA): *is Any incident or pattern of incidents of controlling, coercive or threatening behaviour, violence or abuse between those aged 16 or over who are or have been intimate partners or family members regardless of gender or sexuality. This can encompass but is not limited to psychological, physical, sexual, financial and emotional abuse* (Gov.uk 2102)

This do not include those under the age of 16, but young people of all ages can experience relationship abuse. In the UK, young people aged 16-24 are at most at risk of relationship violence, making early intervention essential. Recent research shows 25% girls and 18% of boys aged 13-17 years old have experienced physical abuse. 75% girls and 50% boys reported emotional partner abuse (Home Office, 2019). Controlling and jealous behavior is 42% more likely to occur in relationships involving someone under 18 than any other age group. (Home Office, 2019). For young people aged 12-19 with disabilities, reports of violence are more than twice the rates of those without a disability (Rand and Harrell 2009). Online abuse, such as sexting is also a key issue for young people, with girls experiencing sexualized technology abuse at a higher rate than boys, 16% of girls compared with 6% of boys (ONS 2021). Despite these high numbers, only 33% of teenagers involved in a violent relationship talk to someone about it (Barter et al 2009).

We argue embedding relationship education into the curriculum is one way to tackle growing rates of reported GBV, including online abuse, as schools are settings where young people are socialised into gender norms and where significant amounts of IPV occurs (Girlguiding, 2021; Ofsted, 2021).

2. Young People and Relationships

Developing healthy romantic relationships is central to young people's self-understanding and identity formation, influencing self-esteem and beliefs about attractiveness and self-worth, and as a 'training ground' for adult intimacy, influencing their view of relationships in adulthood (Erikson, 1968, Shulman, & Connolly, 2013,). However, unhealthy relationships can have long-term negative effects, and violence and abuse in young people's relationships is common, as discussed above. Schools are environments where young people are socialised into gender norms and adolescence is 'a crucial time when young women and men are developing their sexual identities' (Mahony & Shaugnessy, 2007; p.1), therefore age and ability appropriate RSE is crucial to enable young people to navigate, and learn from, their early romantic relationships.

Research shows over 80% of those aged 14 years and older in the US were, or had been, in a romantic relationship (Moore, 2016). Having healthy romantic relationships is crucial for adolescents' well-being (Gomez-Lopez et al 2019). Young people actively seek information on relationships and advice on dating experiences to help them navigate and guide their anticipations and beliefs, and social media, television, as well as peers, family and teachers/sex educators are all sources of information on romantic partners (Porter & Standing, 2018, 2020). On social media, TikTokers and Instagrammers widely share stories of relationships and Gen Z's are re-defining what romantic and sexual relationships look like, with a rise in 'situationships' and hook up culture (Wade, 2021). Online dating has also changed relationships, especially since the Covid-19 pandemic.

Young people's views on relationships are also mediated by gender, sexuality, ethnicity, cultural expectations, religion and other intersecting factors. For example, it has long been argued that men value physical attractiveness in potential mates more than women do, while women value earning capacity more so than men. However, there are some commonalities; a study on dating preferences of 2,700 international students in Singapore, Malaysia, Hong Kong, the UK, Norway and Australia found kindness, physical attractiveness and good financial prospects the top three traits young people found desirable (Thomas et al 2020). In the relationship project we explored young people's ideas of their 'perfect partner' using creative methods. The Crime Survey for England and Wales (ONS 2022) reported a 7.7% rise in reported DA related crimes, estimating 5% of adults aged 16 and over experienced DA in the year ending March 2022. Due to this it is highly appropriate that this is addressed within the school curriculum, and pupils given the tools to recognise and prevent coercive and abusive relationships. However, this is a sensitive subject, so the methods incorporated into any such research require a person-centred approach. Our research project did exactly that, aiming to empower the pupils via project participation in order to maximise their learning.

3. About the Project

Challenging societal attitudes towards DA and promoting healthy relationships via a school-based relationship education programme was crucial to our research. A cutting-edge approach using creative arts-based methods was used to enable pupils to understand and express their views on gender and relationship abuse.

Between 2012-2019 we delivered a healthy relationship project, in 23 state schools in Merseyside, UK, including four Special Educational Needs and Disability schools (SEND). We delivered the project in eight

schools more than once, with 34 project deliveries in total.

Table 1: Schools type and delivery

School	Gender	Pupil age	Type of School	Times visited
A	girls	14-15	Mainstream State	1
B	mixed	14-15	Mainstream State	1
C	girls	14-15	Catholic	1
D	mixed	14-15	SEND	1
E	mixed	14-15	Mainstream State	1
F	boys	14-15	Mainstream State	1
G	mixed	13-15	Mainstream State	3
H	girls	14-15	Catholic	1
I	mixed	14-15	Mainstream State	2

School	Gender	Pupil age	Type of School	Times visited
J	mixed	14-15	Catholic	1
K	mixed	13-15	Catholic	2
L	girls	14-15	Catholic	1
M	boys	14-15	Church of England	1
N	mixed	14-15	Mainstream State	1
O	girls	13-15	Mainstream State	3
P	boys	14-15	Catholic	1
Q	mixed	14-15	Mainstream State	1
R	mixed	14-15	Jewish	2
S	mixed	14-15	Mainstream State	1
T	mixed	13-19	Catholic, SEND	2
U	mixed	15-16	Mainstream State	2
V	mixed	13-15	Catholic	2
W	mixed	13-15	SEND	1
X	mixed	13-16	SEND	1

Workshops were delivered to 912 pupils and shared with an audience of 3,293 to their peers through assemblies and other events. Additionally, we trained 559 school staff in healthy relationships education. Workshops were delivered to approximately 30 pupils aged 13-19 in each school, either in a two-day block, or an hour a week over a ten-week period. Workshops used creative arts-based methods and focused on how to identify early warning signs in unhealthy relationships. The project was funded by Children in Need, Liverpool John Moores University and Tender, Acting to End Abuse.

Pupils learnt about healthy relationships and DA within an age, ability, and culturally- appropriate context. Workshop content was designed for pupils' needs and schools' requests. The project focused on peer-to-peer relationships and took a gendered approach, reflecting the priorities of the initial project funder, Tender.

4. Creative Methods

Creative methodologies, using drama and role-play, art, song and poetry, enabled the pupils to gain the confidence to express themselves in front of their peers. There is evidence that using creative approaches, such as arts or drama, are effective as part of DA intervention/prevention projects (Hester and Lilley, 2014; Sander-McDonagh et al., 2016, Stanley et al. 2015), and this was evident in the project. Porter, as an artist, academic, and the lead researcher used her skills to engage the participants using a variety of arts-based methods to understand their views on healthy and unhealthy relationships. Arts based research is collaborative and inclusive, and creative methodologies enabled participants to engage without the pressure of feeling part of a research project, with art and drama-based workshops enabling pupils to gain the confidence to express themselves. Drama and role-play were essential to success of the project, with pupils re-enacting and creating scenes to help them to understand how abuse is not always physical, but can also be emotional, psychological, financial, sexual and coercive. Creative methods, such as poetry, spoken word, and song helped to both share lived experiences, and for pupils to understand the complexity of DA.

A creative approach to engage with the pupils was fostered by the lead researcher, finding ways to navigate the pupils' needs and requirements was essential. Material for pupils to use was always at hand for pupils to use to express their feelings, stories and or simply have their voices heard. Pupils often created posters to demonstrate their participation and understandings. Often these posters (figure 1) were displayed in schools to disseminate information.

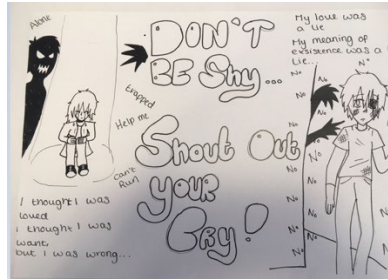


Figure 1 Poster: female, 15, School J, 2017, image ©Porter

Workshop material and research methods were developed and tailored to each school to enable participation for all. In the SEND schools, and schools with SEND requirements, resources were co-designed with pupils to suit their specific needs, including using scribes, readers and photo books, as well as audio visual aids. Co-design research is an increasingly popular approach, that includes relevant stakeholders, pupils and teachers and is especially suitable to meet diverse needs, as research outcomes tailored to all. For example, in a school for pupils with sensory needs the research team worked closely with pupils to co-design scripts based on healthy and unhealthy relationship scenarios. These scripts were designed by, and for, pupils with a visual impairment. These scripts were offered for use by pupils in three formats: Braille, large print, and scribe (figure 2). This enabled all pupils to gain ownership of their learning and to fully engage with the research and workshop resources.



Figure 2: Braille codesigned script, school T, 2019. image ©Porter

In other schools with SEND needs, photo (pod) books were co-developed with school staff to enable those pupils who are nonverbal. The books were used to create a visual narrative for pupils by either pointing with their finger and or using their eyes to navigate the pictures. By creating the pod books (figure 3) non-verbal pupils were given a voice to share their story and participate in the project.



Figure 3: pod book, School X, 2019. image ©Porter

Ethical approval was given by the university ethics and research committee and informed consent from all participants, schools and partners had been obtained by the research team prior to the delivery of the project. In schools' ethics are often negotiated on a moment-to-moment basis (Scherer 2016). Because of the fluid and changing nature of creative data collection, we found ourselves in a constant process of negotiation over ethics, going back to participants and gatekeepers (pupils, schools, and parents) to gain permission to use data and creative material in different formats.

One of the key methods to engage young people was the perfect partner activity.

Towards the end of the project, after the pupils had learnt about relationship abuse and discussed healthy relationships, we revisited this activity with the same group of pupils, however this time we invited the pupils to draw their perfect partner in ten years' time. Figures 7 and 8 show the perfect partner drawn by for the same group of pupils showing their ideal partner now, and in ten years' time.

The 'perfect partner' in ten years' time was considerably different to the original drawing, reflecting the pupils' growing understandings of healthy relationships. The person drawn tended now to be a person with less physical attributes but someone who offered more emotional and long-term support, for example 'someone who listens to me', 'someone who respect me' and 'a kind person' (figure 8). Over the six years of delivery in schools it was noted that this activity had the most impact on changing attitudes of the pupils towards healthy and unhealthy relationships.

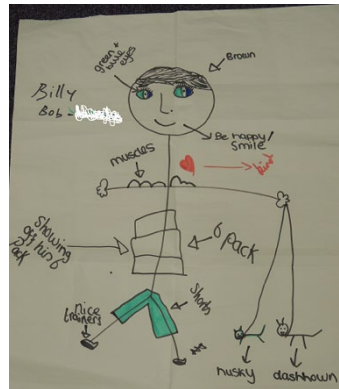


Figure 7: Perfect partner now, School O, age 13/14, 2019, image ©Porter

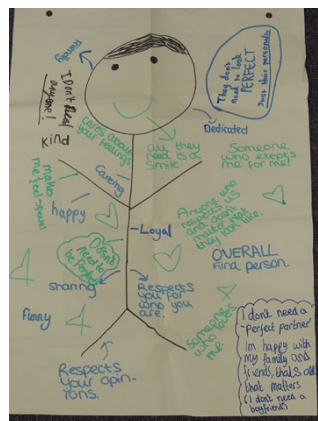


Figure 8: Perfect partner 10 years' time, School O, age 13/14, 2019, image ©Porter

The before and after perfect partner drawings (figures 7 and 8) give an insight into how pupils attitudes had healthy and unhealthy relationship the pupils had changed through the project. From ideals of a 'sexy body' in perfect partner workshop one to 'I don't need a perfect partner, I'm happy with my family and friends and that's all that matters (I don't need a boyfriend)' (figure 8) demonstrates the power of a person-centred creative methodological approach to relationship education.

This method of gathering qualitative data in the form of drawing enabled extremely sensitive subject matter to be expressed in a creative way, one pupil commented 'this workshop allows us to express ourselves and speak freely' (female, age 14). The perfect partner activity was an excellent method for pupils to address relationship abuse and how their choices now could affect their relationships in the future. As one pupil said: 'it helped us focus more on the person and personality traits rather than just appearance' (Female, 14).

6. Findings

Arts based research gave pupils the opportunity to engage with a sensitive subject matter whilst engaging in a fun and inclusive way. The project emphasised the value of implementing creative and art-based approaches to improve the effectiveness of relationship education and prevent relationship abuse.

The project was evaluated by Middlesex University (Sanders et al 2016), using mixed methods, questionnaires, interviews and focus group. Pupils completed pre delivery questionnaires (n= 536) and post-delivery questionnaires (n=457) to understand their experience and changing attitudes and behaviours. The discrepancies between the number of pupils completing the pre- and post-delivery questionnaire was a result of pupil absence, and pupils not completing the questionnaire. Pupils were keen to engage with the delivery of the project but often refused to participate in data collection (Porter & Standing, 2024). Similarly, audience questionnaire figures were lower than anticipated as pupils often refused to complete the questionnaire (n=2218). Questionnaires for school staff were also administered to evaluate the INSET training (n=309). In addition two focus groups (n=16) were conducted with pupils in two schools, and semi structured interviews with school staff (n=4).

Table 2: Pupils Questionnaires after the project: (2014)

Liverpool John Moores University Healthy Relationship project (2014)	Pupils
Understand what a healthy relationship is	77%
Saw a positive change in the attitudes or behaviour of their peers at school around the issues of violence and abuse.	75%
Knew where to seek help and support for abuse in a relationship.	75%
Violence and abuse in relationships affects a large number of people	64%
1 in 4 women in UK will experience abuse in her lifetime	67%

(Sanders et al 2016)

At the end of the project, pupils who took part in the workshops had a better understanding of what healthy and unhealthy relationships were (Table 2). They were able recognise the early warning signs of abuse in relationships and had the knowledge to make positive choices about relationships (Table 2). Pupils who engaged in the workshops showed the most understanding of healthy relationships and gained in confidence and skills. However, pupils and teachers also noted a positive change in behaviour and attitudes from the wider peer group.

Table 3: Audience Questionnaire post project

Liverpool John Moores University Healthy Relationship project (2014)	Audience
Understand what a healthy relationship is	70%
Knew where to seek help and support for abuse in a relationship.	65%
Violence and abuse in relationships affects a large number of people	58 %
1 in 4 women in UK will experience abuse in her lifetime	75%
Likely victims women	67%

(Sanders et al 2016)

Understanding and awareness from the audiences who watched the performances and assemblies were slightly lower (Table 3), but still showed increased awareness of the scale of DA and its gendered nature.

Pupils gained valuable knowledge about DA through the project, demonstrating school based creative interventions have a role to play in raising awareness about relationship abuse. The main themes of both qualitative and quantitative findings were that pupils understood what constitutes as abuse in relationships, the relevant statistics, where to seek help and advice, and had grown in confidence. Qualitative findings found the young people felt more confident talking to their family and friends about relationships and they knew where to go for support.

- *'it is more serious than I expected'* (Male, 14).
- *'it isn't ok to be violent [I've learnt] how to be confident in my relationships'* (Female, 14).
- *'It is NOT their fault; the aim of the other partner is to make them feel like it is. They never want to be abused'* (Female, 14).
- *'I've learnt who to go to, how to help other people, what to say and do and look out for early warning signs. I've learnt how to say confidently 'I just don't want to be with you anymore'* (Female, 14).

- 'I've learned about my own rights as a person'. (Female, 16).

Table 4: Findings from post project staff questionnaire:

Noticed positive change in the attitudes or behaviour of students.	84%
Staff had better understanding of what a healthy and unhealthy relationship is.	74%
Staff felt more confident in dealing with sexual bullying/abuse.	62%
Domestic abuse awareness should be compulsory on the school curriculum.	97%
Domestic abuse awareness should be taught on teacher training courses.	97%

(Edge Hill report 2015, unpublished)

Responses from teachers and other school staff (Table 4) demonstrated that there had been a positive change in pupils' behaviour and attitudes as a result of the project. Both staff and pupils had a better understanding of what relationship abuse was, and using creative methods meant pupils were more engaged. This is reflected in the qualitative findings:

'So many pupils didn't realise that abusive relationships can be non-violent, many seemed to think controlling behaviour was the norm. I think a real eye opener to many of them was when you reflected on how abusers can use guilt and insecurity to mask their behaviour - as a teacher I hear this all the time 'he checks my social media because he is worried about other lads', 'he doesn't want me going out looking too good in case I leave him'. If your project can help challenge any of this, then it has been more than worthwhile. Several of the girls you worked with have been flagged as disengaged, however they were all fully engaged'. (Senior teacher, School O, 2017)

School staff also had increased knowledge and confidence to teach about relationships and highlighted the need for training on DA awareness to be a core part of both the school the teacher training curriculum (Table 4). One teacher commented: *'I found the staff training an eye opener, it really made me think about the importance of pupils being taught what is and isn't a healthy relationship. (Head of art, school M, 2015)*

There is increasing recognition of the need for whole school approaches to prevent GBV from happening in the first place, and for equipping school staff to feel more confident supporting young people affected by GBV. School staff are well placed to embed relationship education but require support and professional training from those with specialist knowledge in DA. Staff needed to be prepared to support the pupils leaning in an inclusive way. In school, staff training was vital to promote a whole school approach and to enable staff to consider the lived experiences of pupils outside of school. It also prepared staff for the project, using the correct vocabulary enabled the conversations throughout the school about GBV. Findings show this had an impact throughout the entire school and beyond:

'I understand that the project not only empowers pupils but that it also has wider impacts across the school as the pupils are advocates who share their knowledge to their peers. The health and wellbeing of pupils has an integral relationship with their learning. Healthier pupils make for happy well-balanced members of society. The project provides signposting from health perspectives as well as empowering pupils to make healthier lifestyle choices'. (Local Authority School Improvement Officer, Liverpool (Health and Wellbeing) 2015)

Findings contribute to existing literature by highlighting the importance of age and ability appropriate relationship education across the curriculum.

7. Conclusion

The research project enabled participants to challenge the normalisation of violence and abuse in relationships that is often portrayed in popular culture and social media. It enabled them to question their ideas about what healthy and unhealthy relationships are.

GBV is a serious global problem, and definitions of GBV are shifting to be more inclusive, whilst still rooted in gender relations, patriarchy, and power. Tender, the initial project funders in 2012, took an explicitly gendered approach, based on an understanding of how gender relations and women's inequality shape women's and children's experiences of intimate partner violence. Whilst useful, this doesn't acknowledge the multiple and intersecting ways sexuality, gender, ability, race, religion and other factors, impact on the way violence is experienced by diverse groups (Crenshaw, 1991) and the research project and delivery evolved to reflect this.

The strengths of the project were in delivering an inclusive, whole school approach to relationship education equipping pupils with knowledge about DA, whilst recognising the intersectional impacts of GBV. It also enabled school staff to be informed about DA via an in-school training session delivered by the research team. The research team were able to adapt the workshop content and methods in creative ways, in order to engage all pupils in activities, including those who did not initially want to participate, and to develop age and ability appropriate methods with pupils in SEND schools. Feedback indicated that the creative art-based methods used were an effective tool to engage young people in research about GBV, the young people we worked with were engaged and active learners.

The limitations of the project included funding, as funding ended in 2019. The covid 19 pandemic also meant the project was unable to be delivered. The project was mainly delivered to pupils aged 14-15, however RSE needs to be delivered to all pupils, at all ages, in an appropriate way. Although we delivered training to school staff, relationship education needs to be embedded within the school and community on a long-term basis, working with all genders and generations. There is a need for longitudinal research, to revisit schools to see the longer-term impact, and better systems are required globally to support those who do speak out.

The research demonstrated school-based interventions are successful in teaching pupils about healthy and unhealthy relationships and can enable them to make informed decisions about relationships going forward. Embedding relationship education into the curriculum is one way to tackle growing rates of reported GBV, including online abuse, as schools are settings where young people are socialised into gender norms, and where significant amounts of GBV occurs (Girlguiding, 2021; Ofsted, 2021). The perfect partner activity enabled young people to explore and express their understandings of relationships in a creative way, and to begin to make informed choices about current and future romantic and sexual relationships. We conclude therefore that creative methods, in particular visual art, is an excellent tool to enable participants to feel confident to engage with research projects on sensitive subjects.

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Exploring Gender Dynamics and Environmental Sustainability in Family Firms

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Abstract: In an ever-changing landscape, family businesses, characterized by their unique blend of tradition, familial bonds, and entrepreneurial spirit, stand as bastions of resilience and continuity, playing a pivotal role in economic growth and societal development. Indeed, family businesses account for 80 percent of all business enterprises worldwide, making them the prevalent form of conducting business. As these entities grapple with the imperative to remain economically viable while navigating the intricacies of the contemporary business landscape, the incorporation of sustainable practices into the organizational fabric takes centre stage. By actively seeking a harmonious and reciprocal relationship between financial objectives, social responsibility, and environmental accountability, family businesses can not only secure their own longevity but also contribute to a more equitable and sustainable global environment. This narrative becomes especially compelling at the intersection with gender. Exploring the intersection between gender and sustainability provides insights into how gender dynamics influence and are influenced by efforts to achieve sustainable development. Moreover, understanding and addressing this interplay is essential for devising holistic and effective strategies that promote social equity, economic prosperity, and environmental stewardship. It underscores the need for inclusive and gender-sensitive approaches in all aspects of sustainable development. Acknowledging the significance of this ongoing dialogue, this study delves into the intricate relationship between gender dynamics and the environmental dimension of sustainability within family businesses. Through a systematic literature review of empirical research, this work specifically aims to uncover the linkage between board gender diversity and corporate environmental performance. The findings indicate that gender-diverse boards improve environmental value creation, and women in leadership positions correlate positively with environmental disclosure in family-controlled businesses. Overall, a strong positive correlation emerges between the proportion of women directors on the board and the level of environmental sustainability. The findings of this study hold implications not only for family business practitioners but also for policymakers and academics interested in propelling gender equality and sustainability agendas, notably within the framework of the 2030 Agenda for Sustainable Development.

Keywords: Environmental Sustainability, Family Business, Family Ownership, Gender, Social Sustainability, Sustainable Development

1. Introduction

The profound impact of family businesses on all key macroeconomic variables, ranging from wealth and job creation to social and territorial cohesion, is widely recognized. Globally, family businesses constitute a staggering 80 percent of all business enterprises, firmly establishing themselves as the predominant form of conducting business (Delmas and Gergaud, 2014; Hadjielias and Poutziouris, 2015). Their influence is reflected on an estimated 70-90 percent contribution to the annual global Gross Domestic Product (Maloni, Hiatt and Astrachan, 2017). Therefore, it is crucial not to underestimate their significance to the worldwide economy.

As these entities grapple with the imperative to remain economically viable while navigating the intricacies of the contemporary business landscape, the incorporation of sustainable practices into the organizational fabric takes centre stage. In light of society's heightened awareness regarding the value of stronger social cohesion and the pressing reality of environmental challenges, organizations face mounting pressure to conduct themselves in a socially and environmentally responsible manner (Caputo, Veltri and Venturelli, 2017). This increased awareness has culminated in the emergence of the 2030 Agenda for Sustainable Development, a comprehensive document adopted by all member states of the United Nations General Assembly in 2015 comprising 17 Sustainable Development Goals (SDGs) and 169 targets (Bauweraerts, Arzubiaaga and Diaz-Moriana, 2022). This agenda, which functions as a guiding blueprint, addresses critical global challenges and aims to promote social inclusion, environmental sustainability, and economic development by the year 2030. The SDGs are instrumental in driving corporate social responsibility (CSR) trends, with businesses at the forefront of championing this agenda (Yáñez-Araque et al, 2021).

By actively seeking a harmonious and reciprocal relationship between financial objectives, social responsibility, and environmental accountability, family businesses can not only secure their own longevity but also contribute to a more equitable and sustainable global environment. As such, ensuring the sustainability of family businesses emerges as a critical concern, holding implications not only for family businesses themselves but also for society as a whole.

This narrative becomes especially compelling at the intersection with gender. By exploring how gender dynamics intertwine with sustainability, valuable insights emerge, shedding light on the reciprocal influence shaping efforts to achieve sustainable development. The narrative unveils the expansive realm of social sustainability, which is anchored on the principles of social solidarity, equality, and ethics (Rumanko et al, 2021). Notably, a critical component of social sustainability is gender equality. Gender equality stands out as a pivotal SDG that nations must prioritize. A fundamental step in attaining this goal involves the gradual inclusion of women into managerial roles (Giraldez-Puig and Berenguer, 2018). This accentuates the urgency for inclusive and gender-sensitive approaches across all dimensions of sustainable development. Consequently, understanding and addressing this interplay is essential for devising holistic and effective strategies that promote social equity, economic prosperity, and environmental stewardship.

Traditionally, family businesses have exhibited a pattern of male dominance, wherein men occupy key positions and women are often relegated to supportive roles. This gendered dynamic extends to the transfer of ownership and leadership within these enterprises. Accordingly, male heirs have historically been favoured, thereby perpetuating a male-centric power structure. This phenomenon, which is tied to deep-seated gender norms, societal expectations, and inheritance laws, is frequently referred to as the "glass ceiling" or "family ceiling" in the context of family businesses. Traditional beliefs about gender roles not only foster the assumption that men are better suited for leadership but also assign women to tasks linked with cultural traditions underlying house chores and family social life management, further perpetuating a "feminine" bias, with the aforementioned jobs being labelled "feminine" (Dan and Shimizu, 2022). Women are indeed under-represented in a wide range of industries, including manufacturing and agriculture, and are sometimes overlooked within family businesses, rendering them "invisible" (Dan and Shimizu, 2022). Due to their nearly non-existent bargaining power, women encounter stereotypes and biases that cast doubt on their ability to manage businesses or make strategic decisions (Agarwal, 2020). These perceptions can constrain opportunities for women to assume leadership roles within family businesses. Societal and institutional barriers, such as restricted access to education and professional networks for women, further contribute to their underrepresentation in leadership positions.

However, the growing acknowledgement of these issues is prompting a shift in many family businesses toward greater inclusivity and diversity. Societal shifts, expanded educational opportunities, and evolving norms are collectively paving the way for a more equitable distribution of ownership and leadership roles. As women actively engage as owners and leaders in family businesses, diverse perspectives and skill sets are now being brought to the decision-making table.

Acknowledging the significance of this ongoing dialogue, this study delves into the intricate relationship between gender dynamics and the environmental dimension of sustainability within family businesses. Through a systematic literature review of empirical research, this work specifically aims to uncover the linkages between board gender diversity and corporate environmental performance, as well as between the presence of women and environmental disclosure. In spite of sustained research efforts, the study of SDGs in the context of family businesses remains in its nascent stages (Bauweraerts, Arzubiaga and Diaz-Moriana, 2022). By synthesizing insights from diverse sources, we offer a roadmap for navigating the complexities that define the sustainable evolution of family businesses in the contemporary business milieu.

The paper is structured as follows: Section 2 provides an elaborate account of the methodology employed, succeeded by Section 3, which articulates our review findings. This section concludes with a reflection on the impact and limitations of the findings, along with suggestions for potential avenues for future research.

2. Methodology

To unravel the intricate relationship between gender dynamics and environmental sustainability within family businesses, a systematic literature review was conducted following the recommended three-step procedure outlined by Tranfield, Denyer and Smart (2003): planning, execution, and dissemination of results. Due to its systematic nature, this approach ensures transparency and promotes replicability. Markedly, it mitigates the shortcomings associated with the informal and unstructured planning processes commonly found in traditional literature reviews within the social sciences, as highlighted by Tranfield, Denyer and Smart (2003).

In the planning phase, the research objective was defined, and the database was chosen. Subsequently, in the execution phase, the criteria and expression of research were established. Key terms identified for retrieving pertinent articles included the truncated form of sustainability, denoted as *sustainab**, and equivalent terms for gender and family business. Their combination with the Boolean operators AND and OR ensured their presence in the title, abstract and keywords of the articles, resulting in the following search expression: (((*sustainab**) AND ((“Gender” OR “Female” OR “Male” OR “Woman” OR “Man” OR “Women” OR “Men”) AND ((“family business”) OR (“family firm”) OR (“family enterprise”) OR (“family influence”) OR (“family involvement”) OR (“family control”) OR (“family owner”)))))).

The search took place on November 20th, 2023, in the ISI Web of Science database and was filtered according to: document types = (Article) AND Research Areas = (Business Economics OR Environmental Sciences Ecology OR Social Sciences Other Topics) AND Languages = (English). This process yielded a total of 73 scientific articles.

The results obtained were duly exported to EndNote X9, where they underwent the filtration process. In our pursuit of upholding a cohesive narrative centred on the relationship between gender dynamics and environmental sustainability within family firms, we excluded studies that deviated from this focus. A total of 67 scientific articles were found to fall under this condition. Consequently, the final sample comprises 6 scientific articles.

For each relevant article, the following dimensions were extracted: author(s), title, study focus, theoretical approach, methodology, and sample. Cumulatively, these dimensions form the basis for the systematic literature review table.

3. Review Findings

Table 1 offers a concise overview of the relevant studies.

Table 1: Overview of the final sample

Author(s)	Title	Study Focus	Theoretical Approach	Methodology	Sample
Campopiano, Rinaldi, Sciascia and De Massis (2019)	Family and non-family women on the board of directors: Effects on corporate citizenship behavior in family-controlled fashion firms	To investigate the effects of women on boards of directors on corporate citizenship behavior	Self-construal theory	Quantitative – Orbis database (2014-2015)	63 family-controlled firms in the global ranking of the top-100 fashion firms
Cordeiro, Profumo and Tutore (2020)	Board gender diversity and corporate environmental performance: The moderating role of family and dual-class majority ownership structures	To study the relationship between ownership control and female board diversity in influencing corporate environmental performance jointly in the context of majority ownership in family-controlled and dual-class firms whose motives and influence are theoretically different from that of the firm's minority shareholders	Resource dependency theory Secondary agency theory Socioemotional wealth theory	Quantitative – CSRHub database (2010-2015)	751 large U.S. firms
Gavana, Gottardo and Moisello (2023)	The effect of board diversity and tenure on environmental performance. Evidence from family and non-family firms	To examine the effect of structural and demographic board diversity as well as board tenure on family firms' environmental performance, by analysing the differences between family and non-family businesses and within family firms	Agency theory Stewardship theory	Quantitative – Euronext Paris, Deutsche Borse, Euronext Milan, Euronext Lisbon, and Bolsa de Madrid (2014-2021)	Unbalanced panel of 434 firms from France, Germany, Italy, Spain, and Portugal, of which 171 are family firms and 263 are non-family firms (1897 observations)
Maggi, Gjergji, Vena, Sciascia and Cortesi (2023)	Family firm status and environmental disclosure: The	To investigate the level of environmental disclosure practices of family versus non-family	Agency theory Resource-based view	Quantitative – Euronext Growth Milan (2018-2020)	324 observations of Italian small- and medium-sized enterprises

Author(s)	Title	Study Focus	Theoretical Approach	Methodology	Sample
	moderating effect of board gender diversity	firms and explore the moderating role of board gender diversity			
Nadeem, Gyapong and Ahmed (2020)	Board gender diversity and environmental, social, and economic value creation: Does family ownership matter?	To empirically investigate whether board gender diversity (BGD) improves the multidimensional measure of value	Agency theory Gender socialization theory Stakeholder theory	Quantitative – ASSET4 database (2007–2017)	399 U.K.-listed firms
Oware, Iddrisu, Worae and Adalety (2021)	Female and environmental disclosure of family and non-family firms. Evidence from India	To examine the female gender and environmental disclosure of family and non-family-controlled firms in India	Gender socialization theory Critical mass theory Legitimacy theory	Quantitative – BRR and Sustainability Report Tracker for Listed Companies (2009-2020)	80 Indian firms with 960 firm-year observations, covering 783 firm-year observations for family managed firms and 177 firm-year observations for non-family managed firms

3.1 Discussion

Before we delve into the discussion of the findings, a clarification is necessary regarding sustainability and CSR, as these concepts are sometimes used interchangeably. While there isn't perfect agreement among scholars, sustainability is often defined as a mode of development that satisfies the needs of the present without endangering the ability of future generations to meet their own needs, as proposed by the World Commission on Environment and Development (WCED), in the Brundtland Report 'Our Common Future' (Broccardo and Zicari, 2020; Bauweraerts et al, 2022). Accordingly, firms are expected to increase their awareness concerning their approach to social and environmental issues, in addition to actively generating profits to satisfy their shareholders (Broccardo and Zicari, 2020). This implies that, at the corporate level, sustainability is operationalized in accordance with the triple bottom line, an accounting framework that encompasses three dimensions: economic, social, and environmental.

Another crucial notion is philanthropy. CSR, along with philanthropy, is perceived as a manifestation of corporate citizenship, wherein corporate entities responsibly align their behaviour with shifting social paradigms, taking into account the assertions of both internal and external stakeholders (Campopiano et al, 2019). CSR is defined as "the voluntary integration, by companies, of social and environmental concerns in their commercial operations and in their relationships with interested parties" (Ciliberti, Pontrandolfo and Scozzi, 2008; European Commission, 2001, p. 7) that have a positive impact on the community, society, and/or planet (Combs et al, 2022). On the other hand, philanthropy involves the discretionary wealth transfer of net income to stakeholders (Carroll, 1991; Windsor, 2006), financing initiatives that are not related to the core functions of the business, such as building museums, sponsoring performances and art exhibitions, and providing fellowships to graduate students (Hutchins and Sutherland, 2008). Corporate philanthropy can contribute to the success of family businesses by fostering positive interactions with employees, customers, and suppliers.

Ultimately, based on the studies that employ it (e.g., Campopiano et al, 2019; Cordeiro, Profumo and Tutore, 2020), CSR is the balancing of social, environmental, and economic demands, making it synonymous with sustainability.

Through the social lens, sustainability invokes social responsibility. Social sustainability places critical emphasis on gender equality. However, the complex nature of these and other issues produces struggles in defining and measuring social sustainability, which negatively affect the incorporation of social outcomes into corporate practice and research (Rumanko et al, 2021).

Under the environmental light, sustainability acquires an edge that seeks to fight environmental degradation. Within this context, the concept of environmental disclosure assumes particular significance, as it serves as an indicator of a firm's responsibility to its community and the world (Oware et al, 2021). Environmental disclosure covers various aspects, including efficient energy use, pollution prevention programs, recycling abilities, clean energy, and ISO certification. An additional or complementary step in this regard is the adoption of green innovation, signifying ecologically friendly innovations deeply ingrained into an organization's products,

processes, services, or methods. These practices collectively fall under the umbrella of “ecopreneurship”, also known as ecological entrepreneurship or green entrepreneurship.

At the nexus of sustainability’s environmental dimension and gender, we find Cordeiro, Profumo and Tutore (2020), who present a ground-breaking study – the first to address the combined effect of ownership control and board gender diversity on corporate environmental performance. Firstly, the authors uncover a strong positive correlation between the proportion of women directors on the board and the level of environmental CSR. Secondly, they establish that the effect of board gender diversity on environmental performance is more pronounced in family businesses. Thirdly, their observation that firms with three or more women directors exhibit superior environmental performance supports the notion that homophily contributes to intraboard networks of women directors. In spite of this evidence and concerns about the ethical and financial ramifications of a lack of gender diversity, the representation of female directors remains remarkably low.

In an attempt to clarify the relationship between female CEOs and environmental disclosure practices in both family and non-family controlled businesses, particularly within the context of a developing economy, India, Oware et al (2021) substantiate this claim. While the research identifies a positive association in family businesses, it underscores that women lack adequate representation on boards to exert effective influence on environmental disclosure. Therefore, it is recommended that companies consider hiring more female directors, surpassing the current limit of one to three. The study argues that a maximum of three female directors is insufficient, and an increase beyond this number is proposed to ensure effective oversight of environmental accountability by female directors. This, in turn, can enhance the company’s credibility in the eyes of stakeholders.

Cordeiro, Profumo and Tutore (2020)’s and Oware et al (2021)’s findings do not entirely align with those of Maggi et al (2023). While Maggi et al (2023) assert that attaining a critical number of women directors (i.e., critical mass) alters board dynamics and improves the decision-making process, this number is set at a minimum of two female directors. Nevertheless, the authors also note a positive association between women directors on the board and the level of environmental disclosure. In contrast to non-family firms, family companies exhibit lower levels of environmental disclosure. Gender diversity on the board, however, positively moderates the family firm-environmental disclosure relationship, to the extent that when at least two women sit on the board, it reverses the lower level of environmental disclosure, leading family businesses to provide richer environmental disclosure as compared to their non-family counterparts.

Auspiciously, several countries are implementing strategies to boost female representation on corporate boards, adopting either a coercive, enabling, or laissez-faire approach (Cordeiro, Profumo and Tutore, 2020).

In a similar vein, Nadeem, Gyapong and Ahmed (2020) contribute both theoretical insights and empirical evidence regarding the impact of board gender diversity, specifically on the multifaceted measure of value creation. Employing a multidimensional approach to value creation is essential to accommodate the interests of a wide range of stakeholders, including employees, customers, the community, and shareholders. Ultimately, this approach refers to a company’s ability to deliver both financial and non-financial returns to its legitimate stakeholders. Hence, following Harrison and Wicks (2013)’s proposed performance indicators from multiple stakeholder perspectives, Nadeem, Gyapong and Ahmed (2020) base their assessment of value on environmental, social, and economic performance metrics. The findings suggest that while gender-diverse boards are associated with stakeholder value creation in family businesses, this is most evident for environmental value creation. Although female directors tend to the interests of diverse stakeholder groups, family owners lead them to prioritize environmental stakeholders, arising from the belief that environmental value creation may offer greater legitimacy.

Gavana, Gottardo and Moisello (2023) build upon previous research by extending the results to encompass France, Germany, Italy, Spain, and Portugal. The authors do indeed point out that women on the board positively influence environmental performance, and this effect is significant only in family businesses. Family businesses demonstrate greater effectiveness in leveraging the distinctive qualities of women directors to the benefit of environmental performance. Importantly, the study goes a step further than earlier literature by indicating that the positive impact of board gender diversity diminishes as board tenure increases.

Last but not all least, Campopiano et al (2019) undertake an exploration into the effects of women on the board of directors, differentiating between the presence and absence of family ties, on firm’s engagement in corporate citizenship behaviour. Drawing on self-construal theory, the authors find that female directors contribute positively to family business CSR engagement, but only when they are not part of the controlling family.

Conversely, female directors are particularly beneficial for philanthropic commitment when they are members of the controlling family. Female directors who belong to the controlling family are spurred by a quest for family reputation, while those outside the controlling family prioritize firm interests, initiating social initiatives aligned with the core of the business. The study notably highlights the positive impact of women on CSR and philanthropy, attributing it to a leadership style that emphasizes human relations, reflecting an attitude of care towards stakeholders and the community in which the business operates.

4. Conclusion

This paper explores the intriguing interplay between gender dynamics and environmental sustainability within the family business context by scrutinizing existing literature to illuminate the impact of gender diversity on environmental performance. In doing so, it discerns how these enterprises conceptualize, implement, and navigate gender-inclusive practices. The review contributes to research at the intersection of environmental sustainability and gender diversity by providing a thorough overview of the current state-of-the-art and suggesting potential avenues for future research.

The study also adds to the advancement of gender equality. The presence of gender diversity on corporate boards can be regarded as a key component of broader efforts to achieve gender equality in various spheres. A gender diverse board brings together diverse perspectives and skill sets, potentially fostering a more comprehensive understanding of the challenges encountered by family businesses, resulting in better outcomes for all stakeholders.

In essence, the documented findings highlight a positive correlation between the presence of women and environmental sustainability in family-controlled businesses. These findings hold implications not only for family business practitioners but also for policymakers and academics interested in propelling gender equality and sustainability agendas, notably within the framework of the 2030 Agenda for Sustainable Development.

In this sense, family businesses are encouraged to appoint a greater number of female directors to the board so as to enhance effective board functioning and improve decision-making, especially environmental accountability. In this context, family owners and managers should be mindful of the family versus non-family affiliation of women, recognizing that female family and non-family directors might prioritize the family or the business reputation, respectively. While it is indeed a significant antecedent shaping corporate citizenship behaviour, the presence of women in family businesses should not be inherently linked to this conclusion. The underlying concept is that diversity and inclusion should primarily be approached with a focus on equality and respect for individuals.

Policymakers can play a pivotal role in fostering a symbiotic relationship between gender diversity and environmental sustainability in family-controlled businesses by enacting supportive policies. Policymakers might consider implementing educational initiatives that raise awareness about the relationship between gender diversity and environmental sustainability. This could involve collaborative efforts with educational institutions and industry associations to promote gender-sensitive practices in family business management. Policymakers can further explore strategies for recognizing and incentivizing family businesses that demonstrate a commitment to both gender diversity and environmental sustainability, possibly through awards or financial incentives. Policymakers should acknowledge that the presence of women should not be a mere compliance requirement.

Additional research at the intersection of gender dynamics and environmental sustainability is evidently warranted for academics, given that this study identified only six relevant papers. Future studies are encouraged to extend the time horizon, adopting a longitudinal perspective. This approach can offer insights into the current levels of environmental sustainability in family businesses and their patterns over time (Maggi et al, 2023). Such a longitudinal perspective provides a more robust foundation for exploring the impact of gender-diversity on environmental sustainability. Moreover, future research should look at other settings, such as emerging economies, and establish comparisons between family and non-family companies and their approach to gender-inclusive practices. Qualitative methods could be employed to understand why and how women nurture family business citizenship behaviour. Examining the influence of stereotypes on the impact of female directors and CEOs on sustainable decisions could also be a relevant avenue for discussion.

As is customary in scientific endeavours, this study is not exempt from limitations. Firstly, the present systematic literature review is contingent on the selected search strategy, suggesting that alternative search terms and sampling procedures could potentially yield different results. Secondly, as an outcome of the initial limitation,

there is a possibility that emerging trends from conference papers were overlooked, given that the scope of this review is limited to articles. Nevertheless, we contend that this work serves as a stimulus for researchers, by systematizing existing literature and pinpointing avenues for future research.

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Essential Aspects of Gender-inclusive Computer Science Education

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Abstract: Computer science is a higher education domain that still show a significant male dominance. Many research studies have highlighted the importance of diversity and gender balance in computer science related areas such as software engineering and system development. However, there is still a well-identified problem that university programmes and courses on computer science fail to attract the female audience. The objective of this study is to investigate the concept of gender-inclusive computer science (CS) education with the aim of broadening participation in CS courses and programs. This is conducted through a literature study, initially focusing on keywords and research areas, and subsequently searching into existing research. The research question that guided the study was: "What concepts can be found in literature to make computer science education more gender-inclusive?". Data were analysed thematically in a two-step analysis process inspired by the grounded theory methods of Open coding and Axial coding. Findings suggest that there is significant room for learning in this field, particularly from Critical CS education studies. The Open coding analysis showed that the findings can be categorised into eight main themes. In the Axial coding the themes were merged, refined, renamed, and centred around the main axial theme of 'Epistemological pluralism'. Other essential themes that all are related to the axial main theme were: 'Design and creativity', 'Bias awareness and ethics', 'Collaboration and communication', 'Self-regulated learning', 'Real-world applications', and 'Role models and mentorship'. The result of this study is presented through a visual model that illustrates essential aspects of inclusive computer science education. The paper also proposes various directions for future research.

Keywords: Gender-inclusion, Gender-inclusive Learning and Teaching, Epistemological Pluralism, Computer Science Education, Diversity in Computer Science

1. Introduction

Girls and women are key players in designing and crafting solutions to improve our lives, and the ongoing issue of female under-representation in science, technology, engineering and mathematics (STEM) education hinders progress towards sustainable development (Chavatzia, 2017). Mathematically talented females are restricted to choose a career within STEM by cultural barriers, gender stereotypes, or misinformation (Wang & Degol, 2017). Lots of initiatives exist with a focus on role models, mentorship, networks, etc., assuming that women need to change and increase their confidence to fit into a male-dominated and masculine culture. This approach may in fact have very little impact on the gender balance and can be seen as reproducing and reinforcing the status quo (Björkman, 2005). Instead of 'fixing the women', Jansson and Sand (2021) and Björkman (2005) argue that the focus should be on 'fixing the knowledge' and challenging the norms.

According to an ecological framework presented in UNESCO's report by Chavatzia (2017), the factors impacting participation, achievement and progression of girls and women in STEM studies and careers can be categorized into four different levels: individual level, family and peer level, school level, and societal level. Factors that provide inclusive and gender-responsive STEM education can span across several levels but in this study the focus is on how to develop and deliver gender-inclusive curricula in CS education. The aim is to gain a better understanding of the barriers on education-system level, that are preventing female students from entering and progressing in computer science education. This is done by collecting existing knowledge on how to design inclusive and gender-sensitive CS education. According to Holman et al. (2018) and Björn et al. (2023) the gender gap in STEM will not close without further reforms and structural changes in education. Built on this backdrop, the research question to answer in the literature study was: "What concepts can be found in literature to make computer science education more gender-inclusive?".

A description of the used methods and materials and the analysis process can be found in the following section 2. Findings from the literature search have been presented, analysed and discussed in section 3, category by category as illustrated in Figure 1. Finally, conclusions and ideas for future research were presented in section 4, followed up by a short reflection on the limitations of this scoping literature review.

2. Methodology

This study was designed as a scoping review, with the suggested idea of providing an overview of a chosen topic as described by Munn et al., (2018). The scoping review is a relevant approach when the studied topic is under researched, complex or heterogeneous (Mays, Roberts & Popay, 2001; Pham et al., 2014;). Criteria that all were present in this investigation of Inclusive CS Education area. Moreover, it is a frequent choice in literature studies aiming at definition of concepts and to identify knowledge gaps. This is a type of literature review that offers a method of finding key concepts in a selected, specific research area, and to identify the main sources of available evidence (Munn et al., 2018). A fundamental strive in this scoping review was to synthesise research results to a foundation for future research studies. Considering this aim, the research question was formulated concrete and specifically to facilitate to meet the aim. Despite the tailored and narrow research design, authors claim that the results from the conducted literature review also can add general knowledge, useful for design of Inclusive CS Education.

2.1 Database Search

After identifying a few on-topic papers that serve as a core (Turkle & Papert, 1990; Björkman, 2005 and Ko et al. 2023), relevant keywords were collected and utilized for future searches. The objective was to gather a broad spectrum of answers to form a foundation for future research. The search strategy involved employing a focused search string while conducting searches across a number of search engines with potential to find answers to the research question. The search began with Google Scholar, then extended to Web of Science and the more specialized resource the ACM Digital Library. Numerous searches led to papers presented in the ACM Technical Symposium on Computer Science Education (SIGCSE), so an additional search of their material was conducted. The following search query was used:

("COMPUTER SCIENCE") AND ("EDUCATION") AND ("GENDER") OR ("INCLUSIVE LEARNING") OR ("BROADENING PARTICIPATION") OR ("CS FOR ALL") OR ("WOMEN IN STEM") OR ("NORM-CRITICAL PEDAGOGY")

To be classified as a relevant finding, the paper should include examples of how computer science can be more inclusive and gender-responsive, either in higher education or in general contexts. The papers should provide one or more answers to the research question. However, vague responses were disregarded, with the focus instead on concrete examples of didactical approaches and concepts. Inclusion and exclusion criteria are listed in Table 1 below.

Table 1: Inclusion and exclusion criteria

Included	Excluded
Defining concrete education approaches related to computer science (including software engineering and programming).	Generic or vague educational concepts, not specifically related to computer science or STEM.
Research relevant to higher education or secondary school.	Studies conducted in preschool or elementary school.
Various types of studies: empirical and reviews.	
Various types of literature: conference papers, journals and books.	
Written in English or Swedish	
Available via digital libraries	

2.2 Data Analysis

This scoping review was carried out in combination with a two-step inductive thematic analysis as outlined by Braun and Clarke (2012). These two steps were guided by the Grounded theory (GT) analysis concepts of Step 1) Open coding and Step 2) Axial coding. The coding process in an inductive thematic analysis clearly resembles the process in GT analysis. As conducted in the study by Samplaski (2018), an iterative thematic analysis process could preferably be divided into the steps of Open coding and Axial coding.

2.2.1 The Open Coding

In the initial analysis phase, here referred to as Open coding, text extracts from the selected publications were broken down into units of meaning, with the idea of labelling and conceptualising data as outlined by Khandkar (2009). The open coding was initiated by the first author with the idea of finding initial codes based on found text extracts or subcodes. Later the categories were fine-tuned and renamed in discussions involving all the authors according to the concept of investigator triangulation. Investigator triangulation or triangulation analysis has been defined by Patton (2002, p. 560), as "having two or more persons independently analyse the same

qualitative data and compare their findings". The coding process followed the six-phase guidelines recommended in outlined by Braun and Clarke (2012) for thematic analysis. The process for an inductive thematic analysis is very close to how the Open coding process is defined in Grounded theory. Finally, according to the sixth phase in this thematic analysis guidelines, the outcomes from the Open coding step were written up and presented separately under 'Findings' here below.

2.2.2 The Axial coding

The next phase of Axial coding was guided by the idea of "coding that treats a category as an axis around which the analyst delineates relationships and specifies the dimensions of the category" (Bryant & Charmaz, 2007, p. 603). In the same way as in the Open coding phase, the Axial coding was also carried out according to the idea of investigator triangulation approach where all the authors collaborated in a 'triangulating analysis' to revise categories from the previous step. Finally, the preliminary categories from the Open coding step were discussed collaboratively and reassembled into more abstract conceptual categories around the central axis of Epistemological pluralism.

3. Findings

The findings from the literature search are summarized in a table, followed by the results from the thematic analysis.

3.1 Search Results

Below is a list of relevant findings related to enhancing the inclusivity of computer science education, derived from literature on critical CS education.

Table 2: Literature summary of inclusive CS education

Reference	Relevant findings
Turkle, S. and Papert, S., 1990. Epistemological pluralism: Styles and voices within the computer culture. <i>Signs: Journal of women in culture and society</i> , 16(1), pp.128-157.	• Epistemological pluralism, multiple ways of thinking. Different styles and voices within the computer culture. Logical, linear, formal and abstract thinking (masculine) vs contextual and narrative. The planners approach vs the bricolage approach.
Björkman, C., 2005. Crossing boundaries, focusing foundations, trying translations: Feminist technoscience strategies in computer science (Doctoral dissertation, Blekinge Institute of Technology).	• How to broaden the meaning of 'knowing computer science'. This includes diversity among students, diversity in ways of knowing and learning (epistemological pluralism), diversity among practitioners of CS, and diversity of practices and approaches to knowledge in the discipline.
Amy J. Ko, Anne Beitlers, Brett Wortzman, Matt Davidson, Alannah Oleson, Mara Kirdani-Ryan, Stefania Druga, Jayne Everson, 2023. <i>Critically Conscious Computing: Methods for Secondary Education</i> . https://criticallyconsciouscomputing.org/ , retrieved 10/3/2023.	• Weave together pedagogy about technical ideas in CS with pedagogy about ethics, morality, and social justice • Design-related activities help engage diverse groups of learners. • Framing CS as an expressive discipline that centres students' creativity and interests. like an artist having a vision for an experience, and then creating it. • Critically analyse algorithms that others have written and modify them to be more just. • Distinguish <i>what</i> to make with computing and <i>how</i> to make it but include <i>both</i>. E.g. by using a design process including steps from ideation to test and verification. • Many students find abstract puzzle solving cold, formal, and irrelevant. • Broadening the CS knowledge. Apart from technical CS knowledge there is social, cultural, and political CS knowledge.
Loksa, D., Ko, A.J., Jernigan, W., Oleson, A., Mendez, C.J. and Burnett, M.M., 2016. Programming, problem solving, and self-awareness: Effects of explicit guidance. In <i>Proceedings of the 2016 CHI conference on human factors in computing systems</i> (pp. 1449-1461).	• Promote and develop metacognitive awareness in programming. By providing a physical representation of problem-solving stages to help learners monitor their state, and prompt learners to describe their problem-solving stage when they ask for help.
Li, P.L., Ko, A.J. and Zhu, J., 2015. What makes a great software engineer?. In <i>2015 IEEE/ACM 37th IEEE International Conference on Software Engineering</i> (Vol. 1, pp. 700-710). IEEE.	• Grading non-functional attributes of the code, such as elegance, anticipates needs, and creative. • Collaborations with non-software-engineers
Kumar, A.N. and Raj, R.K., 2022. Computer Science Curricula 2023 (CS2023) Community Engagement by the ACM/IEEE-CS/AAAI Joint Task Force. In <i>Proceedings of the 54th ACM Technical Symposium on</i>	• "Pair programming with AI" Large Language Models (LLMs) such as OpenAI's ChatGPT, and IDEs powered by them such as GitHub Copilot. • Introducing students to computer scientists who share their

Reference	Relevant findings
Computer Science Education V. 2 (pp. 1212-1213). https://csed.acm.org/	identities. Have peer mentors that share the identities of all your students. • Real-world projects and examples. • Connect the classroom to the outside world.
Davis, K., White, S.V., Dinah, B.C. and Scott, A., 2021. Culturally Responsive-Sustaining Computer Science Education: A Framework. Technical Report. Kapor Centre. https://www.kaporcenter.org/equitablecs	• Educators actively seek out and recruit diverse guest speakers and experts representing underrepresented or marginalized groups in computing
Medel, P. and Pournaghshband, V., 2017. Eliminating gender bias in computer science education materials. In Proceedings of the 2017 ACM SIGCSE technical symposium on computer science education (pp. 411-416).	• Awareness of language bias. Using non stereotypical pronouns and names in the context of CS lectures and course materials.
Frieze, C. and Quesenberry, J.L., 2013. From difference to diversity: including women in the changing face of computing. In Proceeding of the 44th ACM technical symposium on Computer science education (pp. 445-450).	• Create a friendly, comfortable and hard-working atmosphere
Albusays, K., Bjorn, P., Dabbish, L., Ford, D., Murphy-Hill, E., Serebrenik, A. and Storey, M.A., 2021. The diversity crisis in software development. IEEE Software, 38(2), pp.19-25.	• Diversifying computer science stereotypes Include ethical aspects of technology design
Wang, M.T. and Degol, J.L., 2017. Gender gap in science, technology, engineering, and mathematics (STEM): Current knowledge, implications for practice, policy, and future directions. Educational psychology review, 29, pp.119-140.	• Emphasize effort and hard work instead of talent • Add more storytelling to STEM learning • Break down stereotypes about women and STEM • Provide more female role models • Eliminating non-family-friendly policies
Mozelius, P., 2018. It is getting better, a little better—female application to higher education programmes on Informatics and System science. In <i>proceedings of the International Conference on Gender Research</i> (pp. 249-254).	• Combine computer science with design • Real world applications. • Mentorship • Pair-programming • Educational programs that offer the opportunity to study remotely.
Bjørn, P., Menendez-Blanco, M. and Borsotti, V., 2023. Diversity in Computer Science: Design Artefacts for Equity and Inclusion (p. 122). Springer Nature.	• including critical approaches to computing and accessibility into the core computer science curriculum • Use examples of the impact of bias built into software.
Bergstrom, I. and Lotto, R.B., 2015. Code Bending: A new creative coding practice. Leonardo, 48(1), pp.25-31.	• Creative coding: Artistic creation through the medium of program instruction.
Chavatzia, T., 2017. Cracking the code: Girls' and women's education in science, technology, engineering and mathematics (STEM) (Vol. 253479). Paris, France: Unesco	• Teaching using cognitive activation strategies motivates and engages girls. • Align teaching to real-life experiences and interest of girls, e.g. social aspect. • Anonymous grading in male-dominated subjects is advantageous for girls. • Recruiting male and female teachers. • Removing gender bias from learning materials • Linking female students to mentorship opportunities and female role models.
Master, A., Cheryan, S. and Meltzoff, A.N., 2016. Computing whether she belongs: Stereotypes undermine girls' interest and sense of belonging in computer science. Journal of educational psychology, 108(3), p.424.	• Girls were more likely to take a CS introductory course in a physical classroom environment where they felt they belonged.
Wagner, I., 1994. Connecting communities of practice: Feminism, science, and technology. In Women's Studies International Forum (Vol. 17, No. 2-3, pp. 257-265). Pergamon	• Accept the validity of multiple ways of knowing and doing (epistemological pluralism)
Sultan, U., Axell, C. and Hallström, J., 2023. Bringing girls and women into STEM?: Girls' technological activities and conceptions when participating in an all-girl technology camp. International journal of technology and design education, pp.1-25.	• Making friends with like-minded peers. • Incorporating creative activities can positively impact participants' self-efficacy.

3.2 Analysis Results

The outcome from the open coding analysis of the search findings resulted in eight preliminary categories for a more gender-inclusive CS education: Bias awareness and ethics, Collaboration and communication, Metacognitive awareness, Epistemological pluralism, Real-world applications, Creativity, Design, and finally Emotional support and mentorship. These preliminary categories were then discussed collaboratively and reassembled into more abstract conceptual categories around one central axis. This diversity of practices and approaches to knowledge is illustrated in Figure 1.

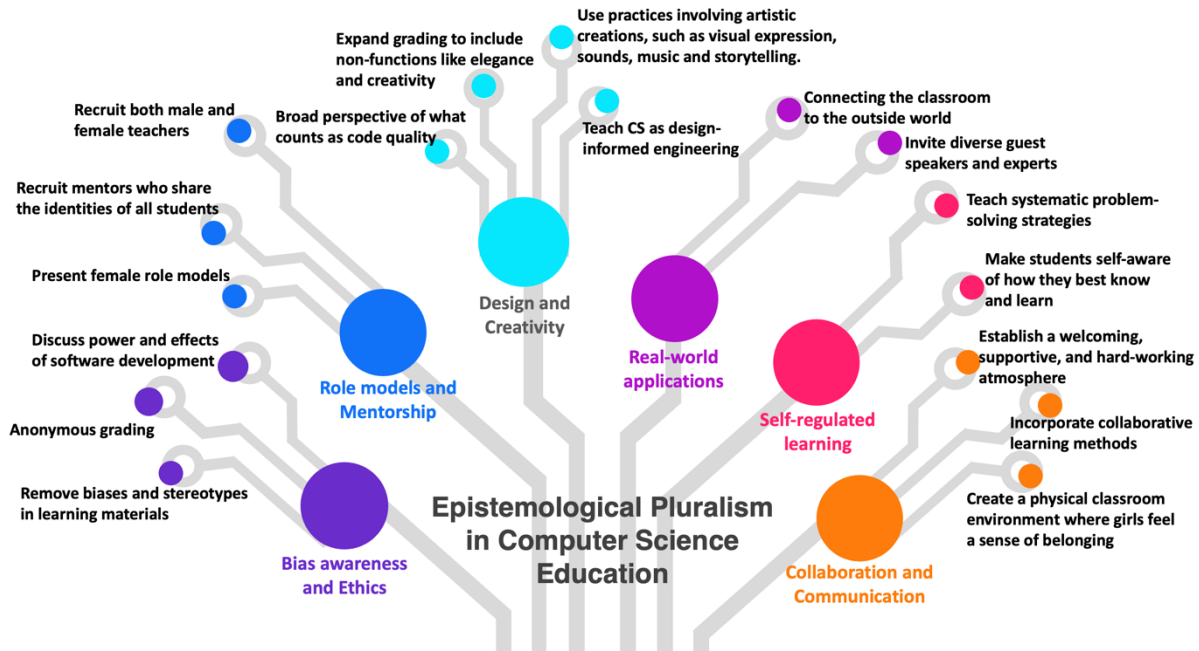


Figure 1: Visual representation of findings, with six categories centred around Epistemological pluralism in CS education.

Epistemological pluralism in CS education was found to be the central category that the other categories rely on. Björkman (2005) suggests in her Ph.D. thesis on feminist technoscience strategies in computer science that a focus on epistemological pluralism has the potential to enrich computer science education. She explored ways to broaden the concept of 'knowing computer science'. Beyond diversity among students and practitioners of CS, achieving this involves diversity in ways of knowing and learning. Epistemological pluralism is about accepting the validity of multiple ways of knowing, doing and thinking (Wagner, 1995). In the field of computer science, it can mean a diversity of practices and approaches to knowledge (Björkman, 2005).

Turkle and Papert (1990) describes the different styles and voices within the computer culture, such as logical, linear, formal, and abstract vs. contextual and narrative. There's the planners' approach vs. the bricolage approach. The bricolage approach contrasts with the classic engineering approach that typically begins with systematically developing a plan. It aligns more with tinkering, play, and the methods of an artist. The programming tool Scratch (Massachusetts Institute of Technology, 2023), developed for kids, employs this playful approach to encourage a process of testing boundaries, experimenting with new possibilities, and engaging with the world (Resnick & Rosenbaum, 2013), comparing programming to building with Lego.

The research findings in each sub-category are summarized below.

3.2.1 Bias Awareness and Ethics

There are three facets to bias awareness in CS education. One aspect involves biases and stereotypes present in the learning materials (Medel & Pournaghshband, 2017; Chavatzia, 2017). A second relates to being aware of bias, ethics, and morality when developing software and the importance of discussing the power and effects of software development (Bjørn et al., 2023; Chavatzia, 2017; Albusays et al., 2021; Ko et al., 2023). A third aspect is the bias of the teacher. Studies show that anonymous grading in male-dominated subjects is advantageous for girls (Chavatzia, 2017). All three aspects have the potential to foster inclusivity for a broader group of students. Ko et al. (2023) suggest broadening the CS knowledge to include not only technical CS knowledge but also social, cultural, and political CS knowledge.

3.2.2 Role Models and Mentorship

Taking classes or joining after-school camps is also about making friends with like-minded peers (Sultan et al., 2023). For female students who are in the minority in CS classes, it is important to have female role models, and providing opportunities for mentorship have been a successful strategy (Chavatzia, 2017; Mozelius, 2018, Wang & Degol, 2017). Kumar and Raj (2022) point out the importance of recruiting mentors who share the identities of all your students, as well as recruiting both male and female teachers (Chavatzia, 2017).

3.2.3 Design and Creativity

Combining computer science with design and using design-related activities help engage diverse groups of learners (Ko et al., 2023; Mozelius, 2018). According to Ko et al. (2023) “design and engineering is a never-ending duality and should be taught as such”. CS might be taught as design or as engineering, but preferably as ‘design-informed engineering’. This can be done by distinguishing *what* to make with computing and *how* to make it, but include both. For example, by using a design process during the course, including different steps from ideation to test and verification.

To incorporate creativity into the learning of programming can have a positive impact on participants' self-efficacy and may be another approach to broadening participation in CS classes (Sultan et al., 2023; Li et al., 2015). There are numerous examples of creative coding practices involving artistic creations, such as visual expression or sounds and music (Bergstrom & Lotto, 2015). To foster creativity there are ways to broaden the perspective of what counts as code quality (Ko et al., 2023), and Li et al. (2015) suggest expanding grading to include non-functional attributes of the code, such as elegance, anticipates needs, and creativity. Many students find abstract puzzle solving irrelevant (Ko et al., 2023) but Wang and Degol (2017) suggests adding more storytelling to the learning experience.

3.2.4 Real-world Applications

Integrating real-world applications into computer science education enhances the relevance and engagement of all students, with particular significance for female students (Mozelius, 2018; Kumar and Raj, 2022; Ko et al., 2023). This also exposes students to the complexities and challenges they may encounter in their future careers and prepares them for the dynamic nature of the field (Kumar and Raj, 2022). Another strategy to engage a broader spectrum of students is to actively seek for and invite diverse guest speakers and experts representing underrepresented or marginalized groups in computing (Davis et al., 2021). Kumar and Raj (2022) also suggest connecting the classroom to the outside world as a way to increase interest in CS classes.

3.2.5 Self-regulated Learning

Beyond teaching programming languages and tools, Loksa et al. (2016) argue that teaching cognitive aspects of programming is important. The learner should be aware of how she knows and learns. This involves teaching both systematic aspects, such as problem-solving strategies, and self-aware aspects, like metacognitive awareness. This can be accomplished by providing a physical representation of problem-solving stages to assist learners in monitoring their progress, and prompt learners to describe their problem-solving stage when they ask for help. Another example of how to facilitate this is by building a classroom culture around self-regulation (Ko et al., 2023). Teaching using this kind of cognitive activation strategies can particularly motivate and engage girls (Chavatzia, 2017; Loksa et al., 2016)

3.2.6 Collaboration and Communication

Establishing a welcoming, supportive, and hard-working atmosphere is one way to get more women in computer science education (Frieze & Quesenberry, 2013). A study by Master et al. (2016) indicates that creating a physical classroom environment where girls feel a sense of belonging increases their likelihood of enrolling in a CS introductory course.

Incorporating collaborative learning methods, such as pair programming, has been shown to be effective in enhancing the learning experience. Pair programming with artificial intelligence (AI) (Kumar & Raj, 2022) and traditional pair programming approaches (Mozelius, 2018) both contribute to fostering a cooperative learning environment appreciated by female students. Additionally, collaborative initiatives with non-software engineers, as suggested by Li et al. (2015), can further enrich the educational landscape and promote diversity within the field.

4. Conclusions and Future Work

Hockings (2010) define inclusive learning and teaching in higher education as the ways in which pedagogy, curricula and assessment are designed and delivered to engage students in learning that is meaningful, relevant and accessible to all. The aim of this study was to gain a better understanding of the barriers on education-system level, that are preventing female students from entering and progressing in computer science education. This has been done by searching for relevant literature that contribute to answer the research question. The findings were analysed and grouped in six categories: Design and creativity, Bias awareness and ethics,

Collaboration and communication, Self-regulated learning, Real-world applications, and Role models and mentorship.

All these categories would definitely contribute to a more gender inclusive educational design centred around the concept of Epistemological pluralism. However, our choice for future research is to investigate further the categories Design and creativity, Collaboration and communication, and Self-regulated learning. Areas where the authors have earlier experiences as well as subject matter knowledge. Finally, those three categories will also be implemented and tested in design for courses in CS education.

4.1 Limitations of the Study

This study was carried out as a scoping review with the aim of exploring the barriers in the current education structure that make female students reluctant to enrol and complete university programmes on computer science. The research question was answered, and findings can be used for further research in this field. However, a scoping review do not, by definition, contain the same level of details as systematic literature reviews, and this study was based on a limited number of databases. For that reason, this study is valuable for further research on the chosen topic, but the concrete guidance for policy or more general practice is limited.

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Role of Education and Training to Make Agritourism a Success Story in India

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Abstract: The paper explores the role of entrepreneurship education and training amongst women entrepreneurs to promote agritourism sector of the Indian economy. This study employ qualitative and quantitative approaches to gather data questionnaires survey and in-depth face to face interviews, based on a semi-structured questionnaire. The research involved a matched sample of 10 registered farmers (from the Punjab Heritage Tourism Promotion Board) and 200 unregistered male and female farmers selected randomly from the Indian State of Punjab. Quantitative analysis suggests that there is a direct and significant impact of EET on the management, efficiency, and use of farming land. The findings also suggested that the fall in the agricultural productivity due to labour shortages; revenue losses are rising as commodity prices are falling. Therefore, it is not a surprise that farmers seek to supplement income through alternative means to enhance their socio-economic stability and viability. The findings suggest that there is high incidence of migration amongst male farming population and female farmers lack EET and reluctance on their part to work with external male population. However, analysis of male owner-managers of micro and small agritourist firms also reported to have lower levels of EET and hence the need for EET male and females; thus, EET and adequate access to finance were two major determinants of agritourist firms' success in Indian Punjab.

Keywords: Agritourism, Women Entrepreneurs, Finance, Entrepreneurship and Training, India

1. Introduction

Performance and survival of agricultural is essential for the Indian Agriculture sector as it encounters competition and challenges due to the global events and climate trends; coupled with uncertain commodity prices, rising input costs (Farhadi et al, 2022; Sharma et al., 2022; Puska et al., 2022; Sandhu and Hussain, 2021). Global farming practices and government policies have impacted upon farming communities and the gross national product (GNP) of India (Sandhu et al., 2017; Hussain and Matlay, 2007; Sandhu, 2007). The impact has resulted in decline in agriculture sector contribution by 18.6 percent in 2022, from 53 percent in 1950s (RBI, 2022). Such sharp decline in the sector has implications for food security and the wellbeing of the nation (Anwar et al., 2022; Kuriachen et al., 2022). Despite a steady decline of the agriculture's share in GDP, agriculture still plays a significant role in the overall socio-economic development of India as approximately 75% of the population is directly or indirectly dependent on agriculture; this demonstrates a significant population remains dependent on agricultural sector (Sandhu, 2020; Sandhu and Hussain, 2021). Thus, there is a case for promoting agricultural associated business. Agri-tourism promotes development of both, agriculture and tourism.

Agritourism plays significant role in the economic growth of the developed and developing countries. It creates job opportunities, promotes training and motivate young people to participate in agriculture and environmental related activities; and it plays a vital role in supporting rural development (Lane and Kastenzholz, 2015; Thomas et al., 2011; Privitera, 2010). Women have been reported as the driver of change in agritourism in the western countries (Halim et al., 2020;). However, women participation within agritourism activities remains under-explored in India. Women's embeddedness within the emergent agritourism entrepreneurial ecosystem remains fragmented and vague and notably absent from the extant literature (Sandhu et al., 2017). However, women's contribution in the agricultural and allied activities has not been fully analysed (Saroj et al., 2022; Sundari, 2020; Gil Arroyo, et al., 2019; Sandhu et al., 2017:12; Sandhu, 2007). Therefore, it is imperative to strengthen women's participation in agriculture through their social and economic empowerment.

Women's access to entrepreneurial education, training and finance in emerging economies, nascent entrepreneurial ecosystems, is an under-researched (Hussain and Scott, 2015). Welter et al. (2011) asserted that when analysing women-owned enterprises should be contextualise in terms of structural and cultural factors that impact on the characteristics of those enterprises. Much of the extant research on Entrepreneurial Education and Training (EET) in family business has been undertaken in the context of developed nations (Muhammad et al., 2011; Matlay, 2008). There is limited research that focuses upon the EET needs of women in developing nations such as India, more specifically in the context of farming (Sandhu et al., 2012a; 2012b; Sampath, 2001). This paper contextualizes empirical evidence and theory (Welter, 2011; Zahra, 2007; Zahra et al., 2014), explores the EET needs of women entrepreneurs engaged in agritourism in the Indian Punjab. It

investigates the potential impact of public and private provision of EET courses aimed at family owned and managed farms, in general, and agritourism.

The remainder of the paper is organised as follows: Section 2 provide evidence on women entrepreneurs in emerging economies, influence of entrepreneurial finance, gender, and importance of EET. Section 3, conceptualises women as key driver of change in agritourism. Section 4 discusses the research methodology used for the study, while Section 5 provides a discussion of findings as grounded in the specialist body of knowledge; followed by the conclusion and recommendations.

2. Literature Review

2.1 Women Entrepreneurship in Emerging Economies

Entrepreneurship is considered as a panacea for economic growth globally; it is an engine to facilitate innovation, wealth and job creation (Lee and Rodríguez-Pose, 2021; Kattak et al., 2020; Packard and Bylund, 2018). Entrepreneurs are part of entrepreneurial ecosystems (Manolova et al. 2016, citing Stam, 2015), therefore, Manolova et al. (2016) theorise entrepreneurial ecosystems by factors such as markets, human capital, finance, education/training, and policy. Although extant studies report that women entrepreneurs are agents for economic growth and poverty reduction (Beriso, 2021; Sajjad et al., 2020). Nevertheless, despite this they encounter major obstacles in running their businesses (Leon-Himmelstine, 2021). Market inefficiencies, financial exclusion, gender inequalities are caused by social, religious, and cultural norms (Jayachandran, 2021). Consequently, women are forced to engage in the informal sector (beauty salons, food vendors) as a mean of meeting livelihood needs, which in ultimately affects their ability to access finance (Lee and Rodríguez-Pose, 2021). Moreover, lack of collateral and ownership rights makes it significantly difficult to access finance from the formal financial institutions (Sandhu et al., 2012). Anecdotal evidence shows that businesses without adequate and/or timely access to finance are less successful than those with formal and/or informal sources of loan, credit and bridging finance. Based upon our review of the specialist body of knowledge, it can be hypothesised.

H1: Lack of access to finance by women has an adverse impact on their business.

2.2 Importance of Entrepreneurship Education and Training in Women Owned Businesses

Women are disproportionately affected by lack of education due to deep rooted gender discrimination, access to entrepreneurial education and finance (Roomi and Parrott, 2008). Educational achievements are positively with access to finance (Burchi et al., 2021). In many developing countries, female education is hindered by the male-dominated social and cultural norms that favour boys' education over that of girls (Lund and Lee, 2018). The lack of education coupled with collateral requirements restricts women from accessing finance from financial institutions (Egbo et al., 2020). Hence due to lack of collateral women have to rely on informal sources of finance, which often leads to their exploitation and manipulation by the informal lenders (Sandhu et al., 2017), especially in the case of developing countries.

There exists a notable paucity of research on the Entrepreneurship Education and Training needs of small businesses owned by women (Sandhu et al., 2012). Much of the seminal literature on EET in small business has been undertaken in the context of developed nations (Muhammad et al., 2011; Hussain et al., 2008; Matlay, 2008). There is only limited research that focuses upon the EET needs of small businesses in developing nations such as India (Sandhu and El Gohary, 2022; Sandhu et al., 2012; Dutta, 1997; Sampath, 2001), there exist non for the agritourism. Small businesses in India and other developing countries are adversely impacted during economic uncertainties recession and pandemic; many businesses failed due to lack of financial support (Sandhu El-Gohary, 2022). This research aims to bridge the knowledge gap, especially the role of EET for the small agritourist firms (SATFs) firms of the Indian economy. Thus, H2 examines the relationship and the impact of EET on women family-owned agritourist firms.

H2: Entrepreneurial Education and training (EET) has a positive impact on women's family and success of SATFs

The next section of this paper reviews the extant literature and considers how agritourism can be anticipated to supplement declining agricultural income and women as key actors of change.

3. Women in Agritourism: can They be key Driver of change in India

COVID-19 pandemic has raised challenges for agriculture throughout the world at large but agritourism sustained and proved to be an effective tool to supplement the farm income in developed countries; and its robustness for the developing countries farmers could be considered (Grashuis et al., 2019; Puska et al., 2021; Nematpour et al., 2022). Agritourism has gained popularity in North America and other countries. There is enough literature (Poulaki et al., 2021; Ammirato, et al., 2020; Barbieri and Mshenga, 2008) that proved role of women is significant for agritourism, but their contribution has not been recognised. Within the agritourism, women have been reported as the drivers for agritourism in the western world (Poulaki et al., 2021; Ammirato, et al., 2020; Gil Arroyo et al., 2019; Wright and Annes, 2016). Studies relating to agritourism have examined different factors associated with their success (Che, 2007; Wicks & Merrett, 2003), and its benefits for participating farmers and their local communities (Che, 2007; Wicks & Merrett, 2003) and what are the motivations to pursue agritourism enterprises (McGehee & Kim, 2004; Nickerson et al., 2001). Studies (McGhee, 2007) examined barriers to agritourism development. However, there are lack of studies which have investigated women as key players in the agritourism ecosystem in India.

There is considerable literature that have examined the agricultural sector of developed and developing nations but small agritourism sector is a miss, especially the contribution of smaller family farms. Since 1970s, in India famers experienced decline in farm profits, caused by adverse socioeconomic, demographic, and political changes; this forced owner-managers to reduce costs to increase farm profits and the family income (Sandhu and Hussain, 2021). However, the strategy failed, and owner-mangers adopted alternative approach to ensure the sustainability of their family businesses: (i) diversification of agricultural output; and (ii) pursuing off-farm activities income strategies. Consequently, agritourism emerged as one strategy to supplement primary, farm-based operations and related income generation (Carpio et al., 2008). The specialist literature highlights that the challenging economic conditions led the agricultural sector of India to become involved in lucrative alternatives to traditional farming, such as agritourism (Lane and Kastenholz, 2015).

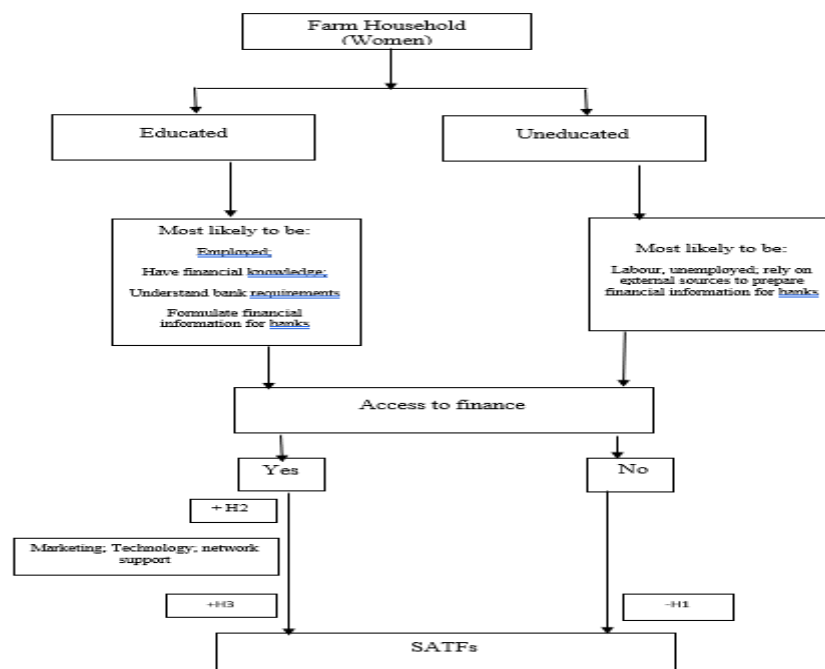


Figure 1: Study Model of the Impact of EET on SATFs

Agritourism is forecasted to further grow in the short and medium term (Thomas et al., 2011). Women's being key protagonist in the family and agritourism farming in India, yet the sector remains largely under-researched area of entrepreneurial studies (Sandhu et al., 2017; Hussain and Scott, 2015), especially entrepreneurship education and training. Thus, this research study explores EET needs of women entrepreneurs engaged in agritourism in the Indian Punjab. It further seeks to investigate the potential impact of public and private provision of EET aimed at family owned and managed farms, in general, and agritourism in particular. Its further access to adequate finance for agritourism enterprises, without adequate finance agritourism sustainability and

growth could be limited. The study also draws on the success of agritourism experiences, use of technology and social media used in European countries (Streinfecker et al., 2022) to compare and contrast their practice with Indian. Hence it can be hypothesised:

H3: Financial education and training help women entrepreneurs to access finance and adopt technology, marketing, and support services to enhance their businesses.

Figure 1, outlines a conceptual model, which highlights the potential impact of EET on access to finance hence SATFs. While the impact of such cultural phenomena upon women-led firms has been explored in a variety of diverse developmental and spatial contexts, their impact cannot be generalized to dissimilar contexts, such as India, where entrepreneurial ecosystems are different across regions and between urban and rural parts in the same region.

4. Methodology

Both qualitative and quantitative data were collected through focussed group, in-depth face to face interviews, based on a semi-structured questionnaire and questionnaire survey. The research involved a matched sample of 10 registered farmers (from the Punjab Heritage Tourism Promotion Board) and 200 unregistered male and female farmers selected randomly from the Indian Punjab. However, 80 responses were discarded due to incomplete data. The balance of 130 usable responses was coded and prepared for analysis. The usable response rate was 62 percent. To ensure the validity of survey responses and that these were representative of the wider population, a non-response bias test was carried out to compare early and late respondents. Chi-square tests show no significant difference between the two groups of respondents, at the 5 per cent significance level, implying that a non-response bias was not a concern. From the usable sample of 130 respondents, 10 face-to-face, semi-structured interviews were conducted in the local language by one of the researchers. These interviews lasted between 45 to 60 minutes. The interviews were recorded, and full transcripts were produced for research purposes. A binary logistic regression model was used to assess if education had an impact on access to formal finance. In this research, it is assumed that an owner/manager has several alternative financing options, both formal and informal. Therefore, we sought to establish whether knowledge of financial education and related skills had an impact upon the financing choices made by SATFs owner/managers. The data showed there existed a relationship between gender, access to growth and societal progress in an emergent entrepreneurial ecosystem. Responses were analysed using descriptive statistical methods, to identify the specific needs of women entrepreneurs and to establish any causal relationships between key variables and the EET needs in agritourist firms.

4.1 Empirical Model

The empirical model was adopted from Sandhu et al., 2012 to investigate the relationship between EET needs of women entrepreneurs engaged within the agritourism. This relationship is represented by the simple liner regression model in equation 1:

$$Y = \alpha + \beta'X + \varepsilon \quad (1)$$

Where α is the intercept, β is the coefficient to be estimated and X is the independent variables determining financing preferences/financial education, $\beta'X$ is the index, ε represents a residual term and the error term has a logistic distribution with mean 0 and variance 1. The logistic regression is the “prediction of the probability of Y occurring given known values of X ’s” (see Field, 2009; Greene, 2003). The logistic model equation, with $P(Y)$ being the probability of Y occurring, e the base of natural logarithms and β_n regression coefficient of variable X_n , is:

$$P(Y) = \frac{1}{1 + e^{-(\alpha_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \dots + \beta_n X_{ni})}} \quad (2)$$

In this research context, we observe the SATFs owner/managers’ financial education impact on financing preferences. The dependent variables, knowledge of “financial education/skills also effect the financing preferences and consequently leads to increase in the access to bank finance” is taken as a binary variable where financial education (skills) and financing preferences take value of 1 or 0 if it does not influence the financing decisions. Therefore, the unobserved variable Y in the case of binary logistic regression is:

$$Y = \begin{cases} 1 & \text{if } Y > 0 \\ 0 & \text{if } Y \leq 0 \end{cases} \quad (3)$$

4.2 Specifying Variables

The dependent variable, financial education and skills, are rated and reported by the participants with a discrete scale of 0 and 1, where 0 depicts that the respondents do not possess knowledge about the financial skills and 1 show that they have benefitted from financial education and possess relevant skills. The hypotheses derived in the previous section, independent and dependent variables are grouped according to business profile and characteristics of the family business owner/manager. Table 2 presents a summary of statistics, the dependent and independent variables.

5. Findings

5.1 Descriptive Results

Table 1 illustrates the demographics of respondents. 77 percent of the respondents were male, as the sector is male dominated nature in Indian Punjab. Whereas 23 percent female, majority of them reported keen interest in the agritourism. Further analysis suggested most women respondents (55 percent) worked on farm either full or part time along with homemaking and involvement into poultry and dairy. The female ran businesses were on their husband's name, even though some of them were working abroad. Interestingly, despite men working abroad, women owned or ran businesses either husband/father made strategic decision-making.

The analysis of respondents suggested, there is keen interest amongst farmers in India, like their counter parts in the western countries to apply the concept of agri-tourism in agrarian economy of Indian Punjab. 80 per cent, respondents recognised that Agri-tourism is a potential business model to market the rural heritage and culture to the urbanised population. There was a recognition amongst the selected respondents, 41 percent, that agri-tourism has potential to attract Punjabi population living abroad and in the urbanised cities of India. However, when asked whether they would like to set up the agritourism business, 55 percent of the respondents' reply was negative and only 38 percent were interested to start the business. However, 70 percent farmers mentioned lack of required knowledge and skills to enter the agritourism business. In terms of educational achievements 58 per cent of the respondents had educational qualification equivalent to or less than senior secondary level education. The survey results showed that females were more educated than their male counterparts. However due to lack of collateral they were perceived to be riskier; lack of skills, outlook and confidence to make decision-making independently and interaction with formal institution was perceived to be an issue.

The farmers, 7 percent of the sample, involved in agritourism reported that there is lack of support offered by the government, financial intuitions, or any other sector. Lack of adequate finance, skills and marketing knowledge were reported to be major obstacles, these findings support H1. Limited training was reported to be the major obstacle to plan properly and provide necessary facilities to their guests. Male entrepreneurs, due to cultural and religious sensitivities, were less likely to involve their female family members in the agritourism business. However, the evasive answer was, *"We need support from authorities before involving our female family members. As outsiders can be a threat to their safety and honour."* Many straight away rejected the idea of involving women into this business due to lack of proper infrastructure and support.

Table 1: Demographics of respondents

Socio-demographic indicators	Frequency	Percent
Gender (n=130)		
Male	75	77
Female	55	23
Education (n=130)		
High School	30	23
Senior Secondary School	45	35
Undergraduate degree	35	27
Master's degree	15	12
Professional/Technical qualification	5	4
Age (n=130)		
Between 20-30	18	14
Between 30-40	43	33
Between 40-50	45	35
Above 50	24	18
Entrepreneurship training and financial education (n=130)		
Yes	35	27
No	95	73
Type of Agribusiness/occupation		
Dairy	30	23
Poultry	25	20
Farming only	65	50
Agritourism	10	8
Size of land holdings/farmland		
Less than one acre	20	15
1-2 acres	35	27
2-4 acres	40	31
4-10 acres	20	15
10 acres and above	15	12
Respondent's role on farm (n=130)		
Owner or co-owner	60	46
Tenant	10	8
Sharecropper	25	19
Manager or employee	5	4
Other	30	23
Farm Participation (n=130)		
Full time farming only	65	50
Part time farming only	11	9
Full time off farm job only	15	12
Part time off farm job only	10	8
Farm and off farm job	24	18
Type of employment (n=130)		
Full time farming	65	50
Part time farming	10	8
Full time off farm job	15	12
Part time off farm job	5	4
Other	25	19
Agritourism Involvement		
Currently involved	10	8
Not involved but planning to	20	15
Neither involved nor interested	70	55

Table 2: Description of Dependent and Independent Variables

Variables	Mean	Std. Error of Mean	Median	Range
<i>Farm Size (FS)*</i> (Less than 1 acres; 1-2 acres; 2-4 acres; 4-10 acres; 10 acres and above)	5.17	.075	3	5
Type of agribusiness (TAB)(1= Dairy; 2=Poultry; 3=farming only; 4= Agritourism only)	0.5	0.2	1	4
<i>Gender of the owner (G)</i> (1 =Male; 2= Female)	1.45	.025	2	2
<i>Age of the SATF's owner/manager (AG)(in years)</i>	37	0.69	35.30	1
<i>Owners' Education(EDU)</i> (1= High School; 2= Senior Secondary School; 3= undergraduate degree; 4= postgraduate degree; 5= professional or technical qualification)	2.41	.018	3	4
<i>Training (TRG)(0= None, 1= apprenticeship, 2= formal training)</i>	1.89	.028	2	1
<i>Financial education and skills(FEDUSL) (0= No, 1= Yes)</i>	1.01	.320	2	2
<i>Advice from financial consultant (AFC) (0= No, yes= 1)</i>	5.01	.135	3	4
<i>Sources of finance/financing preferences (FP)(0= internal, 1= external)</i>	1.70	.560	2	3

Note: * Categorised according to Small Scale Industry definition based on the investment

Table 2: Logistic Regression Estimation of SATFs' Financial Education and Training

Financial Education and training	Coef.	Robust Std err	Sig. P	Odds ratio Exp B	[95 percent conf. interval]	
<i>Constant</i>	0.013	1.835	.358	5.723		
<i>Age of the owner</i>	-					
20-40 years	1.357*	.571	.675	.780	.755	0.785
More than 40	.009	.883	1.322	.023	.145	5.137
<i>Gender</i>						
Male	-2.145	.820	.835	.287	.075	1.222
Female	-.039	.645	.916	.105	.165	3.251
<i>Training</i>						
None	-					
Financial Education	.455*	.475	.574	2.001	.056	10.301
Formal training	-.623	1.105	.465	.785	.162	3.043
<i>Access to</i>						
Internal finance	-.271	.538	1.284	1.157	.257	5.570
External finance	1.551*	2.16	3.075	0.001	.196	6.781
<i>Education</i>						
None	-					
High School	-.235*	.923	1.735	4.661	.246	11.250
Senior Secondary School	.537	1.789	.025	0.850	.882	5.327
College/University education	.630	.911	.357	1.720	.750	5.180
Professional technical diploma	.535	.780	.127	3.21	.451	2.30
<i>Access to agritourism resources(technology; marketing; network, etc.)</i>	2.303*	5.115	0.403	0.060	0.112	1.235
<i>Advice from financial consultant</i>	-3.531*	2.356	.613	0.203	0.023	4.326

Notes: - indicates the reference category; *indicates that estimate is significant at 5 per cent significance level; number of obs. = 122; $R^2 = .93$ (Hosmer&Lemeshow); .39 (Cox & Snell); .54 (Nagelkerke); Model $\chi^2 = 32.02$

5.2 Financial Education and Financing Choices

Binary logistics regression performed (Table 3) to investigate the impact of financial knowledge and skills on SATFs financing preferences and agritourism resources. The findings reports that the probability of using external finance is higher amongst the financially literate individuals irrespective of their gender. Education of SATFs plays great role in allowing them to explore necessary avenues to make agritourism a success. With adequate finance they cannot market their product and use technology to enhance their business. Whereas

those who were uneducated or less educated relied on internal sources of finance or informal lenders and sought advice from consultants while approaching the formal lending institutions. It seems that financial literacy added more value than the formal education to equip SATFs. These findings support H3. When explored further in the interviews it came forward that those female farmers who were educated, they were not only making right financing choices but also using funds appropriately to upskill themselves, staff and positively contributing towards their family wellbeing and growth. They were very entrepreneurial in their action and approach, confirmed by respondents during the interview- one of them stated that *entrepreneurial training/ education helped me unfold key issues which were hindering my business and provided me awareness and insight to look at things from different perspective. It has extended my vision and approach to deal with day to day issues*; another respondent stated *'EE has enhanced my problem-solving skills and they are not only helping me to successfully lead my business but also having positive impact on my personal life and family'*.

During the semi structured interviews conducted with the respondents, it was evident that the male running households of similar size to women have significantly high earnings. Females are significantly disadvantaged in education, savings, banks accounts and prior credit records. They face high rejection rates from banks due to lack of collateral as there is high demand of collateral and referral which female are unable to provide (supports H1). Consequently, they approach informal lenders; they charge higher rates and there is reported to higher level of exploitation by them. It has been observed that there is relationship between farm size, caste and type of informal financing is acquired (table 4). It was observed that most of the farmers with farm size above two acres were from jat community, predominantly farmers.

The hypotheses H1, H2 and H3 are supported by the research results reported in the above-mentioned tables and respondents interview excerpts. There exists a significant relationship between women's access to finance and its impact on their business. EET and Financial education and training can help SATFs to explore more avenues to make their business a success by adopting innovative technology, marketing and support services to enhance their businesses.

6. Conclusion

The results suggest promotion and support of agritourism could serve as supplemented income to traditional agricultural production. Within this context, women could be drivers for change in terms of economic endowment, social status and greater equality of gender within a restrictive society. There is evidence in this paper that there is need for the government to introduce effective policies to promote agritourism and support farmers, through enabling better access to finance and offering greater provision of EET. Such progressive approach by government will ameliorate access to formal bank finance, reduce the need for collateral, thereby providing further support in form of loan guarantee. Appropriate structural and institutional measures should be initiated to empower farmer especially female farmers and improve their access to credit, education and appropriate access to technology. Financial education is essential for farmers in general and female entrepreneurs in particular as its access lags. Enterprise educational providers need to assess the relevance of their education provision – theoretical versus applied enterprise education. In addition, there is a need to develop, effective regulation to regulate the informal providers of finance. Women participants must themselves be encouraged to claim greater decision-making authority in family businesses, whether run in their names or not. This transition can only happen if women gain more confidence, knowledge and experience in dealing with the external world. They should also collaborate with other successful women entrepreneurs. The changing role of women and their contribution to emergent entrepreneurial ecosystems need to be further explored to bring about a greater change, an aspect that has not received fully scrutiny.

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Confronting Conundrums of Care in College Student Advising

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Abstract: At colleges and universities throughout the United States, academic advisors play a central role in stemming the tide of declining student enrollment and academic underachievement—especially in the wake of academic, physical, emotional, and interpersonal setbacks incurred during the COVID-19 pandemic. For many undergraduates, the mentoring relationship with their academic advisor provides the longest lasting and deepest connection with a faculty or staff member throughout their college experience. Increasingly, the expectations that institutions and students place on academic advisors have escalated far beyond simply guiding course selection and checking fulfillment of graduation requirements. While this more holistic approach to advising can cultivate a greater sense of belonging, it also places the advisors in a precarious position as the parameters of their responsibilities and the extent of caregiving continue to broaden. The ever-expanding expectations of caregiving placed on college academic advisors exemplify how pandemic-informed labor practices across many workplaces inadequately acknowledge caregivers while the care recipients may become overly dependent. This study investigates how advising evolves to become an extrapolation of the caregiving demands socially placed upon women in traditional, patriarchally structured families and workplaces. Using methods derived from critical incident theory that identify systemic crisis points and opportunities for intervention, the authors examine narratives of two women who serve as the lead advisors for their departments in southeastern United States universities. Their narratives delineate two double binds. First, the presumably bottomless reservoir of care demanded from women places nurturance of students in tension with career advancement and other care responsibilities (e.g., self and family). Second, setting boundaries to caregiving may generate accusations of insensitivity, but boundless care can accommodate and encourage learned helplessness among students. The investigation concludes with suggestions to reform institutional policies and build student resilience that equips them to learn independently.

Keywords: Academic Advising, Women in Higher Education, Learned Helplessness, Self-Efficacy, Resilience, Higher Education Reform

1. Introduction and Context

Despite some signs of increasing equity in particular academic disciplines, academia often remains a gender-biased professional space in higher education across the United States (Fox 2020). Even when women do achieve numerical parity with men across faculty ranks or in salary, notable differences persist in job performance expectations and in the type of labor women perform. Nationwide data show that women faculty on average perform much higher levels of internal institutional service measured in time spent and number of activities compared to men, even when controlling for rank, discipline, and race (Guarino and Borden 2017). The same study notes that higher service loads reduce time available for research and teaching, both of which generally play more crucial roles in promotion, awards, and salary increases.

One particularly demanding service role that many women in higher education occupy is academic advisor. The 99,400 academic advisors working at all types of U.S. colleges and universities typically “help students plan and achieve their academic goals” (EdTech.com 2023). Increasingly, advisor duties extend far beyond aiding in course selection and checking progress toward a degree. Advisors provide empathy, emotional support, and advocacy for students—advisory functions that have magnified importance for a pandemic-traumatized generation (Lisiecka, Chimicz and Lewicka-Zelent 2023).

Among academic advisors at all educational institutions nationwide, 64.7 percent identify as female (Zippia 2023). As recently as 2022, Solon, McGill, and Jensen “identified no literature on the career management of female primary-role advisors” in publications of the largest professional organization of academic advisors or in the major academic journal databases (p. 19). The same researchers interviewed 17 women academic advisors in higher education. While the subject pool was entirely female, the study included no research questions or findings that addressed gender issues.

For many undergraduates, the mentoring relationship with their academic advisor constitutes their most extensive connection with a faculty or staff member throughout college. Academic advisors play a crucial role in college student retention, satisfaction, and academic performance (Drake 2011; Holland, Westwood and Hanif

2020). Improving the capacity of women faculty to advise effectively carries important gender-relevant consequences. Women especially thrive when mentored by capable women advisors. Pairing female students with female advisors can yield several beneficial effects unique to this gender pairing. Multi-year data analysis of advisor/advisee matched gender pairings shows significant benefits to women students' cumulative grade point average at graduation, retention rates in the first two years of college, post-graduation employment rates, and likelihood to attend graduate school (Kato and Song 2022). These female gender match effects persist independently of other potentially confounding variables, such as the advisor's age, whether the advisor graduated from the same type of institution that the students attend, or whether students were introduced to the field by a female instructor.

The present study focuses on the experiences of two women who coordinate advising at two public universities in the southeastern United States. Their firsthand narrations and reflections regarding advising throughout and beyond the COVID-19 pandemic provide insights on the tensions women advisors face. These gender-infused tensions take the form of feminist double binds, or conflicting professional expectations and aspirations that have no clear resolution and where every option poses risks or penalties (Frechette 2009).

2. Method

The analytical approach combines critical incident theory with autoethnography. As a qualitative method, critical incident theory (CIT) identifies and assesses specific key experiences that constitute potential turning points for some aspect of an educator's professional practice (Tripp 1993). The decisions and actions taken in these circumstances constitute defining moments wherein the choices among available reactions can transform the nature of an educator's professional role (Senel 2021). CIT has proven especially useful in identifying opportunities to improve faculty performance (Khandelwal 2009). On a larger scale, CIT can diagnose problems with and suggest improvements in systemic institutional practices within higher education. CIT elaborates on specific instances to elicit richer details about events and their implications than surveys can yield (Cunningham, De Brún and McAuliffe 2020).

Previous research that applied CIT to academic advising in higher education addressed student satisfaction with advising and recommended that advisors build closer relationships with students (Vianden 2016). Diane Reay (1997) laments the paucity of research centring on women's labour in academic culture. By contrast, this study foregrounds the perspectives of women engaged in performing the labour of academic advising. Firsthand narratives from these women themselves comprise autoethnographies that capture the authentic *praxis* of advising as a lived experience in academia, revealing a more vivid, detailed description than quantitative analyses can provide (Sang 2018; Schwartzman and Simon 2023).

To address the issues confronting women in professional track (i.e., non-tenure track) positions who balance instructional, familial, and advising responsibilities, two women in such positions reflect on critical incidents in their advising experiences from the outset of the COVID-19 pandemic (March 2020 in the United States) to the present. The advisors independently constructed narratives describing examples of occasions when they faced advising experiences that redefined the kinds of care they were expected to provide for students or that challenged their definitions of an academic advisor's role and duties.

Both faculty members (designated JS and CZH) serve as the lead academic advisor for departments of communication in southeastern U.S. universities. JS works as a senior lecturer (professional track) at a mid-size (enrolment = 17,743) research- and teaching-focused public university. She oversees approximately 300 student advisees per term, sharing advising responsibilities with one other departmental advisor (also a woman in a professional track). CZH coordinates advising for 750 students per semester, supervising a team of three other advisors (all professional track, two of them women) at a national top-30 ranked public research university with 38,873 students. She occupies a senior lecturer (professional track) position.

Both advisors are white, cisgender, married, and earn upper-middle class incomes. The findings, therefore, reflect gender issues as they affect this limited demographic. Additional research should compare this study with various demographics such as LGBTQ+, BIPOC, and others often marginalized in academia. Especially informative insights may arise by focusing on intersectional challenges facing members of these marginalized groups. Because the advisors in this study operate from positions of relative privilege, their narratives probably understate gender-related imbalances that women confront more generally in higher education.

The following sections highlight thematic convergences between the narratives of the advisors. The most extensive, detailed incidents revealed two sets of conflicting tensions. The first tension centres on the escalating

and disproportionate demands to nurture and care for students. Constant care escalation, however, competes with time and energy devoted to research, teaching, personal, and familial caretaking responsibilities. The second tension focuses on conflicts between obeying the university's imperative to serve students in every possible way and the advisor's "bottom, non-negotiable line" of duty to equip students to make sound decisions for themselves (Bloom, Hutson and He 2008). The final section suggests productive ways to manage these conflicting pressures.

3. Bound by Boundless Care

The first double bind arises in the tension between growing expectations to extend care to advisees and the simultaneous expectations to devote sufficient attention to teaching and other professional activities—including families and self-care. In their discourse analysis of personal narratives told by black faculty, Griffin, Bennett, and Harris (2013) observed a clear gender difference regarding the perceived obligation to perform academic service such as advising. Although they recognized such student-facing service as encroaching on time that could be devoted to research that would be highly prized for promotion, mid-career black women felt a much stronger obligation than black men. While the men more readily said "no" to service, the women felt more obligations to perform service and were more reluctant to "say no" (Griffin, Bennett and Harris 2013, p. 503).

Such findings illustrate a fundamental double bind for women faculty. To demonstrate their commitment to the university and to students as well as to build relationships, women become more likely to perform labour-intensive service such as advising. When they do, however, they tend to attenuate time devoted to research or teaching, thus placing themselves in a more vulnerable position when they seek promotion (Misra, Lundquist and Templer 2012). On the other horn of the dilemma, deliberate refusal or reduction of advising and other service duties may be interpreted as selfishness—a doubly damaging perception given its violation of social expectations that women shoulder the primary responsibility for caregiving.

CZH notices that, in practice even when not explicitly articulated, the expectations of students, their parents, and the institution differ depending on the advisor's gender. The male advisors "don't have to be as nurturing." She adds: "There's nothing that's written in terms of those expectations. But I think there are more and more of those expectations—like, a lot." Throughout the national conferences on advising, "it's kind of a thing" throughout the professional community to discuss the disproportionate expectations of nurturance placed on women advisors from all directions (colleagues, administrators, students, and parents). "There's much more expectation—a lot more—nurturing and taking care of" the students.

The increasingly comprehensive ways that advisors are expected to monitor, encourage, guide, and serve students takes a toll on the women who put this model of advising into practice. "So, it's that idea, like we are in your [the student's] business," according to CZH. She continues:

Female advisors really do kind of feel that expectation, more of them...[to] find everything that you can to be supportive. And there's a lot of exhaustion, a lot of burnout, a lot of just feeling institutionally underappreciated for the amount of emotional work that's gone on.

Pressure also arises from beyond the institution. CZH observes gender-related demands that parents of students place upon her

as a female in that role [of advisor]. They expect me to be the parent when they are not here to do so. Those parenting components [are] kind of an expectation to be the mother of their child when they [parents] are not here on campus. Very much that *in loco parentis* model.

For example, CZH regularly encounters parents who ask her to find out how their (adult) children are performing in classes although federal privacy regulations (the Family Educational Rights and Privacy Act of 1974, known as FERPA) prohibit disclosing this information without a student's explicit written permission.

JS finds that virtual advising via videoconferencing introduces new forms of parental intrusiveness.

Virtual meetings, while convenient for both students and advisors, create spaces where private information is discussed in very public settings. It is not uncommon for parents to be sitting next to students when the camera turns on, or for students to share the meeting link with a parent who joins the call. Some are guided by parents who are "off camera," but still in the room. While most of these situations are easily remedied by refusing to speak with the third party, advisors are put in a position that forces them into contentious conversations.

Rejection of parental involvement may alter perceptions of the advisor, casting her as competing with rather than extending the sphere of parental caregiving. Women advisors confront a classic feminist double bind wherein they face conflicting demands or expectations with no guidance for resolution and negative consequences attached to every option (Jenkins 2014). In this case, enforcing boundaries between parental and advisor roles invites accusations that the advisor is uncaring although legal regulations require setting such limits.

Women advisors feel pressure to meet these escalating demands, which CZH calls “the hidden messaging that’s present as written in the job description: the ‘other duties as assigned.’” Specifically, women bear the brunt of “those emotional labour, nurturing pieces, and if you’re saying no to those, then you’re saying no to the other duties as assigned, which means you’re saying no to continued employment.”

JS encountered her professional precarity more directly. Throughout the pandemic, her university continuously told students that they should take all their problems and questions about pandemic-related academic policy changes to their advisors. Advisors had to guide students through a brand new, complicated, voluminous Academic Relief Package that articulated all the special academic policies instituted during the pandemic. Although advisors had no more knowledge of the new policies than the students, those students looked to the advisors to fix any problems. As JS explains, the mantra was: “Talk with your academic advisor to help you make an informed decision.” Amid the frantic fervour to prevent further student attrition, advisors were explicitly identified as the key bulwark against enrolment declines. JS continues:

The implication—and the result—was that students believed advisors could do almost anything within the university. In reality, we could only see what students themselves could see—their degree progression and the semester’s list of scheduled classes. We could not help, but we could be blamed for not helping.

As recently as August 2023, JS expressed these concerns to the provost during an Undergraduate Studies Council meeting. Advisors were feeling overwhelmed, understaffed, under-supported, and undercompensated. JS mentioned that the university messaging around advising suggested that advising was crucial to the continued existence of the university. Thus, as essential personnel, advisors should receive some sort of economic or professional recognition for their work. At the very least, the university should probably invest in additional professional advisors.

The provost responded: “It is going to take dedicated advisors like yourself to keep this university running.” Conversely, therefore, any advisor who did not silently endure ever-expanding workload expectations and additional uncompensated labour lacked dedication and betrayed the university. Since the COVID-19 pandemic began, JS’s university has made no effort to increase the number of professional advisors on campus. To the contrary, the College of Arts and Sciences eliminated stipends and release time for faculty serving as advisors. Yet, advisors are still considered, according to the provost, “the first line of defence” against enrolment loss. Extending the military metaphor, advisors who resist or limit their role as perpetual problem-solvers qualify as derelict in their duties and possibly traitors.

4. Bound by Learned Helplessness

Women advisors face another precarious double bind that pits the imperative to do things for students against the need to build student capacity for self-direction. The boundless expectations for student support can play out in detrimental ways for students. When advisors, eager to satisfy students and avoid complaints, unconditionally continue to accommodate requests that advisors complete tasks the students ordinarily should perform, they foster learned helplessness that impedes resilience when faced with difficulties. Learned helplessness is a psychological condition in which one feels powerless to change or escape a negative situation because of a history of repeated failures or a perceived lack of control (Maier and Seligman 1976). “Learned helplessness may be the underlying cause of poor mental health status among college students during the COVID-19 lockdown” (Xue *et al.* 2023, p. 285). Reverberations of pandemic-induced stress and trauma manifest in college students as learned helplessness that

can lead to passivity, reduced problem-solving abilities, deficits in new learning capabilities in college students, and can cause a lack of motivation or hope for academics, leading to inaction and not attempting new learning situations, and resulting in a loss of direction for the future and decreased interest and engagement in overall life. (Park and Han 2023, p. 7)

CZH and JS often encounter these conditions.

Before the pandemic, CZH found that students routinely selected their preferred courses and created their class schedules using the online registration platform. Although “the registration system hasn’t changed at all” since the COVID-19 disruptions in education, student approaches to registration differ. “But now there is so much more anxiety about registering, and students not registering at all when they needed to.” Amidst plentiful course offerings, even seniors “are coming and saying, ‘Well, I just didn’t know what I needed to do, and I need you to sit down with me and explain it to me...How can I find classes?’ I’m like, ‘You’re a senior. You’ve been registering for seven semesters.’”

JS observes that when students defer to advisors to perform tasks the students themselves should complete, the boundaries between advisor and advisee erode. The advisor then is expected to take on the role of decision-maker on behalf of the student. Four years after the onset of the COVID-19 pandemic, JS finds that students frequently no longer understand how to read their degree progress reports or follow registration procedures. They are unaware of how their plan of study works, how to progress through their major, and most importantly, plan for their futures only after their degree completion. Instead, they place this responsibility on their advisors.

One of JS’s advisees epitomizes this transfer of responsibility. The student admitted not having looked at upcoming course offerings, not even knowing how to find next semester’s schedule despite having registered previously, and had no course preferences or career goals.

JS: “So, take a look at those directions, look up the classes, and then let’s talk about what you think you want to take.”

Student: “Can’t you just pick my classes for me?”

The last line is often where advisors and students end up. Students just want their classes picked for them, and because advisors are increasingly accommodating and often know so much about their students’ lives, the students feel comfortable asking advisors to determine the course of their college careers.

Another student interaction shows how JS also confronts expectations to assume gendered parental roles by doing tasks for students rather than equipping them to act independently.

Student: “Dr. S, I wish you were my mom.”

JS: “I assure you, I’m not like this with my own children.”

Student: “I bet you’re a cool mom.”

JS: “I’d like to think so, but I think your parents are doing a good job, too.”

Student: “They expect a lot of me.”

JS: “I know it feels that way, but I bet they just know you have so much potential, and they want you to recognize that and to try difficult things.”

Student: “It’s just so overwhelming. Can’t you just enroll me in my classes?”

JS: “If I enroll you, I’m going to put you in an 8:00 AM history classes because I’m a morning person and I love history. That would be my ideal schedule. Can you see why you need to pick your own classes and set your own schedule? It has to work for you, not me.”

Student: “Yeah, but I just wish you could just do it for me.”

Increasingly, advisors struggle with a vexing double bind. They could complete tasks that students deem challenging and thus appear more caring, but at the cost of enabling helplessness. Or, advisors could build their students’ sense of agency by (re)placing more responsibility on them to chart their own academic future. That assignment of responsibility, however, may set limits to the advisor’s role that students will not accept. Then students could switch to an advisor who will enable their learned helplessness, stigmatizing their previous advisor as callous. Institutional pressures to retain students by whatever means necessary may raise concerns about the job performance of an advisor who draws complaints from students or loses advisees. When the university’s mantra is to maximize enrolment at all costs, an advisor may seriously wonder whether her job is one of those costs.

5. Recommendations

5.1 Policy Changes

Institutional policy changes can mitigate the strain to reconcile advising with women's other responsibilities. One straightforward measure would make the proportions of professional responsibilities negotiable to better reflect actual labour expended. The workload allocation for JS's position is unalterably set at 90 percent teaching and ten percent "other" although advising easily occupies two-thirds or more of her effort. A more flexible and accurate official workload would allow performance evaluations to focus on activities that constitute the largest portion of activity. CZH can do exactly that, as her proportional distribution of responsibilities is subject to renegotiation annually.

To relieve the advising overload, JS instituted a peer advisor program. Trained seniors in the major serve as the first advising contact. They can process the students who have fully planned their schedules, verified their progress toward degree attainment, and simply need their online passcode to complete registration. These students often do not need (or want) extended conversations with their advisor for routine tasks. Overall student satisfaction with this system has been strong, and the process has allowed faculty advisors to concentrate on students who face greater challenges.

Academic departments also can monitor the gender distribution of advisors and assure equitable distribution of advisees among all advisors. Although students may prefer to self-select an advisor, extant gender role assumptions may drive students disproportionately toward women, whom they consider more nurturing. Advising might become a more rotational service role to reduce long-term clustering of women in the most intensive but rarely rewarded academic labour.

5.2 Addressing Learned Helplessness

Although repeatedly performing tasks for students may yield instant gratification, it can prove detrimental to student success. Park and Han (2023) contend that "reducing learned helplessness is a crucial health-related factor for college students to adjust well to college life" (p. 13). A detailed study of the features in advising that correlate with student success identifies students developing self-efficacy and a sense of responsibility as crucial (Young-Jones *et al.* 2013). The same study notes that women more often than men identify taking personal responsibility for their education as a key to academic success.

Self-efficacy intersects with resilience, as students who have developed high self-efficacy "will see challenges when faced with difficult decisions as opposed to threats" (Ibrahim, Fakhry and Khalaf 2020, p. 1176). Building student self-efficacy equips students to persevere through challenges, to explore rather than avoid the unknown. Developing more self-sufficient students also redistributes advisors' labour toward tasks that require their expertise.

Research on students who have overcome learned helplessness suggests how to restore student agency. Hayes, Doucet, and Bedi (2021) find that helplessness declines with experiences that provide a sense of control, positive perspective shifts, and self-development activities outside of just re-attempting the situations that led to learned helplessness. Building confidence through small successes can counteract helplessness. These findings imply that, rather than simply accommodating requests to "do it for me," advisors assign advisees small responsibilities that incrementally build toward taking greater ownership over their academic progress. For example, a student might begin by selecting only one course and gradually progress toward constructing their entire schedule. This incremental approach builds student confidence, shifting their perspective away from perceived incapacity.

6. Conclusion

The experiences of women academic advisors in higher education during and after the COVID-19 pandemic illuminate significant challenges rooted in gender expectations and institutional structures. This study, through the personal narratives of two women academic advisors, highlights the complex dynamics of caregiving expectations and the implications these have on both student resilience and advisor well-being. The conundrums faced by these advisors underpin the critical need for institutional policy reforms that address and balance the expectations placed on academic advising roles, specifically regarding the disproportionate service burdens carried by women. Additionally, this study underscores the importance of fostering student self-efficacy and independence, challenging the perpetuation of learned helplessness facilitated by over-nurturing advising approaches.

To mitigate these issues, institutions should consider revising workload allocations to match actual advising efforts, promoting equitable distribution of advising duties across faculty regardless of gender, and implementing systems that encourage student self-reliance while providing necessary support. By addressing these points, higher education institutions can enhance the effectiveness of academic advising, support gender equity among faculty, and contribute to the holistic development of students. The insights gained from this study call for a concerted effort to redefine the boundaries of academic advising, ensuring it serves as a conduit for empowerment rather than dependency, thereby aligning more closely with educational goals of fostering lifelong, independent learners.

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Evaluating Women's Economic Empowerment During COVID-19 Pandemic in South Sulawesi, Indonesia

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Abstract: The factual condition resulting from the COVID-19 pandemic has changed and impacted various aspects of Indonesian society. It also made women one of the vulnerable and affected groups, requiring them to face various challenges, including loss of livelihoods as family breadwinners, and gender-based violence. Outside of Java, the region with the highest number of COVID-19 cases is South Sulawesi Province, with a total of 62,672 cases. This had an economic impact on communities and families, particularly affecting women, especially domestic workers, and female heads of households. This research aims to evaluate the effectiveness and efficiency of government policies and programs in South Sulawesi Province regarding domestic workers and female heads of households. It directly conducted interviews with stakeholders from the government, women's organizations, and domestic workers and female heads of households. It found that the Covid-19 pandemic significantly impacted women who are heads of households and female domestic workers. The situation for women leading households worsened during the Covid-19 pandemic as they had to navigate the crisis on their own. The situation and conditions of female domestic workers during the Covid-19 pandemic were also dire. Some of them were unilaterally terminated, while others were forced to work daily at their employers' homes, risking virus transmission during their commute due to inadequate personal protective equipment. Those who were laid off by their employers faced a crisis, as they had no income, especially when their spouses, who also worked in the informal sector, stopped working simultaneously. It revealed that both the government of South Sulawesi empowered female heads of households by distributing productive business capital assistance and providing support for female SMEs to access people's business credit. However, in contrast to the reality faced by female domestic workers, this group of women did not receive any social and economic assistance from the government during the Covid-19 pandemic.

Keywords: Economic Empowerment, Marginalized Women, COVID-19, South Sulawesi, Indonesia

1. Introduction

The factual condition resulting from the outbreak of the Coronavirus Disease 2019 (Covid-19) pandemic has altered and influenced various aspects of life in Indonesian society. Among the different aspects affected, the economic and social aspects are highly impacted. The Covid-19 pandemic has had a significant impact on both micro and macro economies in Indonesia. In the context of the microeconomy, due to the government's social restriction policies reducing demand, industry players and providers of commodities will experience significant losses, (Triwidia., 2020) whether they want to or not. The business world has slowly started to crumble, leading to many workers being furloughed. (Muslim., 2020) In the context of the macroeconomy, the government has had to revise the national budget due to various emergency measures, such as providing fiscal stimulus packages (stimulus packages for businesses and affected communities) and reallocating funds to strengthen the healthcare sector in handling Covid-19. (Bareksa, 2020) This significant economic impact is experienced by the population, especially vulnerable groups such as women, particularly the most marginalized women who work in the informal sector as domestic workers and women who are the backbone of their families or heads of households. They are required to confront various challenges, such as the double burden, the loss of livelihood as the family's breadwinners, and gender-based violence. (Puspa., 2020)

In 2021, the region with the highest number of Covid-19 cases outside of Java Island was South Sulawesi, with a total of 62,672 cases (3.3%) of the population, (Kesehatan., 2021) comprising 9.19 million individuals (males: 4.56 million or 49.65%, and females: 4.63 million or 50.35%). (Kusnandar., 2021) To empower women, the South Sulawesi Provincial Government has focused on women's groups through online training related to micro, small, and medium-sized enterprises (MSMEs). It has also collaborated with the Family Welfare Movement (FWM) to empower women, especially homemakers. One of the activities involves empowering family agriculture by cultivating medicinal plants that benefit households (Interviewee 1).

The South Sulawesi Regional Development Agency concentrated on economic recovery in its planning programs for 2020 and 2021. For instance, the Women's Empowerment Office carried out programs that were not solely focused on women but also on all those affected by Covid-19, including heads of households, such

as husbands and children (Interviewee 2). The South Sulawesi Provincial Social Office, on the other hand, strived to assist socially vulnerable women, including domestic workers and female heads of households, by providing aid to families impacted by the pandemic. Support for homemakers was offered in the form of a food assistance package of 2.4 million rupiahs per family (Interviewee 3). The South Sulawesi Provincial Cooperatives and MSMEs Office involved women's groups in efforts to improve the economy during the pandemic by implementing policies that prioritize and empower women to enhance their family's economic well-being (Interviewee 4).

The South Sulawesi Provincial Government implemented various programs during the Covid-19 pandemic with the aim of empowering women. However, it is worth questioning whether these women empowerment programs involve the most marginalized groups of women, especially female domestic workers, and female heads of households. Therefore, this research aims to evaluate the effectiveness and efficiency of government policies and programs in South Sulawesi Province regarding domestic workers and female heads of households.

2. Research Methods

This study is descriptive-empirical research with a qualitative approach aimed at providing a detailed and accurate depiction, presenting the most recent data, documenting causal processes and specific mechanisms, and delivering a report on the background or context of a particular event. The research describes the practices of women's empowerment in a selected area in Indonesia that was affected by the Covid-19 pandemic. (Kate Power, 2020)

Data collection techniques encompassed a literature review to gather secondary data through the examination of human rights regulations, academic papers in the form of journal articles, research reports, and books. Structured interviews were conducted to collect primary data through focused group discussions and in-depth interviews both online and offline interviews at the research sites. The respondents are presented in Table 1 below.

Table 1: List of Respondents

List of Respondents in Focus Group Discussion and In-Depth Interview		
Respondent	Institution	Date of FGD/Interviews
Interviewee 1	Department of Cooperatives and Small and Medium Enterprises, South Sulawesi Province	Friday, May 21, 2021
Interviewee 2	Regional Development Planning Agency, South Sulawesi Province	Friday, May 21, 2021
Interviewee 3	Department of Social Affairs, South Sulawesi Province	Friday, May 21, 2021
Interviewee 4	Department of Social Affairs, South Sulawesi Province	Friday, May 21, 2021
Interviewee 5	Empowerment of Women Heads of Household Union in Bone Regency, South Sulawesi Province	Friday, April 30, 2021
Interviewee 6	Empowerment of Women Heads of Household Union in Bone Regency, South Sulawesi Province	Friday, April 30, 2021
Interviewee 7	National Network Advocating for Domestic Workers in Makassar City, South Sulawesi Province	Friday, April 30, 2021
Interviewee 8	National Network Advocating for Domestic Workers in Makassar City, South Sulawesi Province	Friday, April 30, 2021
Interviewee 9	National Network Advocating for Domestic Workers in Makassar City, South Sulawesi Province	Friday, April 30, 2021
Interviewee 10	National Network Advocating for Domestic Workers in Makassar City, South Sulawesi Province	Friday, April 30, 2021

Data analysis was conducted qualitatively, with the first step involving organizing data according to their type, including primary data such as transcripts and notes, as well as a review of secondary data. The second step was coding, which assigned specific codes to the collected data. The analysis focused on efforts to achieve (i) women's well-being; (ii) women's access to resources and means of production; (iii) fostering critical awareness among women; (iv) mobilizing women's participation in empowerment policy processes; and (v) women's control over empowerment policy programs, as well as access to resources and means of production. (Sara Hlupekile Longwe, 2002)

3. Findings and Discussion

The South Sulawesi Provincial Government involved in women's empowerment includes the Department of Social Affairs and the Department of Small and Medium Enterprises (SMEs). According to the South Sulawesi Provincial Social Department, they consistently have engaged women in assistance programs because their perspective has shifted from seeing women as objects to considering them as subjects. The engagement of women, particularly domestic workers, is related to education because their children must continue to attend school even while their mothers must work. Assistance for female heads of households is provided in the form of social support, amounting to 2.4 million rupiahs per family. However, the activities during the Covid-19 pandemic were still primarily focused on providing social assistance (Interviewee 4). The Small and Medium Enterprises Department, with the assistance of the Ministry of Cooperatives, organized entrepreneurship training in 2020 and 2021 for women on how to market their products. This training in South Sulawesi was provided to housewives who already had businesses, especially in the face of the Covid-19 pandemic. Before the pandemic, the local government also aided in marketing and registering their trademarks, enabling them to grow and compete effectively for housewives and business operators (Interviewee 4).

Empowerment efforts for marginalized women's groups were carried out in the South Sulawesi Province through the fulfillment of economic rights during the Covid-19 pandemic, as the responsibility of the South Sulawesi Provincial government. This realized the mandate of the 1945 Constitution in Article 27, paragraph (2), which states that "Every citizen has the right to employment and a decent standard of living for humanity." Article 28 I (4) of the 1945 Constitution declares that "the protection, promotion, enforcement, and fulfillment of human rights are the responsibility of the state, especially the government". Indonesia's commitment to providing special protection for women to prevent discriminatory treatment and violations of human rights is further stipulated in Articles 45 to 51 of Law No. 39 of 1999 on Human Rights. In relation to economic and employment rights, it is regulated in Article 49(2) of this Law, which states, "Women have the right to receive special protection in the execution of their work or profession against factors that may jeopardize their safety and/or health, especially in relation to women's reproductive functions." Therefore, the fulfillment of economic rights is constitutional and human rights.(Supardjaja., 2006)

As part of the international community, Indonesia, as a nation, has primary obligations on human rights, which include:(Rights., 2006)

1. To respect. This entails refraining from interfering with the enjoyment of human rights. For example, the state must abstain from forced eviction or arbitrary restrictions on the freedom to assemble.
2. To protect. This means that the state must take action to ensure that no one hinders the exercise of rights by their holders. For instance, the state must safeguard access to education by ensuring that parents and/or employers do not prohibit someone from attending school.
3. To fulfill. This implies that the state must take progressive steps to fulfill related rights. For example, by providing assistance to specific groups that are unable to realize their rights on their own, such as offering aid to economically marginalized groups.

The state's duty to respect, protect, and fulfill human rights is also known as the Limburg Principles.(United Nations, 2002) In the context of human rights, the state is positioned as a duty bearer, while every individual is considered a rights holder.(Syafi'ie., 2012) The state's obligations to respect, protect, and fulfill each contain elements of an obligation to conduct, requiring the state to take specific steps to realize a particular right, and an obligation to result, necessitating the state to achieve specific targets to fulfill measurable substantive standards.(Khairunnisa., 2018) Therefore, the discussion here is to analyze the responses of rights holders, in this case, domestic workers and female heads of households, to the empowerment programs and activities conducted by the South Sulawesi government, acting as the duty bearer, in fulfilling the economic rights of domestic workers and female heads of households.

An interesting finding from the research is that women's groups in South Sulawesi province have their unique ways of interpreting empowerment, especially within their roles as women within the community. Life experiences and involvement in organizations seem to serve as catalysts for the resilience of women's groups in facing the Covid-19 pandemic situation. Interviewee 5, a member of the Empowerment of Women Household Heads group in Bone Regency of South Sulawesi Province, received assistance in the form of food staples and mask-making training. The masks produced through this training were not only distributed to other group members of Empowerment of Women Household Heads but also to the impoverished community in the vicinity.

On the other hand, another member of this group, Interviewee 6, who used to run a stall at the market, however due to the Covid-19 pandemic, she rarely visited the market, causing her market goods to go bad. Consequently, she switched her profession to farming. Yet, she encountered difficulties again due to the high cost of seeds and fertilizers. During the Covid-19 pandemic, she received assistance from the Family Hope Program without receiving any form of training. She also believed that the local government and the village government lacked initiative. The issue of women facing economic difficulties due to the Covid-19 pandemic was also prevalent in her village. She said that "the village government did not conduct a follow-up survey, appeared indifferent, and seemed unwilling to work".

In contrast to the reality faced by domestic workers, Interviewee 7, a member of the National Advocacy Network for Domestic Workers, stated that the group of domestic workers received no social assistance whatsoever. She even expressed it plainly, saying that the government never cared about domestic workers. The existence of domestic workers was also never acknowledged. Many female domestic workers were laid off during the pandemic, making it even more challenging for them to meet their household needs. In such dire circumstances, the situation worsened due to the lack of government assistance, considering the uncertain status of domestic workers who have not been officially recognized as formal workers. Despite the marginalization of the domestic worker group, it does not mean that the women in the National Advocacy Network for Domestic Workers simply accept their situation. The women's group supported each other based on solidarity by identifying members in great need and providing them with essential supplies through their organization during the pandemic (Interviewee 8).

Interviewee 9 as a domestic worker, received financial assistance of IDR 600,000 from the central government three times. However, this aid was not specifically designated for domestic workers. In her sub-district, social assistance missed the target. In 2021, the assistance was discontinued due to a reduction in the aid by the central government (Interviewee 9). Interviewee 10 from the domestic worker group expressed that many complaints from the community stem from the mismatch between the government assistance recipient data. Common cases include individuals whose names were listed but did not receive social assistance during the distribution phase.

Not all forms of assistance are accessible to women's groups, whether in the form of cash social aid or job training and skills development. This condition was found across all research locations in South Sulawesi Province. Most of the population was unaware of government assistance, both from the central government and the South Sulawesi Provincial Government. The information available to the public was disseminated through word of mouth (Interviewee 5). This information was often non-transparent, leading to confusion among the public. This further complicated the distribution of social aid, aggravated by irregularly updated recipient data (invalid data) (Interviewee 7). Their hopes for fulfilling their economic needs during the pandemic were quite varied. Those who switched to farming hope for a decrease in fertilizer and seed prices, as well as an increase in their crop yields (Interviewee 6). Many also wished to be involved in government programs or receive training tailored for women's groups (Interviewee 8). Some also desire programs organized by the central government to be delivered directly to their communities, bypassing local governments, in order to ensure that assistance reaches the intended recipients more efficiently (Interviewee 10).

The government's programs and activities in South Sulawesi for the empowerment of women during the Covid-19 pandemic, with the duty to respect, protect, and fulfill human rights, are evaluated through the following approaches: (United Nations, 2002)

1. By omission, which refers to human rights violations occurring due to the state's failure to actively fulfill its obligations to protect and/or fulfill human rights. For instance, when the state fails to act in a situation where a specific ethnic group attacks another, or when it neglects to implement a free primary education system.
2. By commission, which involves human rights violations caused by the state actively engaging in actions that diminish the enjoyment of rights by their holders, such as prohibiting labor unions or the freedom to assemble.

In the research findings, it was revealed that there was no specific policy in place to manage social assistance to the community for female heads of household and domestic workers during the Covid-19 pandemic. As a result, the assistance that had to be provided to those in need, particularly women, was not accurately targeted. Additionally, there were disparities in treatment between female heads of household and domestic workers. The actions taken by the South Sulawesi government in the distribution of assistance during the Covid-19 pandemic could be categorized as discriminatory, as the aid was exclusively designated for specific groups of

women. These actions could fall under the "by commission" category, and this was also in line with the Limburg Principles, which state that "the state's failure to take necessary measures can be considered a violation of human rights and can result from acts of by commission".

Based on the findings, the South Sulawesi Provincial Government's efforts to fulfill the economic rights of women during the Covid-19 pandemic involved women in their programs and aid activities, as the perspective shifted from women being seen as objects to being treated as subjects. However, it is regrettable that there was still a highly marginalized group of women, namely female domestic workers, who were not included in these programs and activities. In this regard, it is evident that the South Sulawesi government did not collect actual data or implement systematic and sustainable monitoring and evaluation for women's programs. The collection of integrated data for social assistance to women in need during Covid-19 pandemic could be carried out by the South Sulawesi government through cooperation with the Population and Civil Registry Office, utilizing the National Identification Number to enable the government to monitor data on the population in need of social assistance due to the Covid-19 pandemic. With accurate data gathering, the South Sulawesi government could map out groups of women requiring social assistance or support in the form of training programs aimed at empowering them economically.

In the context of gender equality, the failure of the South Sulawesi government to pay attention to female domestic workers resulted in systemic and structural discrimination against this group of women during the Covid-19 pandemic. This could be avoided if the South Sulawesi government collaborated with women's groups or civil society organizations working in women's empowerment to distribute social assistance and carry out empowerment activities for women during the Covid-19 pandemic.

4. Conclusion

In 2021, the South Sulawesi Province had the highest number of Covid-19 cases outside of Java Island, totaling 62,672 cases, which accounted for 3.3% of the population. During the Covid-19 pandemic, the South Sulawesi Provincial Government implemented various programs with a focus on economic recovery in its 2020 and 2021 planning efforts. These initiatives aimed to empower women and provide assistance to socially vulnerable groups, including women, by offering a food assistance package of 2.4 million rupiahs per family. These empowerment efforts for women align with the mandates of the 1945 Constitution and Law No. 39 of 1999 on Human Rights, which place responsibility on the South Sulawesi Provincial government as the duty bearer. However, not all forms of assistance, whether in the form of cash social aid or job training and skills development, were accessible to all women's groups. The exclusion of female domestic workers from these programs and activities represents a violation of human rights, resulting from actions (by commission) on the part of the South Sulawesi government during the Covid-19 pandemic.

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Exploration of Girls' Role Models: Are there Female STEM Role Models in Sight?

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Abstract: This study explores the presence and impact of female role models in Science, Engineering, Technology and Mathematics (STEM) education due to the underrepresentation of girls in STEM fields. The objective is to assess girls' role models, particularly the role they play in their interest and in a career choice in STEM. A survey was distributed through an online panel and 546 valid answers from girls aged 14-20 in Germany were received. The analysis links to social cognitive theory and revealed that immediate family members (50,1%), musicians, actors and artists (12,4%), and media influencers (9,6%) were the top role model categories. Male role models dominated in teachers, entrepreneurs, and friends, while female role models were prominent in the family category. Female scientists and entrepreneurs who could serve as STEM role models, were found to be underrepresented. The study also showed that girls with STEM occupational role models in their immediate surroundings were more likely to have an interest in STEM subjects.

Keywords: Women in STEM, Role Model, Career Choice, Inspiration

1. Introduction

People working in Science, Engineering, Technology and Mathematics (STEM) are regarded as sources of innovation, competitiveness, productivity, and economic growth in their countries (Grigg et al., 2018) and it is vital to foster STEM-related occupations in the labor market (Jiang et al., 2023). Yet, the female STEM workforce is severely underrepresented, and girls and women are less likely to choose a STEM career path (Verdugo-Castro et al. 2022). Researchers have noted that upon entry to primary school, girls exhibit similar mathematical abilities to their male peers. However, girls' attraction towards mathematics and the sciences tends to diminish as they progress through the education system (Happe et al., 2021; Cheng et al., 2017). Female students tend to pursue advanced coursework in mathematics and science less frequently than their male peers in secondary school. This trend ultimately leads to a dearth of women in certain STEM fields, particularly in the hard sciences disciplines such as engineering and computer science (Hess et al., 2023; Beede et al., 2011).

The study of Aronson et al. (2001) indicated that student's stereotypes can be reduced through attitude adjustment intervention in the context of African American students. González-Pérez et al. (2020) show that females with STEM careers who speak in school as part of a role model intervention have a favorable and substantial effect on math enjoyment, math significance, math expectations of success, and girls' STEM ambitions, but a negative effect on gender stereotypes e.g. that "girls have lower interest in computer science and engineering" than boys (Master et al., 2021, p. 1). Role models are persons who the girls want to imitate as "standard of excellence" (Lewis and Robinson, 2003, p. 14).

This study is driven by the pressing need to investigate the drivers of interest in STEM careers, particularly in girls' careers. The aim of the study is to explore girls' role models and more particular, to assess the role of STEM occupational role models.

2. Literature Review

The under-representation of girls in STEM fields has received considerable research attention and still continues among European countries (BMBF 2020). Also in the USA, parents, teachers, and peers convey views and attitudes about STEM, impacting girls' perspectives (Eccles, 2015; Raabe, 2009). In Finland, girls are discouraged from pursuing STEM areas during childhood and teenage years owing to gender stereotypes, parental expectations, peer pressures, and a perceived mismatch with their personal aspirations (Kaleva et al., 2019). Parents', instructors', and classmates' views, behaviors, perceptions, and attitudes toward STEM can be conveyed, either implicitly or overtly, impacting girls' attitudes toward STEM in the USA (Eccles, 2015; Raabe, 2009) and in Germany (Steffen et al., 2023). Eccles (2015) concludes that exploring gender disparities in parental attitudes and actions is particularly enlightening in uncovering the development of gender bias within STEM careers, even when girls and boys perform equally well in math and science during their school years. A recent investigation from China also highlights the influential role of role models in enhancing students' academic

performance by fostering higher aspirations (Golan and You, 2021). A role model is defined in this article as “a person considered as a standard of excellence to be imitated” as proposed by Lewis and Robinson (2003, p. 14).

STEM stereotypes can be transmitted by role models. Television and film, for example, frequently portray scientists and engineers in stereotypical ways (for example, CBS's television show *The Big Bang Theory*). Evidence from the USA shows that exposure to these stereotypes is particularly harmful for women (Cheryan et al., 2011). In particular, the findings of Cheryan et al. (2011) showed that women's interest in computer science suffered both an immediate and long-lasting setback when they were exposed to a stereotypical role model e.g., portrayed as a nerd character. When women interacted with the stereotypical role model in computer science, their sense of belonging in the field diminished, mediating differences in interest at both times. A more typical and also familiar person who acts as a role model is thus believed to increase girl's interest in STEM. Positively perceived STEM role models might subsequently get girls more motivated to become interested in computer science, just like their male classmates. In this process, role models are important for student's inspiration. Golan and You (2021) found in a field experiment in China that role models can impact student's school performance by increasing ambitions. The occupation type of parents influences student's STEM long-term outcomes in early adulthood, including STEM degree completion and STEM employment. Therefore, parental growth mindset, along with any role modelling effect transmitted through their work, appears to have an independent influence on student outcomes (Cheng et al., 2017). Furthermore, the analysis of Drury et al. (2011) suggests that increasing women's perceived likeness to role models is important for both recruiting and keeping women in STEM disciplines. Both studies have been conducted in the USA. The discussion above with examples from Western countries and China shows that the girls' underrepresentation in STEM fields and STEM stereotypes are transmitted in many different countries.

Currently, more males work in STEM jobs than females. Due to the underrepresentation of females in STEM jobs, girls are less likely to report a female occupational role model in their immediate surroundings of family and friends. Thus, the following hypothesis is formulated:

Hypothesis 1: *Girls are more likely to report male STEM-related occupational role models (e.g. father, uncle, male friend) than female STEM-related occupational role models (e.g. mother, aunt, other relative, female friend).*

Role models are very important in demonstrating desirable capabilities (Lewis and Robinson, 2003). A family member or friend with a STEM related occupation is perceived to increase interest in STEM because these role models demonstrate desired skills. This relationship links to social cognitive theory. Social cognitive theory indicates that role models may increase students' self-efficacy through perceived competence, perceived likeness and perceived attainability of the role model (Gladstone and Cimpian, 2021). To test whether STEM occupational role models are related to girl's STEM interest, the following hypothesis is formulated:

Hypothesis 2: *Girls who have a STEM related occupational role model in their lives (e.g., STEM occupation of mother, father, aunt, uncle, friend etc.) are more likely to have an interest in STEM than girls who do not have a STEM related occupational role model in their lives.*

The study objective is to assess girls' role models, particularly the role they play in their interest and in a career choice in STEM, using a quantitative survey.

3. Methodology

A quantitative survey was distributed in a youth panel by a reputable market research company in Germany. The survey asked closed questions about general interest in STEM subjects, it investigated life values, the girl's subject preferences, perceptions about STEM jobs and whether or not the girls have people in their immediate surroundings (like family and friends) who work in STEM and could potentially act as role models. The quantitative analysis was done using SPSS. Descriptive statistics and chi-square tests were used to assess independence between variables.

Additionally, the survey contained open questions about the girl's role models. Girls reported who their role model is and how they first heard of this role model. The overall sample size of the survey was 777 girls who were between 15-20 years. All participants were officially registered at the market research panel so that no ethical concerns about surveying minors occurred. They were randomly selected by the panel provider and invited to participate via email. 546 provided a valid comment about their role models. A common procedure in the analysis of qualitative studies is to code the data, construct typologies and to analyze the content in a more detailed analysis (Taylor et al. 2016, p. 161). Accordingly, the open answers were coded into role model

categories one after the other in an iterative process of several loops until no more new categories emerged. All role models which were unknown to the authors, were looked up in a search engine. After reading up on the person, the role model was placed into the appropriate category for further analysis.

Table 1 describes the sample in more detail. The age distribution is mixed with more girls who have progressed further in their grade level. The sample contains some students aged 16 or below, but most girls are above 16.

Table 1: Sample description

Sample description	Characteristic	No.	%	Total N
School Class / Grade	7 or below	2	0,3%	757
	8	28	3,7%	
	9	59	7,8%	
	10	99	13,1%	
	11	141	18,6%	
	12	227	30,0%	
	13	201	26,6%	
Age	16 or younger	178	23,4%	762
	17	114	15,0%	
	18	223	29,3%	
	19	111	14,6%	
	20 or older	136	17,8%	
desired school-leaving qualification	Secondary school leaving certificate	71	9,3%	760
	University entrance qualification	58	7,6%	
	A-levels / High school diploma	631	83%	

The high number of students who desire A-Levels as school-leaving qualification probably stems from the fact that many of the students in the sample are 18, 19 or 20 years old. These students have already passed 10th grade and have already received their secondary school leaving certificate and are aiming to receive a higher qualification. The number is thus not unusually high when surveying older students.

4. Analysis of Role Models

4.1 Analysis of Girls' Role Models Based on the Open Question

When asking girls openly who their role model is, 136 noted that they have no role model. 15 girls noted that they themselves are their role models and these were excluded because this is impossible by definition. The 410 mentioned role models were categorized inductively into 8 different categories. The three largest categories of role models include immediate 'family members and friends' 48,5%, 'musician, actors and artists' with 12,0 % and 'people and shows in the media (including influencers)' with 9,6% of all entries.

Table 2: Role model categories

	Role model category	Role model category description	No. female	No. male	No. thing /neutral/ numerous	Total No (%)
1	Media / Influencer	This category includes media e.g., TV shows, influencers, internet stars and models.	14 (36,8%)	12 (31,6%)	12 (31,6%)	38 (9,6%)
2	Teachers	This category includes schoolteachers.	4 (13,3%)	7 (23,3%)	19 (63,3%)	30 (7,6%)
3	Science (*)	This category includes scientists.	6 (28,6%)	12 (57,1%)*	3 (14,3%)	21 (5,3%)
4	Entrepreneurs and successful people (*)	This category includes entrepreneurs, companies, and successful people (e.g., in positions high up the firm hierarchy) and people who are perceived as happy with their live.	3 (12,0%)	9 (36,0%)*	13 (52 %)	25 (6,3%)
5	Musicians, actors, artists (*)	This category includes musicians, actors and film characters, writers, book authors and artists.	26 (53,1%)*	19 (38,8%)	4 (8,2%)	49 (12,4%)
6	Family and Friends	This category includes family members, friends, acquaintances, and sports team members.	75 (37,9%)	53 (26,8%)	70 (35,3%)	198 (50,1%)

7	Occupational groups	This category includes occupational groups e.g., medical doctors, politicians, and athletes.	6 (30,0%)	6 (30,0%)	8 (40,0%)	20 (5,1%)
8	Other	This category includes a variety of role models e.g., religious role models and those which don't belong to any other category.	5 (35,7,0%)	2 (14,3%)	7 (50,0%)	14 (3,5%)
	Total (percentage)		139 (35,2%)	120 (30,4%)	136 (34,4%)	395 (100%)

* A Chi-Square test revealed significant difference in the distribution between male and female numbers at $p < .05$ for the categories 'science', 'entrepreneurs and successful people' and 'musicians, actors and artists'.

Table 2 shows all extracted role model categories and the category descriptions. Students named more female (35,2%) than male (30,4%) role models overall. The role model categories are explained in more detail in the following paragraphs.

4.1.1 Media Influencers

28 different media and media influencers were mentioned in this category. Examples are Pamela Reif (N=3), social media general (N=3), influencers in general (N=2), Daniel Jung (N=2), Ramona (N=2) and many individuals who were only mentioned once. The Chi-Square tests did not reveal statistically significant differences between the number of reported males, females and things (e.g. like a reported series).

4.1.2 Teachers

This category comprises of teachers as role models. All reported role models either included particular teachers e.g. 'my chemistry teacher' or teachers in general like 'my teachers'. The German language allows for a differentiation of the gender (e.g. Lehrerin (female) vs. Lehrer (male)), so that it was possible to note the genders as well. If 'teachers' in general were reported, a neutral gender was counted. Overall, more male than female teachers were reported to be role models but the Chi-Square test was not significant at $p < 0.05$.

4.1.3 Science

The most often reported scientist who serves as a role model was Albert Einstein (N=7) which represents 33,3% of answers in this category and besides the parents (mother or father) the most often individual stated overall. Marie Curie (N=4), Stephen Hawkings (N=3), Jane Godall (N= 2) and Marc Robert Lehmann (N=2) were mentioned by name as well. Some gender-neutral role models like "scientists" were also mentioned. Of all 408 role models that were mentioned in the whole data set, only 6 role models were female scientists (1,5%). Overall, the category 'Science' only represents 1,5% of all reported role models. A chi-square test reveals that the actual number of reported scientists is higher for males (N=12) than for females (N=6), ($\chi^2 = ,048$).

4.1.4 Entrepreneurs and Successful People

This category includes entrepreneurs or successful people of general public interest who were explicitly mentioned (e.g., Elon Musk (N=5), Michele Obama (N=1)). It furthermore includes reported role models of people that are successful or happy ('people who are happy', 'people who live their dream' or have a high position in a firm (e.g., 'my boss', 'my supervisor'). There are no statistically significant differences between female and male role models in this group. In total, 6,1% of role models fall into this category. For 'Entrepreneurs and successful people' also more males were mentioned (N=9) than females (N=3), ($\chi^2 = ,028$) but the category size is too small for valid results.

4.1.5 Musicians, Actors, Artists

12,4% of role models fall into this category. Included in this category are musician, actors, film characters, writers and artists. Examples include Shirin Davin (3), Emma Watson (3) or BTS (3) which is a Korean boy band. A chi-square test reveals that the number of female role models (N=26) is higher than males (N=19), ($\chi^2 = ,045$).

4.1.6 Family and Friends

Family and friends represent almost half of all reported role models (48,5%), whereas 169 of the 198 reported role models are family members e.g., mother, father, aunt, uncle, sister, brother etc. and the rest are acquaintances (e.g., school friend or a member of the same sport team). Overall, more female role models

(N=75) than male role models (N=53) were reported in this category. If more than one role model e.g. both parents were mentioned, the 'numerous' category (N=70) was chosen. The gender difference (chi-square) test between reported male and female role model was not significant at $p < 0.05$.

4.1.7 Occupational Groups

With 20 reported role models (4,9%) overall, this is the smallest role model category. Medical doctors for humans or for animals were mentioned most often (N=4), followed by different individuals like 'Rosa Parks', politicians or athletes were all mentioned only once. The Chi-Square test did not reveal gender differences.

4.1.8 Other

The 'Other' category is also a relatively small category with 3,5% of all reported role models. It includes all reported role models, which do not fit into any of the other categories. The reported role models include e.g., 'my religion', 'Jesus Christ', 'every person' or 'a lot of people'.

To conclude, the chi-square tests revealed significant difference in the distribution between male and female role models at $p < .05$ for the categories 'Science', 'Entrepreneurs and successful people' and 'musicians, actors and artists' category. The gender distribution of the reported role models was as follows: female (35,2%), male (30,4%), several people e.g. medical staff or teachers, and 34,4% reported items or aspects without a gender (e.g. her religion). Male role models dominate in the following categories: 'teachers' and 'entrepreneurs', whereas female role models dominate in the category family and friends. The gender difference is not statistically significant at $p < .05$. Family (particularly the parents) and friends dominated as single responses.

Female scientists were clearly underrepresented in the answers with 1,5% of all role models mentioned. Whereas girls mentioned Elon Musk, Albert Einstein, or Stephen Hawking, only very few female role models were mentioned overall. Among the few STEM-related role models were only Jane Goodall and Marie Curie who were both mentioned once and twice, respectively. In addition, there were a few comments on the girls' female teachers. The males which were mentioned most often besides family and friends were Albert Einstein (6 times) and Elon Musk (5 times). The females which had the highest frequency overall were Marie Curie (3 times), actresses Zendaya (3 times) and Emma Watson (3 times).

In addition to asking girls about role models, the survey also assessed whether the girls have STEM-related occupational role models (STEM ORM) in their immediate surroundings. The analysis of these answers is shown in the next section.

4.2 STEM Occupational Role Model in the Girl's Immediate Surroundings

Girls were asked whether they know someone who works in the STEM field, i.e., math, computer science, natural sciences or technology (e.g. software developer, biologist, engineer, etc.) in a multiple response set. Overall, in the sample of 777 girls, 472 (65,8%) reported to have a STEM ORM, whereas 244 (34,1%) do not have a STEM ORM.

Out of those girls who reported a STEM ORM, girls reported predominantly male family members and friends who work in STEM jobs, e.g., father (N=124, 26,3%), grandpa (N=33, 7,0%), other male relative (N=213, 45,13%) and a male friend (N=128, 27,1%). In contrast, fewer females were reported in all categories: mother (N=39, 8,3%), grandma (N=20, 4,2%), other female relative (N=104, 22,0%) and a female friend (N=71, 15,0%).

The distribution of STEM occupational role models by gender is summarized in Table 3.

Table 3: STEM Occupational Role Models by gender

		N	Valid %
Valid	Female STEM ORM	79	11,0
	Male STEM ORM	281	39,2
	Female and Male STEM ORM	112	15,6
	Sum of girls with a STEM ORM	472	65,9
	No relative or friend as STEM ORM	244	34,1
	Sum	716	
Missing		61	
Total		777	100,0

Approximately one third (34,1%) of girls do not have a STEM ORM. On the contrary, 65,9% of the girls have a STEM ORM. Of those who reported a STEM ORM, 16,7% of the girls have a female STEM ORM, 59,5% have a male STEM ORM and 23,7% have STEM ORM of both genders in their family or circle of friends.

A chi-square test of independence was performed to examine the relation between gender and girl's occupational role model across all categories. The relation between these variables was significant, $\chi^2 (3, N = 716) = 162.670, p < .001$. There is a STEM-related difference in the distribution of role model categories. A second chi-square test of independence was performed to just compare the female ($N=79$) and male ($N=281$) STEM ORM. There is a significant relationship between gender and STEM occupational role model. Girls are more likely to report male STEM ORMs than female STEM ORMs, $\chi^2 (1, N = 360) = 113.344, p < .001$.

Hypothesis 1 is thus supported. Yet, the large number of girls with both a female and a male STEM ORM suggests that the girls have a more neutral stance than these results suggest at first sight.

Table 4: Interest in STEM by STEM Occupational Role Models (STEM ORM)

	Personal interest in STEM					
	Yes		No		Total	
	N	%	N	%	N	%
Female STEM ORM	64	12,5%	15	7,4%	79	11,0%
Male STEM ORM	209	40,8%	72	35,3%	281	39,2%
Female and Male STEM ORM	94	18,4%	18	8,8%	112	15,6%
Sum STEM ORM	367	71,7%	105	51,5%	472	65,8%
No relative or friend as STEM ORM	145	28,3%	99	48,5%	244	34,1%
Total	512	100,0%	204	100,0%	716	100,0%

Overall, 512 (71,5%) of girls report a general interest in STEM-related topics compared to 204 (28,5%) of the girls who are not interested in STEM-related topics (see Table 4). When combining interest with occupational role models it becomes evident that of those girls who are interested in STEM subjects, 40,8 % have a male STEM ORM, 12,5% a female STEM ORM, 18,4% both female and male STEM ORMs. 28,3% have no STEM ORM role model. Of those girls with interest in STEM subjects, 28,3% have no STEM ORM. In comparison, of those girls who are not interested in STEM related subjects 48,5% do not have a STEM ORM.

The results of a chi-square test of independence show that the relation between these variables was significant. The pooled test of either having a STEM ORM or not $\chi^2 (1, N = 26,52), p < .001$ was significant. The two variables interest in STEM subjects and STEM ORM are not independent from each other. Hypothesis 2 can thus be supported. 71,7% of girls who have a STEM occupational role model have an interest in STEM subjects. In contrast of those who are not interested in STEM subjects, only 51,5% have a STEM ORM.

5. Discussion and Conclusion

The result of the analysis shows that many girls have role models and that girls seem to have more female role models than male role models. In the open answers, very few scientists are reported overall. Many of these are male and only 1,5% of all reported role models were female scientists. To answer the title question: There are only very few STEM-related female role models in sight. Also in the entrepreneur category, only very few female role models were identified. The role model category which girls most frequently reported are 'family and friends' with a large proportion of 48,5%. Family and friends are the most common role models for the girls. 'Musicians, actors, artists' and 'media / influencers' as categories were the second and third largest role model categories. Girls seem to spend much time with the media and heavily identify with the people and shows. This identification with e.g. an actress or social media influencer seems much stronger when looking at the number of girls who reported in the categories than with entrepreneurs and scientists. It seems as being a social media star, an actor or a musician is more appealing to girls than to become an entrepreneur or scientist. Strikingly, many girls had no role model at all, which creates an interesting future opportunity for parents and educators to exert influence on girls.

Still, due to the underrepresentation of females in STEM jobs, more males work in STEM subjects in the girls' immediate surroundings. Thus, girls report fewer female STEM occupational role models than males. It seems, as if girls lack female STEM occupations role models. This finding is even more severe when considering that almost half of the girls report family and friends as role models in the open answers. The girls have role models in their family, many of which – and particularly the females – do not serve as STEM occupational role models.

The study therefore indicates that there is still an underrepresentation of females in STEM subjects. Particularly well-known but also familiar role models are lacking. Only 6 girls named a female scientist as their role model. Overall, the scientist category (male and female) accounted for 5,5% of all reported role models only. Therefore, scientists should have greater visibility on the internet, in TV shows and in media in general so that girls' awareness of scientists as role models increases overall. Female students could acquire a genuine and gender-specific impression about their later career choices and incorporate the field of computer science more strongly if they are exposed to a variety of computer science activities at an early age, such as software development, data analysis, artificial intelligence, human-computer interaction, or cybersecurity. Exposure to various STEM fields and career options could help to decrease the girls "leaking pipeline" which typically starts at the age of 12 years (Speer 2023; Sáinz and Eccles, 2011). Yet, it needs to be addressed that boys also don't consider IT jobs and the negative connotation with "nerds" or "geeks" as cool but males are more often represented in IT jobs in the media (Thomas and Ellen, 2006). Other research shows that the word "geek" has lost its negative stigmatism a bit and can be seen more neutral. It would be wonderful if talented and STEM-gifted kids could live without the negatively perceived stereotypes in the future (Cross, 2005).

In addition, schools should perhaps emphasize STEM role models more- no matter which gender they have- in their curriculum overall. Students should learn particularly about female scientists in school so that awareness amongst them rises. Steffen et al., (2023) found that teachers have the strongest influence to create either positive or negative incidents that affect the girls' attitude about STEM in general in their class. The personality and motivation of the teachers show more than twice as many negative incidents as a trigger category. Teachers thus serve as important role models themselves or as mediators for accelerating STEM image amongst girls. Research has indicated that teachers, acting as role models, can enhance students' academic performance by fostering their self-integrity (Aronson, Fried, & Good, 2002). However, there has also been concern about the overrepresentation of female teachers in the educational system and that boys learning styles are ignored (Tarrant et al., 2015). The research of Cushman (2008) suggests that there should be more role models in young boys' lives as well. Tarrant et al. (2015) call for an open approach in role model research and diversity, and perhaps even a gender fluid approach amongst those people who are expected to be role models.

The main limitation of the study is the sample composition. Some of the categories were very small with only a hand full of reported role models. Thus, the validity of the gender comparison tests needs to be questioned for small categories. In addition, the sample consisted of older girls who have progressed far in their school grade. Many of the girls have already lost interest in STEM occupations at the age of approximately 12 years (Sáinz and Eccles, 2011). Due to the older sample, the number of girls pursuing an A-level degree is high. Because these girls aim for a degree and are potentially interested in studying at a university, the number of girls who have an interest in STEM subjects is higher than in a younger sample. A limitation of the study is thus that younger and older girls cannot be compared. As a result, the findings cannot be generalized to the girl student population in Germany. A more representative study would be necessary to do so. Another limitation is that 15 role models had to be deleted because the girls reported themselves to be their role models. Since, a role model is someone a person imitates, it was necessary to delete these entries.

Future research could investigate younger girls' role models to see whether or not younger girls have more science-related role models. These results could be compared to boy's role models of the same age. In addition, the role of family and friends as occupational role models should be investigated further. The strength of their influence of choosing a career in STEM could be evaluated.

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Can Participatory Action Research Deepen the Understanding of Intersectionality in the Field of Biodiversity Research?

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Abstract: Halting biodiversity loss and reducing inequalities are targets of the Sustainable Development Goals (SDGs), which are not within reach. In 2022, the European Commission started to explicitly include gender with an intersectional perspective in their Horizon Europe working programme. In this paper, research is presented that tackles the very interlinkage of social inequalities in biodiversity studies. The first – conceptual – phase of an ongoing biodiversity project is analysed, explaining the knowledge co-creation process within a transdisciplinary, international team of researchers and practitioners, aiming to elaborate a methodological framework of intersectionality. Five intensive biodiversity case studies from Norway, Germany, Austria, Great Britain, and Switzerland, and their specific understandings of the concept of intersectionality are presented in detail and analysed with an action research approach. The outcome of this conceptual project phase is a report, which was further analysed regarding the development of approaches to include intersectionality in overall eleven biodiversity case studies, with a quantitative and qualitative content analysis. The main conclusion of this research is that intersectionality is a hard to grasp concept outside gender studies. Thus, it is on the one hand used as a synonym for terms like sociodemographic variables, and on the other hand closely related to diversity. It depends on the definition of diversity, whether these terms can be used almost interchangeably. This paper argues that the general focus of diversity – inclusion of all potential persons – is different to the focus of intersectionality, pointing towards discriminations at the crossroads of social or political categories. The latter is of specific relevance for environmental justice issues by addressing neglected, excluded or oppressed persons and their knowledges.

Key words: Intersectionality, Inequalities, Biodiversity, Food Justice, Sustainable Development Goals (SDGs), Co-Creation

1. Introduction

1.1 Policy Background: why Intersectionality Came Into Biodiversity Research

The world is not on track for achieving most of the targets of the Sustainable Development Goals (SDGs). For instance, SDG 15 aiming at protecting terrestrial ecosystems and halting biodiversity loss (<https://sdgs.un.org/goals/goal15>) is not within reach. Furthermore, it has been stated that the world-wide consequences of biodiversity loss on rising inequalities have to be addressed (Independent Group of Scientists, 2019).

In their new research funding programme, ‘Horizon Europe’, the European Commission (EC, the governing executive of the European Union) asks to explicitly include gender with an intersectional perspective in biodiversity research proposals since 2022:

“The proposals should explore intersectionality approaches and consider interlocking systems of power between gender and other social categories and identities such as religion, ethnicity and race (including migrants and refugees), social class and wealth, gender identity and sexual orientation and disability to better address access to and ownership of nature-based solutions.” (<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl6-2022-biodiv-01-09?tenders=false&callIdentifier=HORIZON-CL6-2022-BIODIV-01>)

The project PLANET4B (“understanding Plural values, intersectionality, Leverage points, Attitudes, Norms, behaviour and social learning in Transformation for Biodiversity decision making”; 2022-2025; <https://planet4b.eu/>) received EC funding in 2022 after submitting a successful proposal to the aforementioned call, using the concept of intersectionality to tackle the interlinkage of social inequalities in biodiversity decision-making. The project team comprises universities, NGOs, research and other organisations from Austria, Belgium, Czech Republic, Germany, Hungary, Italy, Netherlands, Norway, Switzerland, and the UK.

1.2 Theoretical Background: Intersectionality and its Relation to Biodiversity

Kimberle Crenshaw (1989) first introduced intersectionality – based on previous work, such as bell hooks’ (1981) book “Ain’t I a Woman” – as an analysis of a legal case of discrimination of Black women in the US. Crenshaw

elaborated that frameworks using only one social or identity category are discriminating Black women because the intersections of race, sex, and class-discriminations are ignored. She argued that by re-centring the “... *discrimination discourse at the intersection ... we may develop language which is critical of the dominant view and which provides some basis for unifying activity.*” (Crenshaw 1989, p. 167)

Applying an intersectional approach to biodiversity means addressing issues of access to resources, differing impacts on diverse groups of actors, and analysing privileges of knowledge and legitimisation (Mangelsdorf et al., 2016). An intersectional perspective highlights potential intersections of discriminations for instance by asking whose access is limited for instance by educational or economic background, and if certain experiences and voices are under-represented. Thus, a critical reflection of knowledge production in biodiversity research includes also postcolonial criticism (Schurr & Segebart, 2012). Biodiversity research can include discourses of social justice, discrimination, postcolonialism, and the necessity to include various ‘situated knowledges’ (Haraway 1988) without using the term intersectionality. For instance, Cristina Yumie Aoki Inoue and Matías Franchini (2020) refer to “socio-biodiversity” and argue that relations between society and nature must be reconstructed by broadening our very notion of knowledge.

The authors of this paper are responsible for providing a process of co-creating knowledge on intersectionality in biodiversity within the transdisciplinary PLANET4B research team, which resulted in a methodological framework on intersectionality (Thaler & Karner 2023). Based on existing theoretical work (Crenshaw, 1989; Hancock, 2007; Walgenbach, 2012; Rice et al., 2019; Bauer et al., 2021), the authors defined the concept of intersectionality for the project and its team members as follows:

“Intersectionality highlights that race, gender, disability, sexuality, class, age, and other social categories are interrelated and lead to different levels of power and oppression influenced by forces like colonialism and neoliberalism.” (Thaler & Karner 2023, p. 5).

The PLANET4B team agreed to broach the issue of intersectionality in all eleven case studies, and ask whether a loss in biodiversity can potentially affect people at the intersections of social categories and identity markers differently. In the next section, it is explained how the authors co-created a methodological framework with the transdisciplinary team with five of the eleven biodiversity case studies, which are carried out within learning communities – as so called intensive case studies – in Europe.

2. Methodology

Two methods will be presented in this paper. First, a participatory action research (MacDonald 2012) started with the knowledge co-creation process in the PLANET4B project’s conceptualisation phase, aiming to retrace the steps of including intersectionality in case studies. That includes this very paper, which has been distributed among the project team, as an intervention, which generates questions, conversations, and insights:

Participatory action research (PAR) is considered a subset of action research, which is the “systematic collection and analysis of data for the purpose of taking action and making change” by generating practical knowledge (Gillis & Jackson, 2002, p.264).” (MacDonald 2012, p. 35)

Secondly, a content analysis will add insights on the impact of knowledge co-creation by assessing an outcome of this project’s first phase with a gender perspective, a published report from Mendes and colleagues (2023) conceptualising all empirical biodiversity case studies and their integration of intersectionality.

2.1 Process Level: Participatory Action Research

During the kick-off meeting of PLANET4B in December 2022 the authors – in their role as task leaders to make ‘intersectionality’ applicable outside the gender scholars’ community – introduced the concept of intersectionality and connections to biodiversity to the transdisciplinary consortium. Then, based on the literature overview on intersectionality with a focus on biodiversity, a series of online co-creation workshops were organised between February and March 2023. The purpose of the workshops was to co-create a shared understanding of intersectionality and a methodological framework, specifically to identify and include vulnerable groups of actors in five – so-called intensive – biodiversity case studies.

22 PLANET4B team members from twelve organisations participated in three online workshops. The main group consisted of members from five teams, who were supposed to work on intensive case studies together. Additionally, further interested researchers from the consortium attended and brought in expertise on

biodiversity research. The authors of this article had multiple roles, as gender experts they conceptualised and facilitated the co-creation process, as researchers of one of the five intensive case studies, the one based in Austria.

The levels of previous experiences with the concept of intersectionality differed very much among the participants. Individual members of two of five participating teams (from Austria, Germany, Norway, Switzerland, UK) were already familiar with feminist, post-colonial and/or social justice discourses and theories, while others were relatively new to the thematic area. This variety in gender knowledge (Wetterer 2009) came already to our attention when intersectionality was first discussed at the kick-off meeting in.

All three online workshops followed the following didactical elements (Thaler & Karner 2023a):

- introducing the participants
- interactive core-activities
- plenary discussions
- reflection and feedback phase

After these workshops, the five case study teams summarised findings from literature reviews and drafted their concepts, connecting intersectionality to their specific biodiversity research. One of the authors consulted the three teams without any previous gender studies expertise (face to face, by telephone and via e-mail) and accompanied all teams in the writing process alongside several feedback loops.

Between April and September 2023, the PLANET4B consortium exchanged theories of change and intervention methods and further planned their case study activities. In May 2023 the result of the knowledge co-creation process so far was published as a methodological framework on intersectionality (Thaler & Karner 2023).

Until October all case studies officially started their fieldwork by inviting relevant stakeholders and initiating local learning communities. At the end of October, the whole consortium met at another face-to-face meeting and reflected upon the actual relevant intersections of inequality applied to all eleven biodiversity case studies in the course of a fishbowl discussion moderated by one of the authors. Finally, in November 2023, a project report was published, comprising the conceptualisation of all eleven biodiversity case studies, and its application of the intersectionality approach (Mendes et al. 2023).

2.2 Impact Level: Content Analysis

One aim of the knowledge co-creation process was to support the transdisciplinary teams, who had no or little previous scientific gender knowledge, in order to prevent the application of everyday gender knowledge perpetuating stereotypes and biases (Wetterer 2009). Another goal was to co-create a practical methodological framework on intersectionality, which could be specifically used for the biodiversity case studies of PLANET4B (Thaler & Karner 2023).

An outcome of the first conceptualisation phase of the project PLANET4B is a published report on all eleven biodiversity case studies ("Learning Communities and sectoral Advisory Boards established for 5 intensive place-based and 6 extensive sector-based case studies", by Mendes et al. 2023), explaining planned activities within all case studies, and the application of intersectionality, especially in addressing actors, stakeholders and advisors.

With a quantitative and qualitative content analysis of this report (Mendes et al. 2023), the use of the intersectionality approach within the planned biodiversity case studies can be assessed (Mayring 2014), following the general research question:

How does the discourse on intersectionality within the PLANET4B team refer to the methodological framework on intersectionality as an outcome of the co-created gender knowledge of the participatory action research (described in Thaler & Karner 2023)?

3. Results

In this section, the results of both methodological steps will be presented. First, the participatory action research process itself – analysing the co-creation of knowledge on intersectionality in biodiversity generally, and integrating the methodological framework (Thaler & Karner 2023) using intersectionality in biodiversity case studies specifically. Second, the quantitative and qualitative content analysis of the PLANET4B report (Mendes

et al. 2023) to explore the application of the co-created gender knowledge in planning biodiversity case studies with an intersectional lens.

3.1 Process Level: Analysing the Co-Creation of the Methodological Framework on Intersectionality

The co-created methodological approach of using intersectionality in biodiversity case studies was the result of an iterative cycle. The initial literature review on intersectionality in biodiversity research informed the first co-creation workshop with transdisciplinary partners of five intensive biodiversity case studies (in the fields of inclusive nature recreation and outdoor activities, urban biodiversity and food, and biodiverse agriculture). Findings from partners' specific literature reviews were integrated in the following co-creation workshops, which led to improved case study concepts and literature reviews, and finally to a framework of "doing biodiversity case studies with an intersectional lens" (Thaler & Karner 2023, p. 17 ff.):

1. Reflexivity of researchers informed by intersectionality – useful questions to start are:
 - a. Where do I stand?
 - b. What are my privileges?
 - c. Where are my connections to the case study?
 - d. Where are my entry points?
 - e. Who can help us connecting to human and non-human actors?
2. Approaching actors of biodiversity case studies using an intersectional perspective – useful questions to include actors are:
 - a. Who are we doing research with?
 - b. What knowledge is valued and how?
 - c. Who are we missing and why?
 - d. How diverse are the people we are missing?
3. Doing biodiversity case studies with an intersectional lens – useful questions for doing intersectional biodiversity research are:
 - a. How are we deciding on research topics and questions?
 - b. How can we enable research on eye-level with our actors/stakeholders?
 - c. How can we use creative research methods to tap into undervalued knowledge?

3.2 Process Level: Analysing Draft Concepts Using Intersectionality in Biodiversity Case Studies

The participatory action research addressed specifically those biodiversity case studies¹, which are planned as intensive case studies establishing learning communities in concrete European regions and participated the knowledge co-creation process:

- Children with disabilities and outdoor recreation in Norway,
- ethnic minority communities and access to nature and the outdoors, in UK,
- urban youth, intersectionality, and nature in Germany,
- urban food for biodiversity and inclusion in Austria, and
- agriculture, religion and biodiversity, in Switzerland.

In spring 2023 the five teams initially planned their case studies and discussed the role of intersectionality within their biodiversity research (see Thaler & Karner 2023):

Helene Figari, Yennie Bredin and Vegard Gundersen (2023) planned to support and research a nature connection for children with disabilities in Oslo. During the first discussions of this case study, the basic idea was using recreation activities as starting point for biodiversity research. By asking, who has access to those recreation activities and who gets excluded, and then whose knowledge would be missing, if formerly excluded groups are not included, the focus of the Norwegian case started to shift towards children with disabilities. But, although green spaces are important for individuals' wellbeing and health in cities, children are mostly excluded in

¹ The following description of the five intensive biodiversity case studies focuses on the conceptualization of intersectionality. Details on the theoretical background and planned research and intervention methods are described in the case study chapters in the aforementioned report (Thaler & Karner 2023).

planning processes of recreation areas in cities. The assumption of the Norwegian case study is that at the intersection of age and (dis)ability a systematic exclusion leads to a specific disadvantage of disabled children in the decision making of recreation areas:

“Since children with disabilities tend to be excluded from outdoor recreation, we suspect that being both children and disabled also entails a double disadvantage when it comes to influencing planning and prioritisation of outdoor recreation areas (Porębska et al., 2021).” (Figari et al. 2023, p.23).

Geraldine Brown, Alex Franklin and Geeta Ludhra (2023) proclaimed to diversifying access to the outdoors through bringing people from diverse backgrounds together and exchanging their biodiversity stories and knowledge in the Chilterns Area of Natural Beauty, a White rural area outside of Oxford in the UK. The case study centres around the shared experiences of people from ethnic minority communities serving as a vehicle to connect to stakeholders from the environmental sector as a starting point for change. The case study team states:

“An intersectional approach will enable us to capture similarities and differences within and between participants and capture a nuanced understanding of how racialised communities’ experience nature and the outdoors.” (Brown et al. 2023, p.26).

The UK case study will co-produce knowledge about the relationship of ethnic minority communities to biodiversity and will foster a dialogue with decision makers to engage with people from diverse backgrounds in addressing biodiversity loss (ibid.).

Ilkhom Soliev, Ammalia Podlaszewska, Zafar Saydaliev and Torsten Wähler (2023) planned on researching how experiential learning, behavioural games, and creative interventions can enable nature prioritisation in decision-making of young people, including youth with less privilege in their case study in Germany.

The main assumption is that feeling powerless is a relevant barrier in prioritising biodiversity in young people’s everyday lives. The German case study team states:

“The anxiety and the feeling of powerlessness might be stronger in young people with less privileged intersectionality backgrounds (e.g. migration) (e.g. Borho et al., 2022), who might have less access to various political systems (e.g. elections) and might face additional challenges of social acceptance/inclusion/integration, all potentially explaining the level of nature and biodiversity prioritisation.” (Soliev et al. 2023, p. 32).

Sandra Karner, David Steinwender and Anita Thaler (2023) planned initiating an edible city initiative, which connects biodiversity, sustainable food and social justice issues in Graz, Austria.

The starting point of including intersectionality in this urban gardening related case study is the assumption that in Austria inequality is the main driver of food insecurity, not the unavailability of ‘good food’ per se. These mentioned inequalities are mostly area-based in cities, leading to poorer access to healthy food for residents of low-income and ethnic minority neighbourhoods.

Alternative food and gardening initiatives aiming at overcoming prevailing problems of the corporate food regime advocate more food justice. However, in practice, it turns out that these alternatives tend to be lacking social diversity, and reproducing inequality and hegemonic domination. This is the communicated motivation for setting up a “diverse foodscape” in Austria:

“The Bio-Diverse Edible City Graz will aim at establishing a diverse foodscape, which will not only cover the food system in its narrow sense (food production and supply perspective), but also green spaces as edible landscapes and areas for learning, recreation and social interaction (societal perspective) as well. ... to get in touch with different user groups to identify their needs and to make green spaces more attractive for under-represented groups, especially women at the intersection of gender, age and migrant background.” (Karner et al. 2023, p. 40)

Robert Home and Ghezal Sabir (2023) described their case study as biodiversity-promoting farming practices in Switzerland with a focus on the role of spirituality and religious beliefs. It is to be seen, whether certain spiritual beliefs and practices in the context of farming are positively influencing behaviour change towards biodiversity decisions like it could be shown for health. Discussing their starting point to include intersectionality in the biodiversity case study in Switzerland, the team was advised to take a closer look at gender inequities in Swiss

farming and move along from there. As religion was an already set variable, the team concluded with their concept:

“Religion and gender are the two axes along which intersectionalities will be included in this study. ... The majority of Swiss farmers being male is largely due to the social structures that favour sons over daughters in questions of farm inheritance. Hence, males are more likely to gain education in agriculture, which indirectly means that women have fewer knowledge resources to participate in strategic discussions. Less is known about the relationship between religion and biodiversity decisions.” (Home & Sabir, 2023, p. 44).

3.3 Impact Level: Analysing Final Concepts Using Intersectionality in Biodiversity Case Studies

To assess the impact of the knowledge co-creation process, the content of the report on “Learning Communities and sectoral Advisory Boards established for 5 intensive place-based and 6 extensive sector-based case studies” (Mendes et al. 2023), published in November 2023, was analysed. The leading research question of the content analysis (Mayring 2014) was how the discourse on intersectionality in the 72 pages long report of Mendes and colleagues (2023) refers to the co-created gender knowledge of the participatory action research (the methodological framework on intersectionality described in Thaler & Karner 2023).

At first a quantitative content analysis could show that the concept of intersectionality was used 51 times in the text, followed by 38 mentions of a related concept, “diversity”. It is important to state that not all references of “diversity” or “diverse” were counted as related concept of intersectionality, as the term is also part of epistemologically different concepts like “biodiversity” or “agrobiodiversity” etc. Likewise, all mentioned terms, which were analysed and their frequency noted in table 1, are only those epistemologically connected to intersectionality. To further contextualise the term “diversity” within this specific project, it is also important to note that the semantically close term “biodiversity” – which is the core topic of PLANET4B – was used 171 times.

Table 1 shows that besides intersectionality and diversity also terms like “vulnerabilities”, “privileges”, “ecofeminism” and “postcolonialism” were analysed as relevant concepts related to intersectionality, but they were referred to only at six to eight instances, “feminism” and “postcolonialism” were never mentioned at all.

The lower part of table 1 comprises categories related to the concept of intersectionality, and here terms around “age” were used predominantly, which can be explained as this is a category used in several case studies.

This most used term was followed by “disability”, “women”/“men”, “migration”/“immigration”/“emigration”, “Black”/“White”/“Asian”, “gender”, “ethnicity” and “religion”. “Class” and “race” were only used two times and once, “sexuality” and “LGBTQ” were never mentioned in the analysed report (Mendes et al. 2023).

Table 1. Frequency of the term „intersectionality” and connected relevant concepts as well as frequencies of categories of intersectionality in the analysed document of Mendes et al. 2023

		Analysed terms		Frequency	Ranking
Concepts related to intersectionality		„intersectionality”, „intersectional”		51	1
		„diversity”, „diverse”		38	2
		„vulnerable”		7	3
		„privilege”, „privileges”, „privileged”		6	4
		„ecofeminism”, „ecofeminist”		3	5
		„feminism”, „feminist”		0	6
		„Postcolonialism”, „postcolonial”		0	6
Social, political and identity categories related to intersectionality		„age”, „elderly”, „youth”, „young”		76	1
		„disability”, „disabilities”, „disabled”		32	2
		„women”, „men”		30	3
		„migration”, „immigration”, „emigration”		26	4
		„Black”, „non-white”, „White”, „Asian”		25	5
		„gender”, „genders”, „gendered”		24	6
		„ethnicity”, „ethnic”		24	6
		„religion”, „religions”		21	8
		„class”		2	9
		„race”		1	10
		„sexuality”, „sexualities”		0	11
		„LGBTQ”, „queer”		0	11

While a quantitative analysis gives an overview of used terms, and their frequency, only a qualitative analysis can bring a deeper understanding of how concepts and social or political categories are used epistemologically (Mayring 2014).

In the project report of Mendes and colleagues (2023), the phrasing around intersectionality shows that the concept is often not connected to its theoretical roots highlighting – intersecting – discriminations based on social and political categories or identity markers (Crenshaw 1989). It is rather used as a term in the general meaning of ‘social categories’ or ‘sociodemographic variables’ like these quotes suggests:

“In addition, other intersectionality dimensions were addressed, in particular, age, ablism & disabilities, and varied ethnicities and geographies within and beyond Europe.”
(Mendes 2023, p. 2)

“Participants were selected based on the five-helix framework... We also followed the intersectionality criteria.” (ibid., p. 26)

“How to work with the dimension of intersectionality in this case study?” (ibid., p. 27)

“The age of the participants falls between approximately 30 and 55 years. and the SB [Stakeholder Board] consider gender parity (4 females and 4 males). Different experiences, skills, roles, and types and levels (local, national, and international) of action and activation implemented are represented. Other criteria of intersectionality will be considered in the next phase.” (ibid., p. 40).

“This system characteristic (as well as scientific literature pointing to differences in the environmental attitudes of girls and boys) led us to consider gender as one of our most important intersectionality dimensions to be included in our study.” (ibid., p. 43)

“Nonetheless, in the next steps of the research, we are trying to include more women, and other colleagues with varied intersectionality backgrounds (Indigenous peoples, black or quilombolas communities in Brazil; farmers in the Netherlands, and others).” (ibid., p. 46)

“We do not address intersectionality with the SB. We do not have the freedom to choose the intersectionality characteristics of our SB [Stakeholder Board].” (ibid., p.56)

In comparison, the definition of intersectionality discussed in the knowledge co-creation process and the published methodological framework of PLANET4B emphasises the intersection of categories as well as the issues of power and oppression:

“Intersectionality highlights that race, gender, disability, sexuality, class, age, and other social categories are interrelated and lead to different levels of power and oppression influenced by forces like colonialism and neoliberalism.” (Thaler & Karner 2023, p. 5).

In other parts of the analysed report from Mendes and colleagues (2023), intersectionality was used as a synonym or closely related to diversity. This quote represents an example, where fostering diversity is discussed as a value, which drives the inclusion of a broad variety of actors, along “a wide range of intersectionality dimensions”:

“In line with our commitment to fostering diversity and inclusion, our LC [Learning Community] embraces a wide range of intersectionality dimensions. Participants hail from various corners of the world, including India, Central Russia, and West Asia, offering a multicontinental perspective. We represent different ethnicities, religions, and genders, with a balanced ratio of three females and six males.” (Mendes et al. 2023, p. 30).

4. Discussion and Conclusions

This paper explores how the discourse on intersectionality in an ongoing EU project refers to the co-created methodological framework on intersectionality from this very project (described in Thaler & Karner 2023).

We present the participatory action research of the project’s knowledge co-creation process, and the content analysis of the discourse – the use of the intersectionality concept in planning the PLANET4B biodiversity case studies case studies, which was synthesised in a project report (Mendes et al., 2023).

The content analysis of this report, published in November 2023, showed that the definition of intersectionality was not in line with the definition, which was co-created earlier in the project (Thaler & Karner 2023): “intersectionalities”, “intersectionality dimensions”, “intersectionality backgrounds”, this wording represents a use of the concept as a placeholder for ‘social variables’ or ‘socio-demographics’, and does not acknowledge the interlinkage of social or political categories, leading to different levels of power and discrimination. According to the European Commission, it is the consideration of “... interlocking systems of power between gender and other

social categories and identities”, which should enable biodiversity research “to better address access to and ownership of nature-based solutions.”

(<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl6-2022-biodiv-01-09?tenders=false&callIdentifier=HORIZON-CL6-2022-BIODIV-01>)

The qualitative content analysis of the project report showed that intersectionality was used as a synonym or as closely related to diversity, which can be defined as:

„Some alternative definitions of diversity extend beyond race and gender to include all types of individual differences, such as ethnicity, age, religion, disability status, geographic location, personality, sexual preferences, and a myriad of other personal, demographic, and organizational characteristics. Diversity can thus be an all-inclusive term that incorporates people from many different classifications. Generally, “diversity” refers to policies and practices that seek to include people who are considered, in some way, different from traditional members. More centrally, diversity aims to create an inclusive culture that values and uses the talents of all would-be members.” (Herring, 2009, p. 209).

This motivation to include various actors from different backgrounds was found in many case study descriptions, but does it follow the same aim as the intersectionality approach? There are scholars who refer to both concepts, like Mangelsdorf et al. (2016):

“Environmental justice and the biodiversity crisis must include an intersectional lens, because ‘... looking at biodiversity is inseparable from looking at the diversity of human communities ...’” (ibid., p. 7)

Is the direction of diversity – inclusion of all potential persons – different to the focus of intersectionality pointing towards discriminations at the crossroads of social or political categories – addressing specifically neglected, excluded, or oppressed persons?

The following definition distinguishes “critical diversity” from “colourblind diversity”, and this could settle the debate, because while the first has undoubtedly an overlapping with intersectionality, the latter has not:

„... critical diversity is about more than embracing cultural differences that exist between groups and appreciating those differences. It also includes examining issues of parity, equity, and inequality in all forms. It confronts issues of oppression and stratification that revolve around issues of diversity. A theory of critical diversity includes an analysis of exclusion, discrimination, and it challenges hegemonic notions of colorblindness and meritocracy. Critical diversity is in stark contrast to other notions of diversity such as ‘colorblind diversity’. A colorblind diversity understanding of the social world is based on the premise that it is sufficient to embrace cultural differences among various racial and ethnic groups without acknowledging disparities among these groups in power, status, wealth, and access.” (Herring and Henderson 2011, p. 632).

Thus, using diversity could also be a valuable and useful path for biodiversity research. Yet this requires that the concept is defined and understood by all involved researchers as critical diversity. Similar to intersectionality, critical diversity highlights discriminations and power imbalances to address excluded or oppressed persons. Environmental justice and biodiversity loss deal with structural barriers in participation and systematic discrimination of specific persons, therefore policies calling for an intersectional or critical diversity approach seem both to address the same important issue.

This paper could not only provide insights into a knowledge co-creation process and the difficulties in communicating the concept of intersectionality and implementing it in biodiversity research, moreover, the paper serves the participatory action research itself. The presented data and arguments were and will be used for deeper debates around intersectionality within the PLANET4B team itself. The feedback from project colleagues not only helped to improve this paper but also triggered further discussions and reflections on taking an intersectional approach in our case study work. The PLANET4B team might have “overlooked the deeper political and social meanings of intersectionality” as our colleagues, who had compiled the report, which was analysed for this paper, concluded. The PLANET4B team is still in a learning phase, and colleagues emphasise our intention to apply intersectionality “to strengthen the critical edge of the analysis within case studies” as well as the final goal to “explore intersectionality’s full potential to trigger transformations towards socio-environmental justice”. However, to achieve this, further steps in translating intersectionality as a critical social theory to our specific case study contexts will be necessary.

It must be stated that the presented challenges to integrate intersectionality in empirical research and case studies are not limited to the project at hand, it can be assumed that the core ideas and methodological consequences of using intersectionality have generally not been made fully accessible outside gender studies. The authors – and their colleagues of PLANET4B – will go on to work towards their aim, to provide knowledge on using intersectionality as a practical concept, which helps to understand interlinked complexities of systems of oppression such as patriarchy, ableism, racism, ageism, colonialism, which marginalise people and their knowledges, also in the discourses and decision-making processes in biodiversity research and policy making.

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Gender Bias in Succession in Family Companies: Theoretical Analysis With Application to a Portuguese Region

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Abstract: In this paper we analyse the problematic of succession in family businesses, and we specifically address the situation of women within that process. The problem is important because, in one hand, family business are among the most prevalent in the economy, and because, in the other hand laws, and rules define gender equality as a very important social rule. We first make a literature review on the topic using the SCOPUS database, and after we detail the results of study made in the Portuguese region of Madeira Island. We conclude that, rather surprisingly, women are discriminated in succession, and this reality has been described in theory and in same empirical studies, and is confirmed, sadly, in our study about Madeira Island. The implications of these results should be great – it is of no use having all the laws published if they are not enforced and women are still harmed and discriminated in such an important social matter. The limitation of this study is that the sample we use in the study is small, but we would underline that the findings of our study are very much aligned with previous ideas. It seems that the old fashioned sexism so well described by Beauvoir in the middle of last century (Beauvoir, 1949) is still a fact. With those results we wonder if that sexism, culturally ignited and learnt as it, can be eliminated. Finally the paper is original because we first make a literature review and then present a case study that illustrates this theory.

Keywords Gender Bias, Succession, Theory, Portugal

1. Introduction

At the time of writing, succession in family business is an important scientific topic given that it relates to the survival of many companies worldwide. Anecdotaly, succession in itself has been the focus of a very praised a seen series in the last years (HBO, 2023). Campos (2022) produced a study on the importance of knowledge management in the succession of family business in Madeira Island, a peripheral region of Portugal. While doing that study, and during a qualitative study made with 12 interviews to owners of family business, it became apparent that in this particular case, the succession is made by the male line, meaning that the owner tends to pass the power to the oldest son. This idea is very surprising, in many ways. First, it seems to go against all the current regulations on Human Rights and equality of opportunity from the European Union and other international bodies. Second it seems to be against economic reasoning, which postulates that positions of leadership must be occupied by the more efficient and reliable individuals, and at least in theory, these persons may be the daughters and not the sons. Thirdly and finally, it should be taken into consideration that in Portugal women have currently more academic achievement than men, a fact that would recommend that daughters should be the natural successors of fathers in family business, and not their male siblings; in this context, work-life-balance or maternity issues come into consideration; from the onset it seems that the old Latin and machist version of society still prevails – a boy is made to make money and have power, and a girl to make children and obey. To make things even more relevant, in the fictional series we mentioned in the beginning of the paragraph, misogyny was a relevant and dominant feature, according to the critics (Dean, 2021). All things considered, this paper addresses the possibility and reality of gender bias and misogyny in the succession in family business. To address this research question, the paper is divided in the following sections: Introduction, Concepts, Theory, Cases, Data and Analysis, Discussion, Conclusion and References. Therefore, during this paper, first we define family business, succession and gender bias; second, we expose theories relating the three concepts; third we describe empirical cases that analysed the problematic; fourth we present Campos 2022 case; fifth we discuss all the previous information; sixth and finally we draw conclusions.

2. Concepts

2.1 Family Business

Family businesses represent a considerable part of a country's overall economy (Astrachan and Shanker, 2003; Botero et al., 20015), and are even more important in the overall progress of a society if we analyse the consequences of their business activities (Chang et al., 2008).

According to Birley (1986), only a third of family businesses in the world remain and survive into the second generation, with 10/15% reaching the third generation. Current studies show that family businesses and the training of successors are important for family businesses and the economy in general. Specifically for Portugal and according to the Portuguese Business Association AEP, (2011) the scenario is not encouraging, as 50 per cent of family businesses survive to the second generation and only 20 per cent to the third generation. After many years, this has triggered the interest of various researchers in looking for the causes and trying to understand which ones affect the succession process (Marler, Botero and De Massis, 2017).

The definition of this type of company may depend on the researcher's objective of analysis (Astracham et al., 2002). In other words, for some of the authors, a company is only considered family-owned when its ownership and management are inherited from one generation to the next. The family business must have institutional values that are identified with the family surname or the appearance of the founder. For Westhead and Cowling (1996), a family business is defined as one in which the family group has more than 50 per cent of the voting rights, and is linked by blood or marriage.

When talking about family businesses, whatever the purpose, we must necessarily address the corporate culture, mentalities, beliefs and vision of their founders, a vision that represents the support for all their personal convictions. According to Shein (2010), culture is to groups and organisations what character is to individuals. A company's culture is indispensable and represents a kind of benchmark for its employees, serving as a stimulus so that, in the course of their activities, the objectives are realised with maximum success.

Family businesses favour an environment of strong emotional interactions between everyone, particularly family members (Naldi, Chirico, Kellermanns, & Camponiano, 2015).

Finally, the literature draws attention to the competitive advantages that family businesses can achieve by using, in a balanced way, the unique resources and capabilities they have, which come from the interaction between the family, its traditions and its culture, between its members, their interests and their competences and between the business, its strategies and its structures (Campos, 2022). More specifically, (Campos, 2022) when it comes to "family first" and "business first", the literature states that we have to take into account the type of family business, whether it is at an early stage of its activity, in its first generation, or whether it has already moved on to a more advanced 2nd generation stage, in which family interests are still emphasised to the detriment of the business, or whether it is already in a 3rd generation, which is usually difficult to achieve, for reasons of conflicts between family members that are created over the generations, and which can lead to its decline.

2.2 Succession

Succession is the biggest constraint facing family businesses. Succession is a major challenge for family businesses for a large number of underlying reasons related to the transfer of the business from one generation to the next (Campos, 2022). Many authors draw parallels between succession and inheritance, and even speak of them synonymously. Errington & Tranter (1991) differentiate the definition of these two concepts. They define succession as the transfer of administrative control between generations, while the concept of inheritance is related to the process of transferring ownership of land. It's true to say that succession is a delicate subject and considered extremely important in the family environment, generating conflict, stress, anxiety and the constant fear that the business will not continue (Campos, 2022). Succession in family businesses happens when several factors come together, namely when there is a need to replace the founder and choose one of the family members as the preferred successor. There are specific (tacit) factors, characteristics of the knowledge acquired over the years, which create an ideal atmosphere for preparing and making a family member the most suitable successor (Campos, 2022). In order to better understand the development of successors in family businesses, the James, Iii & Justis (2015) have emphasised the importance of company leadership. The succession process involves trust between founders and successors (Handler, 1994). The attitude of successors

not turning up at the family business can be difficult for historical founders (Dyck et al., 2002), a situation that can be difficult for the whole process of developing successors (Fiegener, 1994).

2.3 Gender Bias

Gender bias refers to a situation where there is an unfair difference in the way women and men are treated: most commonly women are unfairly treated; in work related environments this means that women are less paid, put doing worse jobs, get less promotions opportunities, and may be even be exploited, harassed and abused morally, emotionally and sexually. This situation which has no logic, or economic reason, amounts to sexism and misogyny. In fact it is a part of the "discrimination or screening theory" according to which people that give the "bad" signs (in this case being a woman) are disadvantaged (Stiglitz, 1975, Spence, 1981). The bad economic and social consequences of gender bias are quite obvious because it generates inefficiency and injustice. In a reaction against this strange tide, which was in fact taught as culture in societies in which machismo was deep-rooted societies, feminist studies and movements arise; Simone de Beauvoir 's *Le Deuxième Sexe* (Beauvoir, 1949), highlighted in monumental fashion all the cultural problematic about women in societies. Crucially however, in the last decades, and particularly in the Western and OECD countries, the gender issue was densified and problematized in depth, and nowadays gender bias does not refer only to men versus women as we will do in this paper but it concern also the LGBT+ communities (United Nations, 2023).

3. Theories

The situation of women in family business was described by Galiano and Vinturella (1995). Basic features of that situation were the following:

1. *"Women expected to remain in the back responsible for the home, while men protected their hold on the decision making in the business"* (p. 179);
2. *"Daughters were not generally considered serious about their business careers, particularly when they entered into marriage"* (p.179); they *"tended to remain insulated for major decision making roles; they often assumed roles that were highly clerical"* (p.179); parents and siblings believe daughters are incompetent about business, therefore they face significant challenges to acquiring power (p.179);
3. A glass ceiling was apparent, diminishing the possibility of raising in the hierarchy after certain levels (p.180);
4. Discrimination, resulting for illegal or informal recruiting practices resulted in discrimination in pay (p.180);
5. When a woman takes the power of a company, she may have problems related to her own low self-esteem, the reluctance of the father to give her the command, or the stigma of men employees regarding a woman in command (p.180).

This traditional view, that may be considered "retrograde" and "reactionary" is more pervasive than expected. Even with social movements, education and laws that give equality of rights and tend to give equality of opportunity to women, even through positive discrimination, equality of results is not achieved.

In the same paper (Galiano and Vinturella, 1995) noticed that there were "cracks in the glass ceiling")and there were situations "breaking from the tradition"(p 180-1). With those novelties in mind these two authors interviewed 10 women managers in the US, in search for views "from the front lines" (p.181-3). These 10 women had a "sense of achievement" and "very positive experiences" even if they felt some uncertainty about what was expected from them and how their performance was viewed (p.183-4).

4. Cases

In SCOPUS database, in January 2024, and with keywords, family business, gender bias, succession we found seven papers. The oldest one was (Galliano and Venturella, 1995), which we already referred to in the previous section. One of them was excluded after analysis. We also found two studies related to misogyny and family business. The mentioned seven studies are summarised in the following Table 1:

Table 1: Summary of studies on Gender Bias, family business and succession

Authors, date	Type of study	Sample	Topic	Results
Bagis and al, 2023	Bibliometric. Performance analysis to identify the most influential journals, authors, countries, co-citation, multidimensional scaling (MDS), hierarchical cluster (HCA) and document analysis to identify dominant research themes.	Papers published	Women entrepreneurship	<i>Three clusters: 1) family succession and women's roles; 2) succession process, gender bias, leadership and entrepreneurship; 3) women leaders and identity construction (Bagis, 687)</i>
Cater and Young, 2022	Qualitative case study, In-depth interviews,	18 daughters and their parent mentors	preparation process for daughters as successors in family firms in the United States	<i>reciprocal social exchange process between parent mentors who provided resources and daughters who acquired the knowledge to become successors in their family firms; Significant elements in the preparation process included: positive childhood experiences, choosing and earning a relevant college degree, the daughter's autonomous decision to enter the family firm, guided on-the-job training, and counsel and advice to overcome the crucial issues of male gender bias and the burden of childcare responsibility; differences that exist between mothers and fathers as mentors regarding understanding the daughters' position in the firm and communication;(pg.1)</i>
Urban and Nonkwelo, 2022	structured survey instrument; hypotheses are statistically tested using regression analyses.	Family business companies	intra-family dynamics with regard to daughters as potential successors in family businesses, in South Africa	<i>business context (BC), intra-family cohesion (IFC), intra-family adaptability (IFA) as well as the parent-daughter relationship (PDR) are important in successful daughter succession planning (SP); (p 266);</i>
Hamilton and al, 2021	Exploratory study using critical realist methodology	Daughters succession leaders de facto or in perspective	identify mechanisms within the family, the family business and societal social structures that caused them to experience gender bias.	<i>While typically the norm of primogeniture dictates that the eldest son is the recipient, today, with changing societal attitudes toward women's leadership, daughters often find themselves as the firm leader; when daughter successors receive validation by their father, any mechanisms that may have caused gender bias are counteracted by others that enable a daughter to be accepted as the successor-leader (p.1)</i>
Ferrari, 2019	Qualitative research biographical features of the participant are investigated to highlight the culture, value systems and other background features	Sample of Italian SMEs	power dynamics involving the mother (as the founder) and the daughter (as the successor) during the business transmission process.	<i>if the founder is her mother, the daughter faces further challenges. power is important in itself, regardless of the gender of those who exercise it. during business transmission, it is important to consider gender biases, both in the family and in the workplace. (p 121)</i>
Carbone and al, 2019	Conceptual	insights from criminology, psychology, and feminist theory,	Rule breaking, gender bias and career	<i>Women face a triple bind: 1) they cannot prevail in such competitions unless they can outmaneuver men, credibly display greater devotion to the job, or more brazenly flout the laws; 2) they are disproportionately disliked and punished for displaying the self-centered, rule-breaking behavior of men. 3) They become less likely to seek positions because they correctly perceive that they could not thrive and are more likely than men to decide they do not wish to do so on such terms,</i>

Authors, date	Type of study	Sample	Topic	Results
				<i>reinforcing the male-identified character of such environments (p1105)</i>
Kuzmanovic (2019)	10 couple and 30 family businesses (micro and small sized)	small couple and family entrepreneurship in traditional sectors of production and services in Serbia	misogyny as a structural and complex socio-economic, political and institutional phenomenon	<i>. Misogynic relationships of differing visibility and intensity are present in family businesses, in relation to the most important long-term management decisions about the distribution of power and resources in household and business roles in the family firm, in all styles and bargaining models of management. These relationships manifest themselves through prejudices, stereotypes, ritualization and offensive hierarchies. The burden of home work and care work predominantly on female shoulders, and women's ownership and/or management positions overall are obscured by and subordinate to the male members of the household and family businesses. (p.406)</i>

It is quite interesting to note that those seven articles were all published since 2019. This is an indication that the topic is finally becoming relevant in scientific terms. Another interesting finding is that gender bias and succession was slightly more studied than misogyny – a difference from 5 to 2. Furthermore, the studies were done with a variety of methods, and in a variety of settings. Namely: the methods were bibliometric (Bagis and al, 2023), interviews (Cater and Young, 2022, Hamilton and al, 2021, Kuzmanovic (2019), biographical features (Ferrari, 2019), survey (Urban and Nonkwelo, 2022), or conceptual (Carbone and al, 2019); the samples were papers published on women entrepreneurship (Bagis and al, 2023), daughters and their parent mentors in the US (Cater and Young, 2022), family business companies in South Africa (Urban and Nonkwelo, 2022), daughters involved in succession in Canada (Hamilton and al, 2021), Italian SMEs (Ferrari, 2019), insights from criminology, psychology, and feminist theory (Carbone and al, 2019) and couple and family businesses in Serbia (Kuzmanovic (2019). There perspectives were multiple: women entrepreneurship (Bagis and al, 2023), preparation process for daughters as successors (Cater and Young, 2022), intra-family dynamics with regard to daughters as potential successors in family businesses, (Urban and Nonkwelo, 2022), identify mechanisms within the family, the family business and societal social structures that caused them to experience gender bias (Hamilton and al, 2021), power dynamics involving the mother (as the founder) and the daughter (as the successor) during the business transmission process. (Ferrari, 2019), rule breaking, gender bias and career (Carbone and al, 2019) and finally misogyny as a structural and complex socio-economic, political and institutional phenomenon (Kuzmanovic, 2019).

However, and in spite of all this diversity a common ground of knowledge emerge, and it was this one: women still face difficulties because the eldest son is typically the successor and validation by the father to overcome the gender bias is required (Hamilton and al, 2021); women face a triple bind in competition to men, and have to outmanoeuvre men to succeed them (Carbone and al, 2019); gender bias is relevant in the literature about women entrepreneurship, (Bagis and al, 2023), as a topic of the preparation of the daughter as a successor (Cater and Young, 2022), and during the business transmission, particularly if the founder is her mother (Ferrari, 2019); finally stereotypes that promote are still prevalent (Kuzmanovic, 2019) and family cohesion and father – daughter relation are essential for the women to take power (Urban and Nonkwelo, 2022).

5. Data and Analysis

In 2021 (Campos, 2022) made a large study of knowledge transmission, succession and trust within the family businesses of the Portuguese region of Madeira Island, using mixed methods. Th main result of that study was that knowledge transmission is the decisive in the succession process; that transmission is based on trust and is fundamental for the continuation of the business throughout the generations.

In the qualitative part of the study (Campos 2012) interviewed 12 founders of family businesses. They were all male, with ages between 60 and 82, had 1 to 4 children and basic but not university education. The 12 semi-structure interviews were analysed according to the predefined guidelines.

Quite crucially, in the 12 interviews daughters were never mentioned. Regarding trust interviewee I “trusts his son and the employees” (Campos, 2022, 108), has does interviewee F “and I hope one day he will be in my place (Campos, 2022, 111); interviewee H is 70 years old and does not like to talk too much about succession because the son “sometimes thinks he knows better and then it goes wrong” (Campos, 2022, 111). Interviewee M is more optimistic: “he knows everything about the company” (Campos, 2022, 111). Interviewee K hopes to pass the business to the grandsons “I share with them all I can” (Campos, 2022, 111), and Interviewee L, “trusts his sons but wants to continue a bit more for fear they would do mistakes (Campos, 2022, 111). Also, if the transmission of knowledge to the successor is essential, it is done to the boys: Interviewee D knows the difficulties their sons will face and shares everything that may be beneficial in the future (Campos, 2022, 115). Interviewee G underlines that he has told his sons never to fail to clients and believes they are ready (Campos, 2022, 115), and the same intentions of success drives Interviewee E (Campos, 2022, 115). Interviewee C has difficulties currently because the sons are studying away from home but hopes they will be successful when he passes away (Campos, 2022, 115). Finally, interviewee H mentions that because of his son’s influence he began attending formal training courses and had a rather pleasant if not unexpected success (Campos, 2022, 113). Also, Interviewee I is happy because his son replaces him when needed (Campos 2022, 118) and interviewee H feels happy because his son is motivated to replace him (Campos, 2022, 119).

6. Discussion

It is said that some things are more visible when they are not in view, like the monuments hidden by the artist Christo (Vizorek, 2022). In the case of Madeira Island the complete absence of references to women in succession by the 12 founders that were interviewed in Campos 2022 is the tip of the iceberg about the situation of women in the companies of the Island.. It seems that machismo still governs the Island. This situation is not entirely unexpected in theoretical terms, but it is very worrying socially and economically. One can guess that if women do not succeed their fathers many companies may just go bankrupt. One can imagine that the economic effects of those bankruptcies for the Island will be devastating. One can also guess that such discrimination has deep social consequences – probably women will try to create their own business or work in the public sector or in a company where they will not have the problem of succession. Finally, last but not the least the feeling of exploitation women may feel can have political consequences. In this context it is very interesting that last week (January 2023) a study was published in the Portuguese media showing the in Generation Z girls vote more on the left than boys. Having in mind that combating discrimination is a leftist agenda, we may imagine that the problem we studied in this paper may be one of the roots of that tendency (Vasconcelos, 2024).

7. Conclusion

Despite all the regulations, international and national, despite all efforts to promote gender equality and fairness, in theory and in practice, a gender bias exists that is not favourable regarding women in succession. The situation is almost paradoxical because women are having more academic success than men in many countries. In this paper we showed studies and a particular case that represent unequivocally that situation. Women are not represented in the calculations of founders in Madeira Island.

A deeper study should be made, with a larger sample and a broader objective

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CEO Gender and Family Business Performance: the Moderating Role of Socio-Emotional Wealth

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Abstract Family businesses are businesses that are managed and/or owned by a family. Like in any other company, the CEO is the manager and is responsible for achieving good performance. But unlike in non-family businesses, women are more represented in leadership positions and are more likely to work their way up. There is considerable disagreement in the literature about whether female CEOs outperform male CEOs. While some studies confirm this, other studies refute it, and other studies find no connection at all. In this study, we therefore investigate whether female CEOs perform better than male CEOs within family businesses. However, given the target group, it is essential not to ignore the influence of socio-emotional wealth (SEW) on this relationship, since family businesses distinguish themselves from other organizational forms with this characteristic. SEW includes the non-financial aspects of a business, such as a desire to maintain family control and family values that are incorporated into the corporate culture. According to SEW theory, family businesses focus more on maintaining SEW than pursuing purely economic prosperity. This can ensure that not all decisions are made with profit maximization in mind. To empirically test our hypotheses, we use a sample of 238 Belgian family businesses. Our results do not show any statistically significant results for the impact of the CEO's gender on firm performance. What is significant, though, is the positive moderating effect of SEW on the relationship between CEO gender and performance in family businesses. The more SEW retention within a family business, the better the performance will be in the case of a female CEO.

Keywords: Gender, CEO, Family Businesses, Performance, SEW

1. Introduction

In recent decades, there has been a growing attention and interest in women in leadership positions, especially as Chief Executive Officer (CEO) of organizations. This development reflects an increasing awareness of the value and potential of gender diversity in leadership teams. Women as CEOs bring unique perspectives, skills and attributes that can contribute to the success of organizations. Furthermore, the presence of women in these top positions ensures a more balanced and inclusive corporate culture (Hernandez-Nicolas et al., 2022).

Although the number of female CEOs in all types of companies has increased in recent decades, the number is still relatively low. Only 5% of all CEOs worldwide are female (Deloitte, 2021). In Belgium, that percentage is slightly higher, namely 7.1% (De Smedt, 2021). There is one type of company in which women are better represented, namely family businesses. Within these companies, 30% of CEOs worldwide are female (Deloitte, 2021). Furthermore, 70% of family businesses are considering a woman as their next CEO (Bjuggren et al., 2018, Familymind, 2021). In this context, it is important to conduct research into the role and impact of women as CEOs, both at an organizational and societal level. By exploring the specific challenges, opportunities and contributions of women in this prominent leadership role, we can gain a better understanding of the diversity and dynamics of effective leadership in today's business world (Smith et al., 2006).

Given the importance of family businesses in our economic system, we focus on this group of companies. Family-owned and operated businesses represent up to 90% of all companies (FBN International, 2023). They have specific characteristics and challenges that differ from non-family businesses (Gomez-Mejia, 2011), such as a strong focus on non-financial goals alongside their financial goals (Berrone et al., 2012). The non-financial goals refer to preserving the family's socio-emotional wealth (SEW), which is the affect-related value the family invested in the firm (Berrone et al., 2012).

Much has been published in the literature about the differences in leadership styles between men and women and their impact on financial performance (Gondhalekar, 2007; Adams and Ferreira, 2007; Strøm et al., 2014). However, there is considerable disagreement in the literature as to whether or not female CEOs outperform male CEOs. While some studies confirm this, other studies refute it, and other studies find no connection at all. Therefore, we will consider the impact of SEW when considering this relationship, as this dimension of prosperity is increasingly considered integral to the success and sustainability of family businesses (Berrone et al., 2010) and might explain the mixed results concerning the CEO gender – firm performance relationship.

2. Literature Review and Hypotheses Development

2.1 The Link Between Gender and Financial Performance

The relationship between gender and company performance is a complex issue. There are many studies that compare male CEOs with female CEOs, but it is striking that these studies do not reach the same conclusion. Several studies (e.g. Kalleberg and Leicht, 1991; Elizabeth and Baines, 1998; Gondhalekar, 2007; Davis et al., 2010; Arrfelt et al., 2013) conclude that there is no or a negligible effect of gender on financial performance.

Other studies indicate that male CEOs perform better compared to female CEOs. The explanations are diverse, such as the lack of knowledge about financing among women (Blount et al., 2023), or the fact that men have more self-confidence, can make faster decisions, are better organized, have a higher motivation and have a need to be dominant. In terms of leadership, men appear more assertive and dominant while women appear to be gentler, friendly and understanding (Danes et al., 2007).

However, many other studies show the opposite. Various explanations are given as to why female CEOs achieve a better financial return, such as women think more market-oriented (Davis et al., 2010), understand the market better (Strom et al., 2014), are better advisors (Adams and Ferreira, 2007), can better maintain relationships leading to a better business environment (Shrader et al., 1997), take fewer personal benefits than men (Barber and Odean, 2001; Bliss and Potter, 2002), and manage the expenditure of financial resources better (Barber and Odean, 2001; Bliss and Potter, 2002; Khan and Vieito, 2013). The results of Fouad et al. (2023) recently confirmed a positive relationship between women managers and revenue over a multi-year period for all companies. Similarly, Fernando et al. (2023) show that increasing female representation in the top management team has a substantial and direct positive influence on firm performance.

In addition to better financial performance, it also appears that companies with female CEOs are less risky than those with male CEOs (Niessen-Ruenzi and Ruenzi, 2019). Women more often choose stable investments than men and take less non-systematic risk (Niessen-Ruenzi and Ruenzi, 2019). Companies with a female CEO also have less debt (Hernandez-Nicolas et al., 2022). Because female CEOs are more risk averse, they take potential losses and risks into account in advance. Women are also more likely to adopt an interactive management style, which means they are verbally strong, make quick decisions and engage more with others. This leads to more effective development, communication and coaching (Appelbaum et al., 2003). They also take others into account more and provide good support, unlike men, who go more for power and dominance (Wang et al., 2013).

2.2 The Link Between Gender and Financial Performance in Family Firms

One of the most important characteristics of a family business is the combination of business activities, family relationships and ownership (Berrone et al., 2012). The vision within family businesses provides meaning and context for family involvement (Gomez-Mejia et al., 2011). For example, family businesses will focus more on long-term goals (Sharma and Manikutty, 2005), have a stronger corporate culture and identity (Memili et al., 2010), work more with internal financing (Villalonga and Amit, 2006), and have a high involvement of employees and high loyalty (Schulze et al., 2003).

A family business must therefore be managed differently: the values and norms of the family must be followed and spread throughout the company so that everyone is on board with the vision of the company (Smith, 2006; Nekhili et al., 2018). This is a transformational leadership style and women are better at this than men (Nekhili et al., 2018). Female CEOs can also more easily find solutions to problems that arise between the family side and the non-family side. They do this through interaction and not so much by positioning themselves above other employees (Eagly and Carli, 2003; Dezsö and Ross, 2012). This results in a win-win situation that makes people more motivated and improves cooperation. Through this leadership style, female CEOs also build bonds with employees and thus gain trust (Nekhili et al., 2018). Furthermore, women are also more likely to make decisions that balance the interests of both the business and the family. This is an important factor because the family's capital is often invested in the business (Nekhili et al., 2018). Finally, within every company, female CEOs perform better than male CEOs in the field of non-financial performance, such as corporate social responsibility (Chadwick and Dawson, 2018).

Although studies also state that female CEOs perform better financially only in non-family businesses (Chadwick and Dawson, 2018), and women miss out on human capital and perform worse due to their less experience in family businesses (Hitt et al., 2001). Based on the above, we believe that there are sufficient arguments to propose the following hypothesis:

Hypothesis 1: Female CEOs achieve better financial performance than male CEOs within family businesses.

2.3 The Moderating Role of Socioemotional Wealth

The SEW theory states that family businesses focus more on maintaining SEW than pursuing purely economic prosperity (Berrone et al., 2010; Gómez-Mejía et al., 2007; Gomez-Mejia et al., 2010; Gomez-Mejia et al., 2018). By definition, SEW includes the non-financial aspects of a business, such as a desire to maintain family control and family values incorporated into the corporate culture (Gómez-Mejía et al., 2007; Berrone et al., 2010). These non-financial aspects often concern the family, while in a non-family business they often revolve around customer satisfaction or employee satisfaction (Zellweger et al., 2012). SEW is important within family businesses and is believed to be a determining factor within their decision-making process (Berrone et al., 2012; Minichilli et al., 2014).

CEOs who value SEW are more likely to make long-term decisions that are good for future generations, even if this has short-term consequences that are less financially beneficial (Gomez-Mejia et al., 2007). The long-term decisions can become a potential competitive advantage (Berrone et al., 2010). Indeed, when socio-emotional aspects are present in family ties, SEW yields better performance (Cruz et al., 2012). These family ties, both internal and external, allow these businesses to maintain their viability over several generations (Miller and Le Breton-Miller, 2005). The family behind the company also wants to present the best possible image of their company to the outside world in order to meet its own needs (Sharma and Manikuti, 2005). This is important for the value of their company.

Companies where SEW is under pressure will make decisions that are no longer based on logical reasoning (Gomez-Mejia et al., 2007). In addition, there is the threat that people will become very generous to children or important people within the family (Schulze et al., 2003). In this way, people can benefit from the company for personal matters and things are given to family members that are not taken for granted (Schulze et al., 2003). Maintaining SEW can therefore result in unforeseen, additional costs (Gomez-Mejia et al., 2007).

Gomez-Mejia et al. (2011) even argue that family businesses that value SEW fail to professionalize and hire outside managers, which can lead to a lack of quality within management (Anderson and Reeb, 2003; Lubatkin et al., 2005). Wanting to maintain SEW can also mean that increased sales, which are the result of correct strategic decisions, do not always lead to an increase in profits due to the additional costs that SEW entails (Casillas et al., 2010; Cruz et al., 2012; Le Breton-Miller et al., 2015). SEW can also reduce innovation in family businesses (Casillas et al., 2010; Cruz et al., 2012; Le Breton-Miller et al., 2015). This can lead to poorer performance.

So, it is clear that SEW can have both a positive and a negative impact on performance. However, it remains unclear whether family businesses make decisions with only SEW in mind or whether they make a trade-off between SEW and financial performance (Berrone et al., 2012). For instance, Hernandez-Pilares et al. (2021) show that the concern for SEW preservation is positively associated with family firm performance and enhances the positive effect of entrepreneurial orientation on family firm performance. Davila et al. (2023) also confirm that the SEW-family firm performance relationship is overall positive. Still, they add that SEW-driven strategies negatively mediate firm performance, offset by governance and stakeholder management choices.

Since gains or losses in SEW represent the pivotal frame of reference that family firms use to make major decisions (Gomez-Mejia et al. 2007; Berrone et al. 2012), its impact on the gender-performance relationship cannot be underestimated. We therefore suspect that SEW plays an important moderating role in the relationship between gender and performance. Because SEW is an important factor within family businesses, we assume that the positive consequences exceed the negative consequences. We argue that the transmission of female leadership into good financial performance can be strengthened by SEW preservation because SEW preservation might enhance the positive effects of the transformational leadership style of female CEOs on firm performance.

We, therefore, pose the second hypothesis:

Hypothesis 2: The positive effect of a female CEO on the financial performance of a family business is strengthened by the moderating effect of socio-emotional wealth.

3. Methodology

3.1 Sample

The study's population contains all non-listed family firms located in the Flemish region of Belgium. A firm is designated a family firm if it self-identifies as such (Westhead and Cowling, 1998) or if a single family possesses at least 50% of the company's shares (Chua et al., 1999). Data is combined from two different sources to test the moderation model empirically. An existing database of the Research Center for Entrepreneurship and Family firms (RCEF) is used for the independent, moderating and some of the control variables. These data originate from a cross-sectional survey undertaken in 2015. Among the survey respondents, 238 Flemish CEOs filled out all the questions related to the variables necessary in this study. The empirical data of the survey are complemented by financial information and other company data sourced from Bel-first, a publicly accessible financial database provided by the Bureau van Dijk. In that way, information for the dependent and remaining control variables for the year-end 2021 was obtained.

3.2 Measurements

Dependent variable. To measure family firm performance, return on assets (ROA), which is the ratio of the net income for a particular year divided by the total assets at the end of that year, is used. This is the most commonly used variable to measure firm performance (Nekhili et al., 2018).

Independent variable. The gender of the CEO is measured as a dichotomous variable being 0 when the family firm is led by a male CEO and 1 when the family firm is led by a female CEO (Chadwick and Dawson, 2018).

Moderating variable. Berrone et al. (2012) proposed that there are five dimensions of socio-emotional wealth (SEW) that may be derived from prior research. They collectively labeled these five dimensions as FIBER, where each letter represents one dimension, being (1) Family control and influence, (2) Identification of family members with the firm, (3) Binding social ties, (4) Emotional attachment and (5) Renewal of family bonds to the firm through dynastic succession. To measure these dimensions, respondents were presented with twelve statements, which had to be answered based on a 5-point Likert scale (1 = completely disagree, 5 = completely agree). To arrive at one SEW variable, the scores of all twelve statements were added up for each family business and divided by the number of questions asked.

Control variables. The analyses further include four control variables. The age of the CEO is the first control variable, as previous studies have indicated that firms with older CEOs exhibit lower performance levels (Cline and Yore, 2016). A second control variable is the age of the company. Previous studies also find a negative relationship here: although more knowledge and experience are present, the performance of companies declines as they get older (Arend, 2014). We then have the size of the company (based on the number of employees) as the third control variable. The larger the company, the better the performance of that company (Kirca et al., 2011). As the fourth and final control variable, we include the number of shares the CEO holds. According to Li et al. (2007), a positive relationship between the CEO's number of shares and firm performance can be expected.

4. Results

4.1 Descriptive Statistics

The descriptive statistics indicate that the average age of the CEOs is 59.5 years (ranging between 36 and 74 years). The CEOs hold an average of 21% to 50% of the shares, and the firms employ an average of 32.10 employees. The average age of a company is 40.50 years (ranging between 12 and 77 years). 13% of the CEOs in the sample are female CEOs. The average for SEW is relatively high, namely 3.85. This means that SEW is important within the companies surveyed. Splitting the sample into male and female CEOs does not lead to any significant differences. Only in terms of socio-emotional wealth do we see that companies with a female CEO score slightly higher (4.03) than companies with a male CEO (3.82). Regarding the ROA, an average of 6.20% is noticed (ranging between -61.55% and 63.32%).

Table I presents the pairwise correlations. It shows a negative correlation between firm age and firm performance and a positive correlation between the age of the CEO and SEW. Based on the correlation values in Table I and the computed variance inflation factors, which are lower than the threshold of four (Miles and Shevlin, 2001), multicollinearity is not a problem in this study.

Table 1: Correlation table

	1	2	3	4	5	6	7
1 ROA	1						
2 Gender CEO	-0,007	1					
3 SEW	-0,014	0,093	1				
4 Age CEO	-0,056	0,069	0,249**	1			
5 Firm age	-0,140*	-0,010	0,052	0,143*	1		
6 Firm size	-0,033	-0,075	0,013	-0,168**	0,147*	1	
7 % shares	-0,082	0,075	-0,040	-0,144*	0,025	0,079	1

N = 238

* $p < .10$. ** $p < 0.05$. *** $p < 0.01$

4.2 Regression Results

To test Hypothesis 1, an ordinary least squares regression was performed. As shown in Model A of Table II, the beta value for the gender CEO variable is negative but not statistically significant. Hypothesis 1 is therefore not supported, which means we cannot conclude that female CEOs perform better than male ones. We hypothesized a positive relationship between female CEOs and financial performance based on several studies (e.g., Nekhilli et al., 2018; Chadwick and Dawson, 2018; Fouad et al., 2023; Fernando et al., 2023). However, our results acknowledge the mixed findings in existing literature regarding this relationship. This is consistent with prior research, which has shown conflicting results on whether female CEOs outperform male CEOs or vice versa. Given that we do not find a statistically significant effect, our results align with the ones in, e.g., Gondhalekar (2007) and Arrfelt et al. (2013).

Table 2: Regression results

	Model A		Model B	
	β	SE	β	SE
Gender CEO	-0,059	2,748	-0,115	0,984
SEW			0,071	0,946
SEW * Gender CEO			0,204	1,080***
Age CEO	-0,312	0,158*	-0,159	0,157**
Firm age	-0,024	0,083	-0,035	0,082
Firm size	-0,010	0,014	-0,054	0,014
% shares	-0,089	0,644	-0,073	0,636
	$R^2 = 0.052$		$R^2 = 0.071$	
	$F = 1,804; p < 0,1$		$F = 2,079; p < 0,05$	

Dependent variable = ROA

N = 238

* $p < .10$. ** $p < 0.05$. *** $p < 0.01$

SE = Standard Error

To test Hypothesis 2, an interaction variable is created by multiplying the variables gender CEO and SEW. The results of Model B in Table II show that SEW has a positive moderating effect on the relationship between gender and performance. This effect is statistically significant at the 1% significance level. Thus, we can say that SEW positively influences the relationship between CEO gender and performance for family businesses. However, we hypothesized that the positive effect of a woman as CEO on performance would be enhanced by SEW as a moderating variable. In contrast, the opposite in the direct relationship has emerged (although not statistically significant), as performance is lower when a woman is CEO. So, the finding that SEW positively moderates this effect means that the negative impact is weakened if a high degree of SEW is present.

This result emphasizes the significance of SEW in understanding family business performance, aligning with existing literature (e.g., Davila et al. 2023; Cruz et al. 2012). Furthermore, it underscores family-owned firms'

unique goals and priorities beyond purely financial objectives (Gomez-Mejia et al. 2007). It also aligns with prior research that suggested that SEW moderates the relationship between CEO characteristics (including gender) and firm performance in family businesses (e.g., Hernandez-Pilares et al. 2021). The study's findings contribute to this understanding by highlighting the positive moderating effect of SEW on the relationship between CEO gender and performance. We performed several robustness tests with ROA from 2018 to 2020 as a dependent variable and the return on equity as a dependent variable from 2018 to 2021. However, in all these analyses, there is no statistically significant result confirming Hypotheses 1 or 2.

5. Discussion and Conclusions

The findings of this study contribute to understanding the complex dynamics between CEO gender, SEW, and performance within family businesses. First, the study highlights the complexity of the relationship between CEO gender and firm performance in family businesses. It acknowledges the contradictory findings in existing literature regarding whether female CEOs outperform male CEOs. Second, according to the results of this study, SEW plays a crucial role within family firms and is a factor influencing the relationship between CEO gender and the performance of these firms. These insights underline the need to include SEW as an essential variable when analyzing business performance within family businesses. SEW theory provides a framework to explain how family businesses prioritize non-financial aspects, influencing decision-making and performance.

For practice, the study underscores the significance of preserving SEW within family firms, given its positive moderating effect on the CEO gender-performance relationship. In general, highlighting the results of Fernando et al. (2023), family businesses should recognize the value of gender diversity in leadership positions.

Admittedly, this research suffers from several limitations. The study acknowledges limitations in the robustness of its findings, as alternative analyses did not yield consistent results. This suggests caution in interpreting the results and underscores the need for further research. The study only relies on two performance measures (ROA and return on equity), limiting the comprehensiveness of its analysis. Future research could include additional performance metrics for a more holistic assessment. For instance, future research could incorporate a broader range of performance measures beyond financial indicators, such as sales, customer satisfaction, and innovation metrics. The study also focuses solely on family businesses in the Flemish region of Belgium, which may limit the generalizability of its findings. Future research could explore broader samples across different regions and industries for a more comprehensive understanding.

Also, a more in-depth analysis of the impact of gender on leadership styles would be interesting, as well as research into the perceptions and reactions of stakeholders, such as family members, employees, customers, and investors. This could provide insight into how gender-related factors influence the assessment of leadership and the acceptance of diversity. Furthermore, examining the influence of external environmental factors, such as cultural norms, institutional context, and industry-specific characteristics, can contribute to a better understanding of the interaction between gender and SEW on the performance of family businesses. It can also help identify opportunities and challenges for male and female CEOs within different contexts.

Finally, comparative studies between family and non-family businesses could also be conducted. This research could focus on comparing male and female CEOs within family businesses with those in non-family businesses. This can provide insight into the unique dynamics and challenges associated with gender and leadership in the context of family businesses. Additionally, it can help identify specific factors that influence the success of male and female leaders.

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Is Artificial Intelligence Gender-Free? What Does Feminist Epistemology Say About That?

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Abstract: I start my contribution with some general questions: Is AI gendered? Is AI sexist or can it be? Does AI include gendered knowledge and suppositions? If so, how? After that, I proceed to develop my theoretical (i.e., qualitatively based) starting points with the main referential authors, Donna Haraway and Alison Adam. The fact that impersonal does not mean observer-independent (as Haraway described it in a slightly different context [1997]) is a good reason to turn to feminist epistemology, especially its concept of situated knowledges. Since knowledge (or the representation of knowledge) lies at the very centre of AI research, this makes it an appropriate vehicle for a gendered critique of AI (Adam, 2000). The concept of situated knowledges entails knowledge that reflects a perspective on a subject which is necessarily partial and limited, not universal (this is Haraway's famous critique of the "view from nowhere"). Namely, there is no way to be simultaneously in all of the epistemologically privileged positions structured by gender, class, nation, etc. I then proceed to AI research. The knowledge engineers build systems that contain knowledge reflecting their own interests and competencies. While this representation of knowledge is usually regarded as being universal (Adam, 2000), it is hierarchical since it does not grant epistemic authority to all. Most importantly, social exclusivism and biological essentialism are re-inscribed in the ontology of AI (Adam, 2000). I address the question of which effects social and political contaminations and prejudices can bring for the development of AI. I suggest that unless we commit to deconstructing the harmful essentialisms that govern our human lives, we might just be perpetuating the same (i.e., our own and others') practices of domination and unequal parts of privilege and oppression (Haraway, 1991) in developing AI.

Keywords: Artificial Intelligence, Epistemic Privileges, Feminist Epistemology, Gender, Situated Knowledges

1. Introduction

As a starting point, I wish to ask some quite general questions about artificial intelligence (AI), a heterogeneous network of technologies, and gender, such as: Is AI gendered? Is AI sexist or can it be? Why? Does AI include gendered knowledge and suppositions? The answers to these questions may seem relatively obvious, at least to those of us engaged in gender research more generally. The notion that AI is completely non-gendered or gender-free is a great misinterpretation, as if AI is being developed in a world devoid of humans, their prejudices (conscious or unconscious), and ways of acting. Since AI is our mirror, why should it be assumed that no sexism or stereotypes will be part of it? Even when AI learns from (existing) data, why should it be assumed that bias will not exist if it is already present in that data? As discussed at the *HeForShe Summit* (UN Women), "AI language models draw their material from already published information, meaning that they can replicate and amplify existing gender biases". In short, what is involved in the ways AI is presented, is a broader social, ethical, and political issue.

I concur with Cave, Dihal, and Dillon's argument (2020, with reference to A. Adam) that it needs to be considered how a certain type of masculinity is inscribed in the way AI is conceived and how this does interplay "with a culture in the computing world that is hostile to women" (their description). AI could hold a more meaningful importance if we agree that AI should benefit all (and also work in that direction). This raises the related question (which I cannot address more deeply at this point) whether this benefit-all goal is reachable under present circumstances. As stated on the webpage of internationalwomensday.com: "Bias may be an unavoidable fact of life, but let's not make it an unavoidable aspect of new technologies". Unfortunately, bias is not something that can be done away with in the field of AI alone, it must be done away with first in wider society. Otherwise, we will just be transferring the same gender-related issues to the new areas (as it is currently done). Nevertheless, the bottom line is: that AI would not contain bias if there were no bias in society. We are therefore confronted with the same old story. Moreover, not only does generative AI replicate stereotypes, it can even make them worse, in many senses, at least in that (once again) an impression is being created that AI is somehow impersonal, society-independent, and objective.

According to Alison Adam (2000), "AI follows classical versions of epistemology in assuming that the identity of the knowing subject is not important. This disguises an implicit hierarchy of knowers involved in the representation of knowledge in AI which privileges the perspective of those who design and build the systems over alternative perspective." Hence, to start dismantling the idea that developing AI is a neutral and gender-free process, as it is too often perceived, we must first return to the very basics of knowledge acquisition and a

feminist rethinking of it. I say feminist because this is where I start from. Yet, I do not suggest that feminist theory was the first or only one to tackle this issue.

2. What About Epistemologically Privileged Positions?

In this section, I present my main theoretical (i.e., qualitative and humanities-based) starting points with the key referential authors, Donna Haraway and Alison Adam. The fact that impersonal does not mean observer-independent (as Haraway described it in a slightly different context (1997), namely, while speaking about reality being collectively, materially, and semiotically constructed), is a good reason to turn to feminist epistemology, especially its concept of situated knowledges. Since knowledge (or the representation of knowledge) lies at the very centre of AI research, this makes it an appropriate vehicle for a gendered critique of AI (Adam 2000).

The concept of situated knowledges entails knowledge that reflects a perspective on a subject, which is necessarily partial and limited, not universal (the famous critique of the "view from nowhere", also known as God's eye view of the world), often concealing a white male perspective (of interest in our case). Traditional epistemology has it as in casting the "business of knowing in terms of 'S knows that p' where 'S'" is universal, and altogether perspective less, taken for granted and not to be discussed subject, and 'p' is a piece of propositional knowledge" (Adam, 2000). This is a view from nowhere, believed to be universal and objective and from everywhere. Alternative (or one of them) is partial, locatable, critical knowledges "sustaining the possibility of webs of connections called solidarity in politics and shared conversations in epistemology" (Haraway 1991). What is furthermore needed is the power-sensitivity and the awareness that there is always the issue of interpretation of results, relations, views, and so on (Haraway 1991).

Here, we find ourselves on the terrain of the necessarily subjective, not objective (objectivity would require a longer elaboration, as there are different definitions of it). Situated knowledges are, in brief, ways of knowing that are "self-reflective concerning the conditions (material, historical, social) under which they came into being" (Prins 1995) and that postulates a critical stance towards 'universal truths'.

There is no way to be simultaneously in all or whole in any of the epistemologically privileged positions structured by gender, class, nation, etc. According to Karen Barad (2007), it is not merely about knowing or seeing from somewhere (as in having a perspective), "but about taking account of how specific prosthetic embodiment of the technologically enhanced visualizing apparatus matters to the practices of knowing".

Although, as said, I do not make any claim that all the topics relating to feminist theory and epistemology fall exclusively within the domain of feminism or feminist theory. They also occur in other epistemologies and philosophical traditions that thrive on scepticism and wariness of absolutes, such as deconstruction, pragmatism, and the like (Felski 2000), I do maintain that it was feminism that bestowed a specific dimension upon them and gave rise to new considerations – particularly to the issues of epistemic responsibility and epistemic privileges. The demand for epistemic responsibility is a central concern of feminist epistemology. "Epistemologists need to take seriously matters of social position, race, gender, sexuality, and the like because social hierarchies can both limit the spheres of action available to agents from non-privileged groups and discourage those from privileged groups from being accountable for their actions when they seek and claim knowledge" (Townley 2006). So this kind of work is necessary to reflect on power, privilege, and accountability, not only in AI research and development, but wider as well.

Or, as Donna Haraway famously expressed (1991), "Vision is always a question of the power to see". This means the assertion made by the researcher (or scientist, author, developer/designer of AI) that they watch from everywhere and see everything, that they have no desires, needs, convictions, or backgrounds, is extremely contentious (Haraway 1991) and an evasion of 'responsible discourse'. This is supposedly a view from a position that is transcendent – as in, above the level of human activity, above politics and power – and beyond lived experience. It is as if these issues have nothing to do with humanity, human practices, and ways of living.

The transformation of recognition systems and methods of observation and, in our case, AI design, requires the destabilization of assumptions concerning the "god-trick" (as Donna Haraway refers to the traditional positivist view of science), where everything is seen from nowhere (from out there somewhere, not from our society), when vision is infinitely mobile and endless (Haraway 1991). As already mentioned, vision is a question of the power to see. A view from a specific location, i.e., from the place where politics and knowledge are being built (Haraway 1991), can enable us to see and understand various aspects of the world and human activities – which are then 'copied' into AI.

For mainstream science thinkers, 'subjective' views are suspect partly because they are associated with embeddedness or situatedness (and sometimes, by extension, with the female). To be embedded is to be immersed in relationships and connections that interfere with the rigor and purity of vision presumably required of empirical science (Greene 1994). As stated by Sh. Pendlebury (2005): "Objectivity requires taking subjectivity into account", which in short means that knowledge is not above the level of human activity with all its values, desires, politics, yearnings, machinations, and so on. Accordingly, "how can a human mired in such a stew produce knowledge that is not" (St. Pierre 2006)?

To put this slightly differently: the stance of the omniscient, universally separated (deemed objective in a different conceptual framework) observer is impossible in our theoretical framework. And that can lead to the conclusion: the observer is always 'somewhere', at a given social location, which simultaneously enables and in a certain way constrains their view (Pendlebury 2005).

This 'obsession' with objectivity and the supposed elimination of bias (through the use of 'positivistic' methods) and overlooking the bias of power must be eliminated from the analysis of AI. There is little recognition of the broader questions of bias relating to which evidence is considered to 'count', and who selects it. Further, the researcher is seen as an outsider working on the social reality, not being a constitutive part of it (Archer 2003) – which can also mean not being responsible for the results and interpretations of data, for example.

3. AI and 'Tacit' Forces at Work

Thus, in my research and reflection on AI, I rely heavily on the work of Allison Adam on this issue as she points out that knowledge engineers build systems that contain knowledge reflecting their interests and competencies. While this representation of knowledge is usually regarded as being universal (Adam 2000), it is hierarchical since it does not grant epistemic authority to all. Social exclusivism and biological essentialism are re-inscribed in the ontology of AI (Adam, 2000). I wish to consider the question of the effects that social and political contaminations and prejudices can bring to the development of AI.

There are several key aspects (as I am told by ChatGPT, which I include here for the sake of illustrating my point (ChatGPT was accessed 14 December 2023, the conversation started with the keywords "gender and AI research"; but, to be clear, this contribution was NOT written by it – I guess such disclaimers will become ever more necessary). It is important, even crucial (says he or she or it), to address gender issues in research and development to ensure that AI technologies are fair, unbiased, and benefit everyone. This proves just the main point. Still, what is fair and beneficial might be a matter of negotiation and depends on the context. The same AI representative (i.e., ChatGPT) also claims that "researchers and developers are increasingly aware of these challenges and are working to develop AI systems that are fair, transparent, and free from gender bias". This is certainly a positive initiative, but – unfortunately, in my opinion – it does not reach very far (or not far enough). An instrumental reflection (I am unsure if I may use the word "reflection" here as this is ChatGPT's words) is the following: "It's important to recognize that any gender-related characteristics in AI reflect the data and methods used in its creation rather than being an inherent property of the technology itself". Yet, how can one thing go without the other? Of course, it is so. There is no inherent property (yet) of the technology. And I am not sure that having an inherent property is a good idea.

To continue (according to the same source): "Gender biases can be a concern if the training data used to develop the model reflects existing societal biases. Developers aim to create models that are as neutral and unbiased as possible, treating all users with respect and avoiding reinforcement of harmful stereotypes".

To comment on the last quote (we clearly would need more data on how many feminist researchers are included in developing the models): "Problematizing the implicit knowing subject of AI through the lens of feminist epistemology reveals elements of the nature of that implied subject which have rarely been exposed in commentaries on AI. They turn the spotlight onto what is known, how it is known, and how that is represented in AI systems" (Adam, 2000). Alison Adam (1995b) also claims – and justly so – that there is "a deletion of the subject in symbolic AI systems. I do not wish to claim that this is deliberate; instead, I see it as largely a consequence of their following in the footsteps of the classical position in epistemology where the nature of the knowing subject has been traditionally denied as an essential element in the making of knowledge". Further, "in deleting the subject these systems thereby delete the political and have no means of making explicit the power structures inherent in the implied hierarchy of knowers". This brings us back to the importance of recognizing epistemological situatedness, which means – precisely – taking subject into account as opposed to the knower in traditional epistemology who is disembodied with reason presented as purely mental (Adam, 1995b). Gender biases are thus a concern and it is very hard to claim that developers are creating models that are unbiased and

avoid harmful stereotypes. Why is that so? Because it is very hard to say that the developers themselves are unbiased (I am not claiming that this is so for some malicious purpose, but still).

In summary: there is bias in AI algorithms (i.e., the training data) which can have a very strong impact if used indiscriminately. There is a thing called algorithmic accountability – which is exactly what it says it is: holding the developers accountable for their decisions (here we return to epistemic responsibility). Certainly, regulations should take care of this, but – once again – we are on the terrain of situated knowledges. A feminist perspective is needed to help develop AI technologies that do not perpetuate the same old issues. Nonetheless, this is again the question not of AI development and technology, but of wider societal issues and the attempt to resolve them (and, in my opinion, we are still a long way from doing so).

4. Conclusion

By way of conclusion, I suggest that unless we commit to deconstructing the harmful essentialisms that govern our everyday human lives, we might just perpetuate, reproduce, and once again legitimize the same (i.e., our own and others') practices of domination and unequal parts of privilege and oppression (Haraway 1991) while developing AI.

As Kate Crawford (2021) states, "artificial intelligence is not an objective, universal, or neutral computational technique that makes determinations without human directions. Its systems are embedded in social, political, cultural, and economic worlds, shaped by humans, institutions, and imperatives that determine what they do and how they do it. They are designed to discriminate, to amplify hierarchies, and to encode narrow classifications". Here, I have not delved into the education, court system, and other specific social contexts that could especially benefit from or be especially harmed by AI. Thorough considerations along those lines will no doubt be needed very soon, if not already (over)due.

AI systems (Crawford 2021) are expressions of power created "to increase profits and centralize control" [...] But this is not how the story of artificial intelligence is typically told".

There is no algorithmic exceptionalism, there is no AI that can be more socially just than its human creators.

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Attracting Female Engineers: A Qualitative Analysis in Mechanical Engineering in Germany

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Abstract: The number of women working as engineers in the mechanical and plant engineering sector in Germany has risen to eleven percent in 2023 – remaining at humble levels. In higher positions, the share is even lower. While around 20 % of engineering students at German universities are female, these women do not seem to be entering the sector or they are leaving it again. The question arises as to what companies in the mechanical and plant engineering sector can do to attract female engineers after graduation. This study was conducted in cooperation with the German Engineering Association. The aim was to qualitatively explore the reasons why women enter, stay or leave the engineering sector and to include the industry's perspective to obtain a holistic view of the situation. Therefore, on the one hand the perspective of female engineers was investigated and, on the other hand, combined with the perspective of companies. We provide insights from focus groups and interviews with 49 female engineers across all career levels, from an analysis of 90 online company websites and social media pages as well as from three on-site visits at exemplary companies. The findings point to unresolved issues in recruitment and beyond: highlighting role models of successful women in engineering, the need for companies to actively attract and support women in engineering, e. g. through recruiting strategies focusing on women, insights into the working culture, and transparency regarding career options. Overall, the study suggests that companies should embed gender diversity and group specific recruitment as important issues in their organizations. Consequently, the study provides recommendations for action for companies seeking to become a more inclusive and diverse industry. Limitations are discussed and further implications are presented.

Keywords: Women in Engineering, Female Students, Diversity Recruiting, Gender Diversity, Qualitative Research

1. Introduction

Recruiting and retaining women is a challenge for many companies in the engineering sector. Despite the promotion of a higher number of female engineers since the mid-1990s (Ceci et al, 2014), the proportion of female engineers has not been increasing significantly (Anger et al, 2021). With a share of eleven percent in 2023, women are still underrepresented in German mechanical and plant engineering, a sector that is strongly characterized by medium-sized and family-owned companies (VDMA, 2022). Moreover, demographic change is exacerbating the urgency of the shortage of professionals in STEM (science, technology, engineering, and mathematics) subjects. However, increasing the share of women in the engineering sector promises more than just overcoming the shortage of skilled workers, since heterogeneous teams are more innovative and have a competitive advantage (Somech & Drach-Zahavy, 2013).

In recent decades, a considerable amount of research papers has been published discussing possible reasons for the low share of women in STEM subjects and careers. However, German mechanical and plant engineering companies seem to face problems addressing and winning female engineers to start their career in their facilities. Therefore, the question arises which reasons female engineers might have (not) to enter these companies. What is more, the companies require concrete measures to address and win women at the transition from study to work.

Therefore, we ran a qualitative study inquiring both female engineering students and engineers as well as companies. In the following, the current state of research is presented and the objective and research questions are derived.

2. Research Results on the low Share of Women in Engineering

The first barrier for the low share of women in German mechanical and process engineering courses is already rooted in the choice of study program. Although the number of female freshmen in German engineering programs has been increasing in recent years, in 2020 only 22.5 % of engineering freshmen were female (Anger

et al, 2021). Numerous studies have examined the influence of social environment in childhood, early socialization, and the conveyance of stereotypical gender roles on the later academic and career choices of girls and boys (Olsson & Martiny, 2018). They show that girls' self-perception and their assessment of their technical and mathematical skills are strongly influenced by their social and educational environment and strongly influence their later career choice (acatech & Joachim Herz Stiftung, 2022; OECD, 2015; Weinhardt, 2017). In addition to gender-specific stereotypes, anticipated and experienced male-dominated corporate cultures as well as a lack of female role models lower the interest of young women in STEM programs (González-Pérez et al, 2020). In addition, it is assumed that a lack of knowledge and insight into the engineering profession through internships or vacation jobs contributes to the perception that the job is boring and complicated, and not very social or creative (Seron et al, 2016). These influences maintain prominent during the women's time at university. For example, despite having the same competencies, female engineering students tend to perceive their suitability for the field lower than their male counterparts do (Mastekaasa & Smeby, 2008). The self-doubt of women regarding their suitability often leads to premature termination of their studies or complete abandonment of the industry (Dunlap & Barth, 2019). At the same time, successfully completing a STEM degree does not mean that graduates will pursue a career in the engineering sector. As a result, despite an overall increase in the number of female graduates, the share of female engineers in mechanical and plant engineering remains relatively low, currently comprising only eleven percent (VDMA, 2022). This prevailing gap between the proportion of female graduates and female engineers in the industry underscores the importance of examining hindering and facilitating factors at the transition from study to professional entry.

Aggravating the situation, women are continuously leaving the industry during their professional careers (Singh et al, 2018). The possible reasons for this are diverse and subject to individual expectations, preferences, and characteristics of a person as well as environmental influences from the employer, family obligations, or partnership (Werz et al, 2021). For instance, women may face obstacles to re-enter after maternity leave, encounter challenges in male-dominated work environments and accessing professional networks (Martin & Barnard, 2013). The entrenched "culture of engineering" preserves a masculine professional identity, ultimately contributing to the underrepresentation of women in leadership roles (Carberry & Baker, 2018; Stemmer, 2020).

Amidst these complex interrelations, the transition from study to work represents a potential fracture point, despite being the decisive moment for attracting women for the industry. Previous studies have provided limited information regarding the motives behind individual career decisions, trajectories, and interruptions. Additionally, there is a lack of insight into the perspective of companies' motives and actions in this matter. Addressing these research gaps is the objective of this study. Therefore, it examines both facilitating and inhibiting factors from the perspectives of female engineers as well as from the perspective of companies, with a specific focus on the transition from study to career. This helps to identify the challenges to increasing the proportion of female engineers in the engineering sector and derive concrete recommendations for action to support companies in attracting and retaining female engineers in mechanical and plant engineering.

Thus, the research questions (RQ) of this study are:

RQ 1: What are the facilitating and hindering factors of prospective and working female engineers with regard to the transition between studying and working?

RQ 2: What challenges and opportunities arise for the design of the transition from study to career from the perspective of companies?

3. Method

This study was conducted in cooperation with the German Engineering Association (IMPULS Foundation as part of the VDMA e.V.). The following section provides an overview of the participants and the methodological approach for both the female engineers' perspective and the company perspective. Figure 1 depicts the comprehensive procedure of the current study.

3.1 Perspective of Prospective and Practicing Female Engineers

In total, $n = 49$ prospective, current, and former female engineers in the engineering sector were interviewed in a variety of qualitative formats (see figure 1). To gain the perspective of prospective female engineers, three virtual focus groups were conducted with $n = 19$ female students (four master students, 15 bachelor students) from various engineering and related disciplines (31.58 % mechanical engineering, 26.32 % computer science, 15.79 % industrial engineering, 15.79 % mechatronics, 10.52 % other engineering subjects). The age of

participants was $m = 23.37$ years, $SD = 3.45$. In addition, 23 currently employed (91.3 %) or former (8.7 %) female engineers from the mechanical and plant engineering sector were interviewed. The age of interviewees was $m = 38.05$ years, $SD = 10.12$. Moreover, seven female engineers working as research associates participated in a focus group addressing engineers at universities.

During the focus groups, the prospective female engineers discussed their university and company experiences, and evaluated company websites and job advertisements for attractiveness and interest. The three-hour event took place online and with the help of a virtual collaboration board. The one-to-one interviews with currently employed or former engineers covered five key topics, such as their career trajectories, selection criteria when looking for a job and the role of the company's external image. In the two-hour focus group with female researchers, they discussed the factors that made them pursue a scientific career and their future career plans.

Women's perspective: Female engineers $n = 49$			Company perspective		
Focus groups: Students from mechanical engineering and adjacent subjects $n = 19$	Interviews: (Former) engineers from mechanical and plant engineering $n = 23$	Focus group: Engineers currently employed in universities $n = 7$	Online analysis of websites and social media profiles $n = 90$	On-site visit of companies of different size and structure $n = 3$	Workshop with representatives of companies and associations $n = 16$

Figure 1: Predominantly qualitative approach to inquire both the female engineers' and the companies' perspective

3.2 Perspective of German Companies in Mechanical and Plant Engineering

In order to include the perspective of companies and to identify possible needs for action, we combined qualitative and quantitative analyses. The quantitative analysis of the web presence of companies from mechanical and plant engineering included the examination of $n = 90$ websites and social media profiles. The analysis focused on how the websites and profiles addressed and presented women, as well as presented topics like work-life balance, sustainability, and digitalization. In addition, we visited three companies from the mechanical and plant engineering sector to assess working conditions on site as well as conducted interviews with employees, HR managers as well as superior managers. The companies varied in terms of number of employees and company structure. The company visits started with a thorough tour through the company offices, then, the interviews took place. The goal of these two phases was to obtain different perspectives for the assessment of organizational design components (Hanna, 1988; Marks, 1991). At the end, we shortly presented and discussed the results of the day with company representatives.

After combining the two perspectives of female engineers and companies, a workshop was held with 16 representatives from companies and associations, including CEOs, senior managers, engineers, and HR managers. The key findings of the study were presented and discussed; participants shared views from their companies and provided input for actionable recommendations. Based on these, the authors finalized the set of implications and recommendations for companies.

4. Results

The present results are part of a broad-based German study commissioned by the IMPULS Foundation (Daling et al, 2023). Interviews and focus groups were transcribed and content categories were generated based on Mayring's content analysis procedure (Mayring, 2010). The results reported below include the findings of both perspectives: female engineers and companies.

4.1 Career Orientation

Many prospective or working female engineers emphasized how important it was to know what their work could look like in the professional world and to experience a sense of purpose in their work. Internships, excursions, and company visits illustrated the practical application of theoretical knowledge and the meaningfulness of working as an engineer. Collaborative thesis projects and studies with companies had similar effects. Several women mentioned that experiencing positive internships made them choose the respective companies after graduation.

What is more, participants stated that exchange in networks and mentoring programs for female students encouraged them to pursue their studies and showcased potential career paths. With their professional experience, mentors can serve as role models and provide advice on current obstacles, decisions, or conflicts. One engineer working in the sector stated: "I already had a supervisor during my internship semester, and I also see my boss here at the company as a kind of mentor. She also studied engineering and is a real role model for me." Making female role models visible emerged as another essential factor to attract young female engineers. "Engineering is still a male subject", stated a head of department in an interview. Female role models could help to change this picture – however, finding them remains a challenge.

Finally, female engineers desired transparency about possible career paths and opportunities they would have in engineering companies: Which career opportunities were (actually) open to them? This included, finally yet importantly, the question of whether the company would allow them meaningful work, even with a family. However, the analysis at companies showed that they struggle to provide such information as well as networking opportunities, or mentoring programs.

While companies acknowledge the importance of recruiting women, they put no focus on it. The misconception prevailed that a focus on female recruiting would prevent men from applying. During the company visits, it was often said that "there are no women on the market". One department head confirmed: "If there is a woman, that's good, but at the moment we can't afford to look only for female engineers. There are hardly any applications coming in." Companies used existing formats like career fairs and job portals but specific efforts for recruiting women were lacking. Further examination showed that companies, especially smaller ones, were hardly using opportunities like participation in networks or mentoring programs.

4.2 Job Search

Our survey emphasized the influence the company's website has on job decisions. However, despite the significance of gender-equitable language, it was found that only nine percent of the websites consistently used such language. It has to be noted that in German, professions have a gender-specific ending. The male form, e.g., "Ingenieur", has been used with the justification that it is generally addressing everybody. However, the female word would require adding a "-in" as in "Ingenieurin". The focus groups showed that female students preferred inclusive language like "Ingenieur_in" in job advertisements. Most job advertisements, on contrary, used male connotations. Additionally, the skills rarely included stereotypically female aspects, such as "cooperate" or "team culture". Often, they used a competitive language despite the fact that an HR manager stated that "cooperation and creative problem solving" are the most relevant skills of engineers.

The web analysis of 90 company websites indicated that many companies predominantly targeted and presented men on their online platforms. The visual design of websites often underrepresented women, affecting female engineers' decisions to apply. The focus groups showed that the presence of women on a company's website was considered encouraging. However, authenticity was most important as an engineering student stated: "Of course, at first, you're happy to see women on the website, but there's often a fine line between 'we really stand up for women here' and hypocrisy. You get treated as something special when all you want is to be treated equally, and sometimes companies go a bit overboard."

Social media played an increasingly important role in a company's self-presentation. They served as information sources and contact points for job seekers, providing insights into the company's work culture and profiles of female employees. The web analysis showed that the larger the company, the more likely it was to use (multiple) social media platforms and actively involved trainees on platforms like Instagram for recruitment. Facebook and Xing (a German career platform), were widely used by companies, LinkedIn and Instagram were less represented (see figure 2) despite being preferred by female engineers.

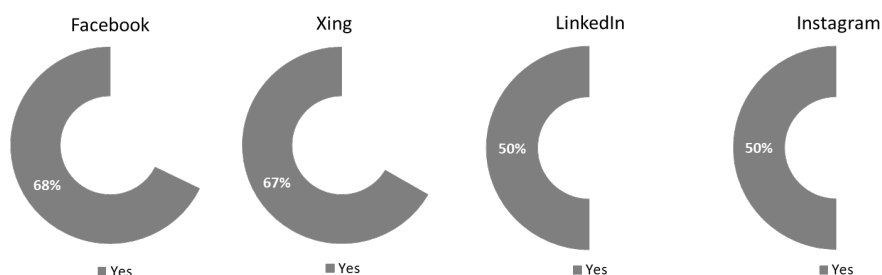


Figure 2: Share of companies who have a social media profile at the respective platform (n = 90)

As a further point, the focus group provided insights into the women's motivation for a doctorate ("Dr. Ing." in Germany). Rather than considering science as a separate career path, many research associates viewed their current employment "[not] as a decision to pursue a different career option than industry, but as an interim phase." as one female researcher stated. Moreover, some women considered the doctorate as a "quality seal" that would manifest their expertise, which some participants seemed to consider necessary for entering a male-dominated industry. Additionally, some participants explained that the scientific field offered more innovativeness, a clearer expert orientation, and options for individual development, comprising easier family planning.

4.3 Job Entry

The prospective and working female engineers underlined that onboarding has an impact on the retention of employees within the company. Well-organized onboarding enables employees to work autonomously and efficiently more quickly, leading to lower turnover and cost reduction.

Many interviewees emphasized the importance of a well-structured and welcoming induction for a successful and long-term engagement. Getting to know various departments and processes within the company helped them connect, identify contacts, and gain a comprehensive understanding of the company's operations. Shadowing in different departments can make this process even easier as one engineering student pointed out in the focus group discussion: "When you start out, there are also different ways to organize the onboarding process. What I always find great [...] is that you simply sit in on different departments". In addition, another student clarified that accessible "buddies" or informal mentors could enhance the welcoming culture and enable a rapid integration: "What would be important to me are clear contacts who can familiarize me with my tasks and are available to answer questions. Not just professionally, but also personally. You could possibly separate that into a professional induction and then perhaps a mentor who establishes contacts in the company or explains what the unofficial rules are". Furthermore, regular feedback meetings, particularly on interpersonal topics such as well-being in the company and integration into the team, made women feel supported and welcome.

Nearly everybody considered working in diverse and varied teams desirable and beneficial for a pleasant work atmosphere during career entry. One working engineer explained: "Male, female, German, international, old, young and so on. So, it's a cross-section where you think: 'That would be so cool if it was like that everywhere'". On the contrary, experienced female engineers reported the impression that they needed to invest more energy to be accepted in less diverse teams, especially when the leadership level was homogeneous. Several participants emphasized that companies would have to promote equal opportunities actively: changing culture and the outdated picture of engineers as men.

Despite several engineering students objecting the implementation of quotas because, as one student stated, they "do not want to get a job because of my Gender", experienced engineers viewed them as a crucial measure to support women in the profession and emphasized the need for a shift in professional culture. Regarding this shift, many students remarked that, when they entered the workforce, feeling accepted and appreciated within the team was particularly important to them. Despite some more experienced engineers' contrary experiences, they wished to be recognized according to their professional competencies irrespective of gender.

5. Discussion

The results of the study provide insights into the facilitating and inhibiting factors of aspiring and working female engineers with regard to the transition between studying and working. They are complemented by challenges and opportunities that arise from exemplary companies in the engineering sector.

A central point in attracting potential and future female engineers concerns communicating a modern picture of the engineering profession. The majority of young women report limited knowledge of what an engineer's job entails, and therefore feel inadequate prepared for their studies and professional life. Companies should focus on communicating the diversity of the engineering profession to young women emphasizing its future viability and innovation, as well as current issues such as sustainability, decarbonization, and its arising purpose. In addition, the profession of a mechanical or plant engineer is not yet sufficiently visible in the everyday lives of young women. To address the target group of young women (and also men), the use of social media will become more relevant for companies in the future.

Another point relates to the expressed need of young girls and women for visible female role models before and during their studies as well as in their professional lives. There are many ways for companies to actively promote role models. They could, for example, reward their (female) employees participation in mentoring programs, increase the visibility of female engineers in university lectures as well as at trade and career fairs. The importance of female role models also plays a central role within the company by demonstrating possible career opportunities to newer employees.

The transition from university to the professional world is a crucial phase in the career paths of female engineers. Previous research has found little information on how female engineers find their way into the profession and which factors they consider when deciding on a domain or a company. The present study provided insights into the strategies and decision-making mechanisms of female graduates. It became evident that companies that provide (positive) opportunities for female students during their studies (internships, field trips, theses, etc.) often manage to recruit these women later. The study also shows that websites and recruitment activities (e.g. fairs, information events, job advertisements) need to be adjusted to address women, too, rather than trying to include them in a general – unintendedly often male – recruitment. Especially smaller companies have hardly been using an active approach to address women in recruitment strategically. As the study showed, respective tools can be small: use visual representation and language to address women, making the working culture tangible, providing insights into teams, being transparent about career steps etc. on websites. However, the observations suggest that increasing the proportion of women in companies is maybe a topic of HR but is not given a high priority across hierarchies. While some are trying, in many companies the topic remains to play a subordinate role on the agenda of managers.

After the application process, the next challenge for female engineers arises at job entry. Some engineers think they can only be accepted with a “quality seal” in form of a doctorate. In order to receive recognition and appreciation, especially at the professional level, many female engineers feel that in order to be accepted they must adapt to the male-dominated professional habitus and prove their abilities more than their male colleagues have to. These mechanisms are deeply rooted in the professional culture of engineering and usually operate unconsciously. Therefore, the conclusions can lead to a certain helplessness if companies want to embrace change. The balancing act between active measures to promote equal opportunities and the (often reasonable) desire of managers not to put female engineers in the spotlight is a big challenge. A clear directive from the top, the sincere will of all involved, and an honest analysis of one's own options are important steps on a marathon of small steps that does not promise quick success.

In addition to the research associates that chose an academic position due to its higher planning security and innovativeness, students mentioned that they wished for transparency on career trajectories and promotion-facilitating factors, also involving the demonstration that the company would allow a compatibility of family and work. For companies, there are several starting points, such as emphasizing the innovative capacity of their own company, offering and agreeing on training goals in the first five years of employment, and emphasizing security through the mostly permanent employment contracts. In addition, companies should actively and credibly promote parental leave – not only for women, but for all employees – as an accepted option and report on respective measures, e.g. attractive part-time opportunities. Particularly for small companies, this topic provides the opportunity to demonstrate their flexibility to find individual solutions. However, whatever companies declare, women are very sensitive in detecting whether corporations really mean it or solely state it for advertising purposes. In order to increase attractiveness, it will be inevitable to reflect on and shape the corporate culture so that the recognition of professional competence happens regardless of gender.

Eventually, limitations of qualitative data have to be considered when interpreting its results. Although the survey of 49 female engineers provided a detailed insight into the expectations and needs of the respondents, their transferability should be further analyzed, for instance with quantitative evaluations. The company visits combined with the workshop with company representatives provided insights into the working conditions of the three companies. However, companies and conditions differ: the observations collected here do not apply equally to all companies in the mechanical and equipment sector, but represent a selection. Finally, the study was conducted in Germany. As mentioned before, the professional habitus of the engineer has a very long tradition in Germany. It is male, conservative, and tenacious. While the results apply to the German professional context of being an engineer and may be transferrable to other western countries, other cultures have different connotations. That is, in other countries both the job profile of an engineer as well as the possible obstacles and challenges for women may differ.

6. Conclusion

While the number of women working as engineers in the mechanical and plant engineering sector in Germany have been remaining at humble levels, the current study provided insights into the reasons for young female engineers to enter the sector – or stay out. Although the diversity of teams surely has many advantages, the current shortage of skilled workers might be one of the driving reasons why German companies realize that they have to attract more women. To use this momentum, the current study addressed the question of facilitating and hindering factors of female engineers with regard to the transition between studying and working as well as for the options of companies in this regard. To this aim, it investigated the women's perspective as well as the one of companies in Germany.

The results show that a clear recruiting strategy to address women in particular does not require great changes but small steps: adapting the online presence with linguistic, informational, and visual changes. Women – and an increasing number of men – want to work and have a family. The working culture has to overcome the dusty habitus of “the male engineer” but respect competence independently of individual characteristics. Overall it is important that everybody involved approaches the change sincerely. As examples from various companies show, honestly analyzing the current status-quo and going small steps from there will lead to successes in attracting female engineers for working in companies and the sector of mechanical and plant engineering.

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PhD Research Papers

Critical Race Feminism and the Counterterrorism Strategy 'Prevent'

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Abstract: There is extensive academic attention on the effects of counterterrorism policy on the Muslim population. My paper goes further by providing an analysis of the intersectionality of religion, race, gender, and the impact of counterterrorism policy, namely 'Prevent'. I focus upon understanding Muslim women's experiences concerning the UK's counterterrorism strategy Prevent, with a theoretical framework of Critical Race Feminism. My research demonstrates the UK government's incorporation of Muslim women into countering violent extremism policies and how this categorises Muslim women as a tool within deradicalisation. I directly address the gap between feminist research and the lived experiences of Prevent for Muslim women in post-16 education. This is achieved by drawing upon the qualitative experiences of Muslim women in further and higher education in the UK. Through an empirical exploration of focus group and interview data, my PhD paper is one of the first to offer insights into Muslim women's feelings surrounding how Prevent operates within the UK's post-16 education sector. To aid this exploration, Critical Race Feminism is used as a theoretical framework to advance the discussion of intersectionality. Within the data collected, certain themes were evident such as: the self-censoring of students; the responsabilization of Muslim women and gendered Islamophobia. The findings state that there is a gendered impact of the Prevent strategy within the UK's post-16 education sector. This paper should be added to the context of debate about the future of Prevent (if any), and to existing work that discusses the securitisation of racialised people.

Keywords: Muslim Women, Education, Prevent, Counterterrorism, Gendered Islamophobia

1. Introduction

To provide context surrounding Prevent, I will begin with a statement from Amnesty International (2023, p.3): 'the UK must scrap the Prevent strategy in order to comply with its international human rights obligations'. Further to this, David Omand, the architect of Prevent, asserted that 'Prevent would be scrapped' if it 'didn't work out' (Pettinger, 2020, p.977). Prevent is a counterterrorism (CT) strategy which operates in the UK. It was developed in 2003 with the official strategy named CONTEST. The Prevent aspect of CONTEST gained prominence post 7/7 due to the concerns of homegrown terrorism (Qurashi, 2018). The strategy has the aim of safeguarding people from becoming terrorists or supporting terrorism; with the outcome being reducing intent (HM Government (2006). Prevent predominately operates in the 'pre-criminal' space, meaning identifying future threats through strategies of surveillance. Prevent has been deemed as controversial, with reports of Islamophobia, stigmatisation, and isolation of Muslim communities (Cohen & Tufail, 2017; Kundnani, 2009; Faure-Walker, 2021; Sian, 2015). Prevent was widened in 2015, with the introduction of the *Prevent Duty* (HM Government 2015). This placed a public duty on educational and other public bodies to prevent people from being drawn into terrorism.

In addition to Amnesty International's and Omand's statements earlier, it has been highlighted that the 'false positive' rate of Prevent referrals- meaning those who are referred to Prevent but who do not need further intervention- is over 87%, with many of these deriving from the education sector (Amnesty International, 2023; MedAct, 2020). Not only has Prevent been described as overwhelmingly aimed at Muslims and young people, but this paper will also demonstrate that the UK government's incorporation of Muslim women into CT policy uses Muslim women as a tool in deradicalization efforts (Rashid, 2016). Ali (2014, p.1258) highlights that 'Muslim youth are discussed, but rarely included in the conversation'. Therefore, this interdisciplinary project utilises Critical Race Feminism (CRF) to analyse the effects of the Prevent policy for young Muslim women in further education (FE) and higher education (HE). The aims were to:

1. Critically explore the gendered impact of the counterterrorism strategy Prevent on Muslim women in further and higher education, in the context of debate about the future of Prevent.
2. Add to existing critical studies on terrorism that discuss the securitisation of racialised people.

2. Theoretical Background: Critical Race Feminism

CRF has its origins in Critical Race Theory (CRT), which focuses upon race as a social construct. CRF also has the added dimension of addressing issues relating to intersectionality by examining how different categories such as race, class, and gender overlap or intersect with one another (Crenshaw, 1989). CRF analyses the 'interconnection of racism with gender and other oppressions' and proposes a unique intersectional feminist epistemology (Hua, 2003, p.2). CRF is therefore rooted within anti-racist and feminist critical work. The theory

can therefore aid the analysis of race, gender, and other issues of racialised women (Wing, 2014). Delgado and Stefancic (2017) discuss how CRF can also help reveal that race is just one of the lines of inequality in racialised women's lives, with layers of discrimination becoming apparent when utilising CRF. From CRF, my research can reveal the lived experiences of Muslim women's perceptions of Prevent, not only by analysing their religion but also taking into account their gender, age and racialisation. CRF epistemologies recognise that racialised women are 'holders and creators of knowledge', rather than relying upon Eurocentric epistemologies that centre majority white experiences (Bernal, 2002, p.107). Therefore, I use CRF to centre Muslim women within this paper to uncover their experiences of Prevent in education.

A popular CRF method is counter storytelling. Delgado and Stefancic (2017, p.171) assert that counter storytelling concerns "casting doubt on the validity of accepted premises or myths, especially ones held by the majority" (Delgado and Stefancic, 2017, p.171; Lahman, et al., 2015). The counter-story telling technique challenges majoritarian stories. This research used focus groups and interviews with young Muslim women within this counter storytelling framework. Consequently, within this paper, CRF can help demonstrate the layers of discrimination that Muslim women face.

3. Prevent and Muslim Women

Muslim women are often 'essentialised' in countering violent extremism (CVE) strategies and are seen through a maternalistic lens (Brown, 2008; Satterthwaite & Huckerby, 2013). The UK government took on this view that Muslim women are the best placed to challenge extremism that may occur within their communities. As a result of viewing Muslim women as 'moderate agents', the UK government has responsibilised Muslim women in countering terrorism within their loved ones (Rodrigo Jusué, 2022, p.297). Muslim women are viewed within CVE discourse either as 'woman-as-moderate or woman-as-moderating' (Auchter, 2020, p.105). This positions women as integral to counter radicalisation efforts, seemingly shifting the state's responsibility onto the shoulders of women (Giscard d'Estaing, 2017). The way in which women are utilised as part of countering radicalisation can be heavily criticised. For example, Eggert (2017, p.1) highlights that states' often place blame upon women and families as 'bearers of extremist culture' rather than seeing radicalisation as a complex, 'multi-causal phenomenon'.

Whilst Prevent's main focus is upon men, the strategy states that women can provide mainstream voices to challenge ideology, and that Muslim women have the capacity to intervene in the 'radicalisation process' within their communities (Huckerby, 2012, p.5). There were some specific initiatives that focus directly on Muslim women within the Prevent agenda. These initiatives made recommendations for Muslim women in Britain. They addressed issues such as unemployment and discrimination and aimed to encourage Muslim women to 'talk' more, in relation to community cohesion and national security (Cook, 2017, p.6). On the surface, these initiatives appeared to be constructive. However, to engage with Muslim women, the UK government had implemented this through a CVE lens, thus leaving Muslim women feeling securitized (Cook, 2017).

4. Methods

My empirical research is currently ongoing at the time of writing. It has involved four online focus groups, with fifteen Muslim women, and four semi-structured, one-to-one, online interviews with select focus group participants. My findings are based upon a small sample size; therefore, the results may not be generalisable. However, the data provides an in-depth look into young Muslim women's counter stories and how they have been impacted by Prevent. Using CRF as a theoretical framework permitted a smaller sample size, it aided the exploration of participants counter-stories in more depth. CRF proposes deep exploration of racialised women's lived experiences. This was my reasoning behind utilising focus groups in combination with one-to-one, follow-up interviews.

Focus groups were employed to encourage group discussion and to acquire thoughts surrounding certain topics regarding Prevent in education. The interaction that occurred within the focus groups enabled the women to share their own experiences, whilst also allowing for each participant to build on the opinions and feelings of others (Liamputtong, 2007). Focus groups reinforce the realisation that experiences are legitimate and perhaps not always individual, as they are shared by others in the group (Pini, 2002). Pseudonyms have been used for all participants.

5. Findings and Discussion

5.1 Theme 1: Self-Censoring

As a result of the thematic analysis, certain themes were evident within the data. Regarding the theme of students self-censoring, many other studies have also concluded that the Prevent strategy has impacted upon free speech and has shut down debate within education due to student fear of being referred to Prevent (Breen-Smyth, 2014; Faure-Walker, 2021; Zempi and Tripli, 2022). Muslim students have also reported having to self-censor their opinions and behaviour (Kyriacou et al., 2017). This coincides with my finding that suggests Muslim women students are self-censoring. Participants provided accounts of feeling 'monitored' within the classroom or feeling as though they must justify their actions. Laila provided me with her counter story:

I decided to tie my headscarf a bit, like tightly, so, to cover more of my face. And I didn't want people to feel that all of a sudden I was being forced to by my family or my friends to cover my face more. So, even if someone did bring it up to be like, "oh, have you noticed that I was trying my scarf a little bit [differently]? Don't worry. It's just because it's cold. There's nothing. There's nothing else going on here". And I kept having to, like, justify that, even if no one asked me. - Laila, FE student

It has been noted that female Muslim students are often regarded a security threat in terms of their dress (Brown and Saeed, 2015). The association of Muslim women, the headscarf, and security suspicions were something that Laila was aware of. A 'change in appearance' is noted as one of the 'signs of radicalisation' (Educate Against Hate, 2023, p.1). From this, Laila stated that she had to "justify" why she wore her headscarf differently in winter, resulting in her self-censoring in terms of her dress. Other participants discussed how they were reluctant to discuss certain topics, particularly regarding their religion, within education. Nasrin discussed how she could not correct a teacher on her own religion:

How could [I] correct this like history teacher?... I was one of the few Muslim students and I just felt like, even if I did voice my opinion to even my fellow Muslim students, they would be like to me, "it's not that deep", like they would just somewhat be passive. So, I just felt very alone in like talking about religion and stuff. - Nasrin, HE student

In Nasrin's quote, she detailed how she felt that even other Muslim students in the class would have been passive to the teachers' comments. Nasrin was uncomfortable discussing religion in education, this was the case with many other participants. Indeed, Saeed and Johnson (2016) discussed how students self-censored from a fear of being labelled at risk of radicalisation by staff. The issue of self-censorship was also evident within Iqra's quote detailed below:

I think my teacher was trying to touch on the whole like situation that's happening right now with like Palestine and stuff, and like because obviously this media like has kind of twisted the whole situation. It's like I just didn't agree with anything he was saying and obviously I wasn't trying to argue or anything. So, and it just means that the situation just made me feel uncomfortable because obviously no one in the class was like educated on the matter. So, everyone was just kind of listening to what he was saying. And I didn't want to get into it, so I kind of just, I literally just left. - Iqra, HE student

Iqra detailed how she felt so uneasy when her teacher was discussing Palestine, that she left the room. It is crucial to note here that some of the focus groups and interviews occurred in and after October 2023- notably when Israel launched its ground invasion within Gaza. The events that unfolded led to concern that students would be under more suspicion and therefore, further targeted by Prevent within schools (Prevent Watch 2023). Breen-Smyth (2014, p.237) similarly found that a 'trend of quietism' amongst Muslims derives from the fear of being perceived as dangerous and ultimately securitised. Indeed, the 'quietism' has impacted upon Muslim students and has been demonstrated within this study's findings. The data suggests that Muslim women students fear that engaging critically in debates may result in them being labelled radical or accused of supporting terrorism, thus the self-censoring continues.

5.2 Theme 2: The Responsibilisation of Muslim Women

The responsabilisation of Muslim women was also found within the data. This often-involved participants questioning why Prevent targeted and encouraged Muslim women to look out for signs of radicalisation within their own communities. The Muslim women within this research provided counter stories, particularly in relation

to how responsibility have been placed upon them and how they feel uncomfortable surrounding this. Tahirah and Nadia told me:

It's not, again, a Muslim women's responsibility, whether she's a colleague, a mother, a wife. It's not her responsibility solely to make sure that the community is strong and avoids radicalism. It's not on us, it's a joint effort. - Nadia, HE student

Why is the government literally after Muslim women? And why is the responsibility of a strong community just on the shoulders of Muslim women? Why is it not a broader responsibility of everyone within that community and society to help people avoid radicalism and extremism? - Tahirah, HE student

Tahirah and Nadia recognised that radicalisation is a complex phenomenon and that one group of people, namely Muslim women, cannot and should not be responsible for tackling it. Indeed, Eggert (2017) also made this point, as they state that extremism and radicalisation should be viewed as a complex phenomenon, not simply placing blame upon women. Some participants also expressed frustration that Muslim women have been expected to “spy on their families or in mosque” through Prevent, further stating that it is not “their job” and asked what the government were doing to support Muslim women in society rather than using them to tackle radicalisation. Again, their counter stories cast doubt on official narratives surrounding Prevent (Lahman, et al., 2015). In addition to this, Sameera, told me:

But these groups are way too big for five ordinary sisters down the road. - Sameera, FE student

She indicated that terrorist groups/organisations are not going to be tackled by a few “ordinary” local Muslim women. This correlated to wider research in the area of Muslim women in CT policy, that suggests that Muslim women have been responsibilised in relation to countering terrorism in their communities (Brown, 2008, 2013; Rodrigo Jusué, 2022). Furthermore, Ameera, told me a story of how she was asked to “keep an eye” on her brothers:

I was asked about my brothers during the time when things were going wrong, like in the UK, and they were just like, oh, just keep an eye on him. If you see them acting weirdly, if they're on their phone a bit too much, if they're watching certain types of videos, just let us know... That's ridiculous. You should never be asking someone a question like that, because you wouldn't go to someone else and ask the same question for me to be keeping an extra eye on my siblings - Ameera, HE student

It was evident that this was Prevent in action, as Prevent follows the assertion that Muslim women have the capacity to intervene in the radicalisation process within their own families (Huckerby, 2012). This is similar to Auchter's (2020, p.105) idea that Muslim women are viewed within CT discourse as moderate forces within their communities that are able to fix problems. These findings suggest that Muslim women in FE and HE are responsibilised into looking for signs of radicalisation whether it be their own friends or family through Prevent.

5.3 Theme 3: Gendered Islamophobia

Gendered islamophobia can be defined as ‘ethno-religious and racialised discrimination levelled at Muslim women that proceed from historically contextualized negative stereotypes that inform individual and systemic forms of oppression’ (Zine, 2006, p.240). The below quotes detail how this gendered islamophobia is evident within the Prevent strategy that operates in FE & HE, and how the Muslim women question the official narratives that surround Prevent and its perceived acceptance:

Women were seen as, you know, submissive and especially when it comes to like the way people sort of view religion in general. - Sameera, FE student

So, I think that...as a Muslim woman, you're categorised into 2 you know, either you're that innocent or oppressed lady, or you're you've got a voice and you're you're kind of dangerous... I hate that I have to prove myself constantly. It really angers me that I have to be the like or the minute. Like somebody mentioned terrorism's mentioned, like you're automatically like you have to be a spokesperson [and] justify like, oh, no, like we're not like that... - Nadia, HE student

Sameera and Nadia both suggested that Muslim women are generally seen as “submissive”, or, as Nadia notes the binary of Muslim women being viewed simultaneously as oppressed and innocent or dangerous and a threat (Mirza, 2015). This is also represented within the Prevent strategy, as it views Muslim women as a group who are able to seek out possible signs of radicalisation. In addition to this, Ameera told me of how she made a comment that she considered to be a joke. The comment was taken much further than she expected:

I must have made like an outlandish comment about how I was going to set fire to the school. Obviously, that would be a normal comment to like any other student to make. But because I was wearing a scarf and this was like kind of post when there was a lot of terrorist like activity going on in the UK, I remember, the police actually got called in to my school and had a sit down conversation with me about counterterrorism. So, they were trying to ask me, like, have you got plans to go abroad? Have you got plans to, you know, to be going joining places like they were asking me very extreme questions. And the fact I was like 14 at the time, 13, I didn't understand why what I'd said was such a big deal. So, then I came to the realisation that because I wear a scarf on my head, because I wear my headscarf and it does show that I'm part of religion, it does give some people, like a rhetoric about me, even though they don't know me as a person... Even though a girl who's sitting next to you with, like, a blonde ponytail could say the same thing, and the teacher [would] probably scoff and act like she didn't hear anything. - Aameera, HE student

It appeared that the stereotypes that link Muslim women to radicalisation or a security threat had influenced staff decision for police to visit Aameera. Furthermore, Aameera discussed how being a visible Muslim woman came with consequences. This was an aspect that was mentioned continuously throughout all the focus groups and interviews- that wearing a headscarf often brought negative perceptions of the young women in education. One participant noted how when she began wearing a headscarf, she was questioned by teachers on why she had done this. Within Aameera's quote, she also suggested that there is difference in treatment of other students by teachers, as she stated, "a girl with a blonde ponytail", noting that the teacher would not regard a non-Muslim students' comments as a cause for concern. Whereas Aameera was securitised due to her comment, and this resulted in her being spoken to by police in school. This binary of Muslim women being perceived as dangerous or threatening represents how Muslim women have been subject to Prevent's objectives, particularly through the Western lens of viewing a headscarf as both oppressive and a security threat (Perry, 2014).

6. Conclusions and Recommendations

This paper is one of many to demonstrate the impact of CT/CVE strategies, notably Prevent, upon racialised people. Despite this focus on the impact of Prevent upon Muslim communities more generally, work on understanding the strategies consequences for young Muslim women has been limited. This paper found evidence of self-censoring and the responsibilisation of young Muslim women in HE and FE, along with gendered islamophobia directed towards them through the Prevent lens. The contributions of CRF have enabled the lived experiences of Muslim women to come to the forefront of this paper, particularly when discussing the responsibilisation of young Muslim women from Prevent. This gendered impact of Prevent was clear to see, whether it was through the questioning of wearing the headscarf within education, being asked to look out for signs of radicalisation, or the young women being questioned through the Prevent framework.

I argue that the UK must sufficiently consider the consequences and impact of the Prevent Duty upon young people in education. Furthermore, I argue that this should include the idea of withdrawing the Prevent Duty from education entirely on the grounds that the impact on young people in education is discriminatory and Islamophobic.

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The Power of Knowledge in Combat Sports Coaching

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Abstract: A growing number of studies develop recommendations for improving the expertise of coaching better athletes. Scholars build knowledge of how to coach and what competence a sports coach should have. Following feminist ideology in knowledge production, this paper explores who can decide on approved coaching know-how. It investigates the assumed expertise and the identification of competition-level coaches' competence and asks what capability is required to qualify as a sports coach. It scrutinises existing practices and collectively formed concepts that influence coaches' pathways: how to become a coach and what possibilities are there for different positions as a coach. The study is conducted at the sports club level, where coaches are voluntary workers. The research includes judo, boxing, and wrestling, referred to as combat sports. Through feminist studies and analysis, the research examines power structures between people or groups. The study focuses on how practical, procedural knowledge is valued in the culture of combat sports. By describing culturally shared meanings and practices in sports, the study reveals the gendered practices by which situations are planned, implemented, and managed. The analysis shows how the male-dominated coaching environment relies on tacit knowledge of learning, cultural behaviour, and assumed know-how. The implied procedural knowledge is proven performatively in physical manners learned through experience, especially expertise from winning competitions. As a result, the study highlights the unchangeable, traditional environment, where repetition of current knowledge is indispensable. Consequently, the study suggests that coaches without previous sport-specific knowledge are excluded from coaching.

Keywords: Feminist Research, Combat Sports, Coach, Tacit Knowledge, Gender, Power, Equity.

1. Introduction

Previous research has emerged that sports coaching remains male-dominated; disproportionately, few women are in high-level coaching positions (Lavoie & Baeth, 2017). Even though girls' and women's participation numbers in sports have decreased, there remains an unequal gender balance in coaching (Kane, 2016). Of all sports coaches in Finland, 67 % are male (Blomqvist et al., 2019). Compared to male coaches, female coaches are younger, less likely to be head coaches, and more likely to coach females and children (Reade et al., 2009). Male coaches have the power as decision-makers, leading to females occupying positions and feeling side-lined with relatively limited opportunities (Fasting et al., 2019). Everyday language and symbols reinforce the ideological gender stereotypes and patriarchal dominance within the sports context (Sartore & Cunningham, 2007). The status quo makes female coaches pessimistic about career possibilities as competition-level coaches (Fasting et al., 2019). Feminist scholars have documented the barriers preventing female coaches from progressing in career paths, such as cultural norms and stereotypes affecting especially females' possibility to coach. The leadership labyrinth has been used to describe bias against female coaches, who are evaluated based on male performance (Burton & LaVoi, 2016). Kirjoita tekstiä napsauttamalla tai napauttamalla tätä.

Scholars have used Kanter's (1977) theory to explain the development of hierarchies and how dominant groups utilise exclusionary mechanisms to preserve their privileged status (Walker, 2016; Wells, 2016). The traditional image of a coach is based on masculine behaviours such as authority, strength, muscularity, and demanding character. Such manners construct the unconscious formation of coaches' identities consistent with homologous reproduction (Burton & LaVoi, 2016). The gendered resemblance has created an environment where coaches are comparable in their knowledge of male attendance. Inherited beliefs, cultural meanings, and standard practices shape the formation of a coach, and the current male coaches have the power to define the best way to coach (Hovden & Tjønnndal, 2021).

Sports institutes being a part of society, the understanding of male dominance and gender-based segregation can be compared to organisational studies. Joan Acker (1990) has focused on gendering organisations, developing a theoretical framework of the 'ideal worker,' referring to a model for a respected employee. Acker's theory helps to explain deeply embedded gendered culture hidden in organisational structures, including informal social relationships supporting career development. (Acker, 1990.) Scholars in sports have had similar ideas of researching successful coaches' knowledge to develop a model of effective coaching. The foundation of coaches' knowledge is represented as declarative (knowing) and procedural (doing), where procedural knowledge benefits past experiences and organisational routines (Gilbert & Côté, 2013). Intuitive, practical knowledge can be described as tacit knowledge (Polanyi, 1983). It is formed on practical knowledge and skills connected to the cultures and traditions of the communities (Toom, 2012).

Interpreting previous research, some assumptions are that experienced coaches have valuable skills respected in sports culture. Tacit knowledge is highly valued, and organisations believe in losing knowledge when people change the sports environment or stop coaching. Conversely, this paper contemplates tacit knowledge as a stagnant practice and collectively formed concept investigating whether it affects coaches' pathways in Finland. Concentrating on the sports club level, where coaches work voluntarily, the research examines how coaches determine their chances of becoming a coach, focusing on identifying competition-level coaches' competence and discovering what kind of know-how is required to get qualification as a coach. Following feminist research, this study examines power structures between current coaches and those willing to coach, addressing the influence of internalised coaching practices on coaching possibilities. The analysis focuses on how the power of knowledge is used in the culture of combat sports by recognising how training is planned, facilitated, and managed in combat sports clubs. It examines the meanings of knowledge in learning, cultural behaviour, and assumed know-how, establishing the operating conditions of how these policies affect volunteer-based coaching possibilities.

2. Researching Gendered Power Structures

This study follows Judith Butler's (1990) theory, considering gender a complex constructed object of social discourses. The theory comprehends gender as a masculine or feminine performativity focusing on gender-related characteristics. (Butler, 1990.) Gender is a matter of social relations, including differences, dichotomy, and hierarchies. It is a pattern of social arrangements addressing reproductive differences into play. (Connell, 2002.) Gender qualities are assigned inherent belief systems, values, cultural patterns, and collectively shared knowledge structures maintaining gender stereotypes in sports (Wood & Eagly, 2013). The gendered substructure includes beliefs about gender differences and reproduced understandings of optimal performance (Acker, 2012). Gendered norms, which legitimise appropriate representations of femininity and masculinity, limit opportunities to exceed gendered habitus or express feminine or masculine social expectations otherwise (Metcalf, 2018). Scrutinising how gender roles are maintained develops the understanding of what is considered an appropriate gender-related presence and how these assumptions affect power relations.

The assumption of approved behaviour and a coach's knowledge can be described as discourse. Michel Foucault (1980) defines discourses as power-knowledge systems that reproduce power relations in ongoing discursive processes by defining ideal codes of conduct. Discourses are intertwined in power mechanics, representing knowledge in the intertwined mechanics of power, reproducing power relations by defining typical or ideal meanings, thoughts, bodies, and feelings. (Foucault, 1980.) Knowledge is produced by anonymous structures, divisions, regularities, rules, and codes of knowledge that organise and limit lives. Power is intertwined with complex relationships affecting strategies and policies, narrowing people's thinking and opportunities. (Markula & Pringle, 2006.) Discourse governs how opinions are reasoned, ideas put into practice and used to regulate the conduct of others. It defines an acceptable and intelligible way to talk, write or conduct oneself, restricting other ways of talking. Discourses are specific ways of constructing knowledge and managing ourselves concerning it. (Hall, 1997.)

Foucauldian theorisation of power explores how humans learn about themselves and their practices through social relations. The surrounding environment, values, and beliefs determine how individuals constitute themselves into certain kinds of individuals. (Foucault, 1977.) In the sports context, it can be used to scrutinise cultural assumptions of ideal attendance and how gender is decisive in complying with sports requirements (Markula, 2003). Sports coaching is a social practice related to autocratic and hierarchical culture, where coaches' roles and activities are presented with a congruent, gendered affiliation (Cushion & Jones, 2006). Gendered, masculine structures regulate social, implicit rules that have governed the selection of coaches (Soler et al., 2022). An extensive activity of socialisation in coaching relates to the distribution of enduring values and an ideology that guides behaviour following given expectations (Cushion & Jones, 2014). Values and attitudes strengthen commonly agreed rules and create norms of behaviour, appraising togetherness and confidence in belonging and multi-layered social cooperation (Messner, 2002). The different forms of implicit rules govern the possibility of coaching and general assumptions of knowledge and competence that are assumed to occur in coaching. The Foucauldian idea is relevant when questioning a 'truth' in coaching practices (Denison, 2019). It gives perspective to inquiry into hidden potential in coaching force: whenever there is a power, there must be counter-power, too. Contemporary actions can always be contested and changed (Foucault, 1977).

3. Methodology

Addressing the long-standing issue of unbalanced power relations is central to feminist studies. Feminist epistemology challenges the dichotomies of positivist approaches and instead considers how and by whom knowledge is produced and valued (Davis & Craven, 2020). Feminist studies are committed to marginality and power differentials, seeking justice for people, communities, and organisations often outside the dominant paradigms (Davis & Craven, 2016). Knowledge production is socially situated, and reflexivity includes the researcher's positionality about the people and topic studied (Deitch, 2020). Following feminist writing, this paper recognises the significance of reflexivity (Harding, 2007). It acknowledges the relative privilege and status of the researcher, relations to the topic, emotions, and experiences (Hesse-Biber, 2007). The study recognises the relationship between the researcher's positionality in the field of research, considering the author's extensive sports knowledge from a professional career as a coach educator and boxing coach for over 20 years.

Participants were recruited using purposive sampling via personal contacts and networks. The snowballing was used, and participants invited other coaches to participate. Participation was voluntary, and the main criterion for selection was that the coaches were competition-level coaches or interested in being one. Participants were provided with an information sheet and consented via the consent form. Considering that participation was voluntary, one could assume all participants were positively predisposed to this research. The data was collected within eight (8) focus group discussions (n=34) involving 23 male and 11 female combat sports coaches from different districts of Finland. Two projective methods guided the conversation (Morgan & Scannel, 1998). Each group discussion was 90 minutes face-to-face, hybrid or remote in 2022. The author's educational background tailored the schedule to inform participants beforehand about the duration. Discussions were digitally recorded with the permission of the participants and transcribed verbatim. All participants have been given pseudonyms to protect their identity. The data was collected in Finnish, and the author translated the extracts reflecting the presented themes.

The study followed six phases of analysis: familiarisation, code generation, generating initial themes, review of themes, defining themes, and producing the report (Braun & Clarke, 2022). The analysis began with familiarising the data through writing, reading, and rereading the transcripts. Exploring the data through a reflexive thematic analysis approached to acknowledge the researcher's active role in interpreting the data (Pillow, 2003). The analysis focused on aspects guiding and shaping the formation of positions of power, such as cultural meanings and practices. While re-reading the data and reviewing themes, the concept of knowledge in various ways drew the researcher's attention, revealing something interesting about unconscious habits and norms. Scrutinising knowledge production between people or groups contemplated a compelling approach to studying the coaching pathway.

4. An Exclusion of Coaches Without Victorious Practical Knowledge

Coaches tend to have a former competition career as an athlete before taking the position as a competition-level coach. The previous research indicates that sports club board members prioritise people with the last history of being elite athletes when recruiting coaches in high-performance team sports (Blackett, 2021). Retaining talent within the coaching staff in national organisations has been substantial, and organisations have created support systems for the career shift from athlete to coach (Chroni et al., 2020). A 'glass ceiling' prevents coaches who do not possess competitive-athletic careers from taking positions as high-performance coaches (Blackett, 2021). Valuing champions and believing in possibilities to benefit from competition-based knowledge is deeply embedded in combat sports culture. The conversation between the three judo coaches illustrates the situation:

Getting respect as a judo coach in Finland takes a long time. You must have many merits from competitions. Both your own merits and your athletes. It is the only way that you are taken seriously. (Anita, female judo coach)

Education is not valued. The athletes and coaches appreciate only coaches with successful competition careers as athletes. They ignore other kinds of coaches, like those who have taken part in coach education. This hierarchy of merits is embedded in the culture. Previous successes need to be mentioned before training sessions or camps. Black belt in judo, if nothing else. (Heidi, female judo coach)

I agree. If there is a coach who is a European champion, everyone listens, no matter what kind of coaching experience they have. The difference is enormous for coaches without a victorious background. It is useless

to say: "Look at me! I just had Level 2 coach education. I have plenty of information about training." (Katja, female judo coach)

Imagining this situation gets a lavish laugh in the group discussion, mainly imagining this educated, non-merited coach who would try to convince using declarative knowledge. The discussion illustrates how a successful ex-athlete will be adored respectfully in contrast to the disregard of an educated coach with pedagogical competence. Laughing is tragicomic, describing the shared experience of female coaches' efforts to get respect in a male-dominated environment. Valuing champions relies on past victories and male images, in contrast to looking forward to new pedagogical ways of coaching. Supporting the climate of champions leads to a situation where an educated coach with 20 years of coaching experience is ignored compared to someone who has achieved international success as an athlete but hasn't gathered any experience in coaching. A path from athlete to coach is taken for granted, even though former athletic expertise does not guarantee coaching success (Ewing, 2019). Communication and decision-making processes are made through personalised and informal conditions, supporting the present coaching style (Schlesinger et al., 2021). Male-dominated culture is noticeable in authoritarian, stagnant training methods and monotonous practices, where authority and social reality are enacted in socio-historical structures. Tradition-based functional knowledge inhibits females from taking positions as coaches, as a female boxing coach describes her experiences:

Only one person, the head coach of the club, has the authority to make decisions. He assumes everyone follows his decades-old training plans. I cannot entirely agree with all those methods. That is different from the way I want to coach. I would want to coach based on my coaching philosophy. At least to have a conversation instead of assuming nothing needs to change. (Taina, female boxing coach)

So far, the head coaches have been males, believing experience in coaching is an asset. Everyday coaching practices are based on masculine routines and behaviours (Hovden & Tjønndal, 2022). The sensible way of knowing (hearing, seeing, feeling, etc.) is culturally disseminated and generated by the social operation of power, which distinctions interiority and exteriority (Meriläinen et al., 2015). Female coaches meet barriers of deeply embedded behaviours that are normalised and unchallenged by coaches who have the power to maintain a deep-seated traditional coaching culture. It is based on tacit knowledge carried out with routines (Gherardi, 2000), as another coach delineates:

Many of these so-called old-fashioned male coaches in boxing say: "We have coached 50 years like this and continue the same way the next ones, too". It is the same old way from the 1960s. Anything new is ignored. (Amanda, female boxing coach)

Old male coaches are committed to the sport and believe they know how to coach and what kind of atmosphere should be in the sports clubs. Activities are tied to established patterns and structures, creating a feeling of security, predictability and permanence. A male coach confirms the idea of trusting the current coaching culture:

If someone wants to be a coach, they must participate daily in the training sessions to learn how to coach. It is essential to embrace the culture and traditions. Otherwise, you will start to coach differently than before. (Oskari, a male boxing coach)

Repeating the same coaching methods is connected to procedural knowledge in skilful and competent action in the sporting context. Coaching skills are related to the physical involvement in teaching sport-specific movements. Pierre Bourdieu's (1989, 1990) *habitus* is an implicit familiarity of knowing how to engage in accepted and legitimised traditions and values (Grenfell, 2018). *Habitus* is appropriate interaction in multiple-layered *fields* where people produce accepted and legitimised traditions and values (Blackett, 2021). The power of knowledge is held by coaches, who are recognised as representing their knowledge in an embodied way. Valued knowledge is conceptualised as a natural practical development, and intuitive knowledge is the capacity created through experience to trust one's instincts (Bereiter & Scardamalia, 1993). Moreover, learning the approved coaching style is based on physical competence that can be visually seen. Learning around practical, contextualised and reflective coaching experiences establishes coaches to construct, implement, and evaluate strategies related to their everyday coaching practices to maximise learning from practical coaching experiences (Nelson & Cushion, 2006). Coaches' competence depends on the ability to perform, as one wrestling coach puts it:

Jussi is an excellent example. He does not have any athletic background in wrestling. He is responsible for the competition-level training group in their sports club. Once, I asked how he can teach the wrestling techniques to the athletes. Jussi said he comes before his working day and practices with the exercise doll.

He can teach the athletes in the evening training session after he has learned the movements. (Markus, male wrestling coach)

In summary, the power of knowledge is built on learning by doing, the performance in combat sports. Accordingly, the dominating respect of doing exceeds speaking, limiting the possibility of coaching with another kind of competence. Female coaches face limited opportunities to take demanding coaching positions or possibilities to demonstrate how to coach (Kay, 2003). Alternatively, this study indicates that anyone who does not meet the socially shared idea of a coach's competence can be excluded from coaching. Interpreting the data, the tradition-based coaching culture is complex to challenge or change, and there is also trouble with diversity in coaching.

5. Discussion and Conclusion

This paper was intended to illuminate the aspects of knowledge in the sports culture. The feminist study examined the identification of competition-level coaches' competence and asked what kind of know-how is required to get a qualification as a coach. It exposed recognised and approved coaching styles and described female coaches' challenges in cultural practices. The paper gives insight into power as a strategy that produces cultural practices that exclude people who do not meet the shared coaching criteria. Potential readings of the data suggest that the dominant culture endorses coaches who can perform physically via tacit knowledge. The power in the combat sports environment maintains the status quo: values of past victories, procedural knowledge and performative practices. Old-fashioned coaching methods maintain the current coaching style and behaviours. The masculine traditions based on physical performance hinder others, especially women, from taking part in coaching.

This study suggests that experience-based, representative competence builds a valued coach pathway. The communal atmosphere involves people's adherence to regulations, manners, roles, and behaviours (Hall, 1997). Participating in coaching with physical activity, obedience, and involvement is possible in combat sports. Coaches are consented to act like others and share the same values and feelings of belonging. Accepting the existing practices and following the current rules makes it possible to be a coach. Relationships with unconscious habits, thoughts, and cultural behaviours keep representing the idea of a coach, marginalising everyone who does not meet the criteria. Being privileged materialises in a culture where current practices are justified by traditional interests (Skeggs, 2004). Coaches with previous athlete-based experience are accepted, valued, and respected with unchallenged normative manners. The power of knowledge in combat sports is held by coaches, who are recognised as representing their competence practically.

This study proposes that the status of implicit knowledge limits opportunities to coach in combat sports. The author suggests that current practices might exclude coaches with declarative knowledge willing to do otherwise. The results imply that female coaches who cannot rely on previous success, carry medals from competitions or perform with sport-specific skills are excluded. They interfere with athletic experience from championships, which can be seen as a lack of honourable knowledge. The knowledge from education is disrespected, considering how teaching by speaking is dispensable in the current operating ways of combat sports culture. If glorifying coaches with competence from previous experience from competitions is not challenged, it hinders the development of various coaches' paths. Therefore, understanding coaching as teaching should be recognised. Creating an appreciation for multiple forms of knowledge would support comprehensive coaching competence. In the future, the changes will be about developing an environment where diverse coaching styles are admired. Discussion is required to conceptualise societal expectations of approved coaches and acknowledge the barriers hindering coaching possibilities.

6. Limitations and Future Research

The article is a minor part of ongoing PhD research providing foundations to continue the study delineating power relations and intersectional differences affecting possibilities to coach.

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The Educational Potential of Cyberfeminisms: An Intersectional Analysis of @coletivoandorinha, @feministasemmovimento and @feministas.pt profiles

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Abstract: Focusing on the dialogue between cyberfeminisms and education, through an intersectional perspective, this study combines the work of feminist authors such as Haraway (1991), DeLaurentis (2004), hooks (2013), Crenshaw (1991), and Butler (2011) with others recent works to address the following question: How do cyberfeminist *Instagram* profiles contribute to intersectional education for gender equality? To answer that, we analysed the profiles @coletivoandorinha, @feministasemmovimento and @feministas.pt between 2021 and 2023, using a qualitative method (Minayo, 2015), with semi-structured interviews to: 1. understand the strategies of the cyberfeminist profiles; 2. identify gender and race differences in the construction of cyberfeminist discourses; 3. identify the main challenges in translating cyberfeminist content into school vocabulary. Results show may enable understanding of how intersectionality is verifiable in cyberfeminist discourses, and how contents may prove adequate for educational purposes.

Keywords: Cyberfeminism, Education, Feminist Pedagogies, Intersectionality, Instagram, Netnography

1. Introduction

The rapid growth of social media and the changes caused by the Covid-19 pandemic have transformed the ways we communicate and learn. The boom of feminist profiles in cyberspace, especially on *Instagram*, and the popularity of the fourth wave of feminism, highlight the concept of cyberfeminism (Miguel and Boix, 2013). This new manifestation of feminism expands the reach of feminist ideologies and collaborates with what some authors (Gago, 2020) call transnational feminism, where national borders are shortened and the internationalization of feminist agendas become more consistent, cooperative, and effective. Meanwhile, Intersectionality (Collins and Bilge, 2021) is also one of the main points of this fourth wave, which guides current activism towards historically neglected racial agendas. In addition, Instagram's feminist activism enables young people greater access to issues related to gender equality and can contribute to their education and engagement on these issues. Thus, authors such as da Silva and Palhano (2020) suggest that schools should appropriate the discussions on social media and bring them to the classrooms, and cyberfeminists' discussions should stimulate students' arguments, thus boosting critical thinking about gender stereotypes.

Cyberfeminism is one of the most important themes of fourth-wave feminism. This study combines the work of feminist authors such as Haraway (1991), DeLaurentis (2004), hooks (2013), Crenshaw (1991) and Butler (2011) with recent studies by Santos, Fernandes and York (2022) and Scolari (2016) to focus on the dialogue between cyberfeminisms and education, through an intersectional perspective, to address the following question: How do cyberfeminist *Instagram* profiles contribute to intersectional education for gender equality?

To answer this question, we used a qualitative perspective with semi-structured interviews (Minayo, 2015) to analyse, @coletivoandorinha, @feministasemmovimento and @feministas.pt profiles between the years 2021 and 2023. The main objectives were: 1. understanding the strategies of the selected cyberfeminist profiles; 2. identifying gender and race differences in the construction of cyberfeminist discourses; 3. identifying main challenges in translating cyberfeminist content into school vocabulary.

2. Cyberfeminisms and Gender Identity

The current fourth wave of feminism brings to the fore important themes such as technology and new forms of activism integrated with cyberspace. Although cyberfeminism term isn't a theoretical consensus (Paasonen, 2011) its main characteristics include horizontality, intersectionality, and feminist transnationalism (Cochrane, 2013; Crenshaw 1991; Gago, 2020).

The term cyberfeminism emerged in the 1990s and is associated with the philosopher Sadie Plant (1996), who connected women, machines, and technology in her works. Furthermore, launched by the Australian collective VNP Matrix, the term was used as a tribute to Donna Haraway's (1991) cyborg manifesto.

After the rapid growth of digital technologies and rise of social media, today cyberfeminism is most known as a networked feminist practice that aims, both politically and aesthetically, to build new orders and dismantle old myths in society by using technology (Lemos, 2009). In contrast, Lamartine (2021) points out that cyberspace is made up of several particularities and this multifaceted characteristic dialogues with feminism's diversity. Cyberfeminism is essentially considered an online activism. However, for Miguel and Boix (2013), cyberfeminism is part of a new field of analysis, which comes primarily from the relationship established between feminisms and technology.

The relationship between cyberfeminisms and the fourth wave of feminism is built through the internet, which enables the transnationalization of feminist agendas, and the call for awareness of intersectionality themes (Cochrane, 2013). The digital universe allows the cooperation between local and global feminist movements, and interaction between subjects who dialogue and exchange experiences through virtual spaces. Accordingly, the relationship between feminisms, technologies and the internet allows for more autonomous communication and offers new tools to expand feminist discourses (Gago, 2020).

Gender studies also play an important role in cyberfeminisms. Initially, Haraway (1991) explored the denaturalization of women's identity, making connections between technology and the feminist movement, and thus created the cyborg manifesto. Then, the innovative concept of "gender technology" by De Laurentis (2004) was later on disruptive in terms of social discourse, the adequacy of bodies and the domestic of desire. All of them imposed from a gender normativity. Later, Butler (2011) updated the debate with the idea of "becoming gendered" and the "performativity of gender", which allowed studying the proliferation of cultural configurations of sex and gender and coined the term *queer* on stage (Butler, 2011). For the author, it would only be possible to use the category of gender as something fluid, constructed, performed and systemic.

Butler (2011) adds that gender identity can be understood as a set of cultural meanings of imitative practices, that is, that throughout life the subject imitates a set of actions, gestures and acts that end up building the illusion of a primary gender self. In this way, Butler concludes that gender is reaffirmed in society through repetition, so we repeat gender through performance.

Allied to this idea, Queer Theory contributes to envision the socially constructed character of sexualities and the way in which modern science has resorted to categories, which were later transformed into identities, as a form of biopolitical administration (Cascais, 2004). The term *queer* challenges the identity structure, demarcated by gender binaries and heteronormativity as a form of political fiction (Butler, 2011). In this way, gender studies teach us that it is no longer possible to dissociate gender equality from the use of new technologies, because it is also there that new identities, relationships and interpretations of the self are established.

Therefore, Queer Theory is very important for this study because it collaborates with the expansion of the debate on sexualities, proposing the normalization of sexual diversities. In this sense, by understanding sexualities also as identity characteristics that construct subjects and that, within the heteronormative system, are repressed or discriminated against, we reinforce the importance of expanding this debate to all spheres of society, especially in schools where identities are being built. For this reason, our study will be located in these institutions.

3. Intersectionality and Critical Education

Intersectionality is a very important concept for today's feminisms, as it integrates a critical perspective on inequalities that are not hierarchical (Crenshaw, 1991). According to Collins and Bilge (2021), intersectionality goes beyond recognising the multiplicity of systems of oppression that operate from categories such as gender, class, race, and sexuality. It transposes the sum of dominations, enabling a transdisciplinary theory that captures the complexity of identities from an integrated approach (Collins and Bilge, 2021). Also, research and critical praxis are central points for using intersectionality as an analytical tool, which "can help empower communities and individuals" (Collins and Bilge, 2021, p. 57).

The embracing of intersectionality as a category of analysis allows feminist movements to take on campaigns to end discrimination against black women and against other minorities such as the LGBTQIA+ population in their agendas. The intersectional approach also serves here as a justice parameter, as Collins and Bilge (2021) suggest, the combination of investigation and critical praxis enables more effective actions to fight against inequalities and integrate marginalized groups in order to guarantee their rights.

From an educational perspective, intersectionality is an important foundation for the development of critical knowledge and the fight against inequalities. The Pedagogy of the Oppressed, developed by Paulo Freire (1919), proposes a teaching method that values individual and collective experiences to make them knowledge tools for

the construction of critical thinking. In this way, it is a method that dialogues directly with the emancipatory principles and goals of intersectional thinking.

Freire's theory (2019) is guided by the sense of social justice and proposed a dialogical method which is a form that would promote a critical analysis of the world, through the elaboration of complex questions, problem solving, and thus exercising critical thinking. In this way, critical education is beneficial for society, as it improves the collective understanding of intersectional social inequalities, broadens the types of critical thinking, and develops better resources for dealing with problematic situations.

Also, the dialogue between Freire's thought and feminist pedagogy is crucial to build new perspectives on fighting against inequalities. bell hooks (2013) said that dialogic pedagogy is one of the main roots of feminist pedagogies, and that it is the most effective way to get more critical people committed to diversity. Feminist pedagogies are a concept and method of applying feminist knowledge for pedagogical purposes, aiming to promote a transgressive and critical education (hooks, 2013). The work of feminist pedagogies is oriented towards eliminating prejudice and discrimination, working on the prior information to which groups excluded from power had access (Rosa, 2021).

Thus, both dialogic pedagogy, feminist pedagogies and intersectionality treat differences as an important part of human development and for a diverse society to become more sustainable, stimulating individual and collective critical thinking is fundamental. For this reason, Freire's pedagogy provides a material path for a better development of intersectionality. Collins and Bilge (2021), scholars of Freire's work, argue that "The use of intersectional frameworks to rethink social inequality requires a more participatory and democratic methodology, one that rejects the neoliberal tendency to evaluate knowledge since its 'use' or 'function' for the individual project" (Collins and Bilge, 2021, p. 244).

To connect the intersectional and pedagogical perspective with practice, we use transmedia literacy project (Scolari, 2016) to contribute to the debate. According to Scolari (2016), transmedia literacy "can be understood as a set of skills, practices, values, and learning strategies applied in the context of digital participatory cultures" (Scolari, 2016, p.272). The project, developed a new methodology that involved the creation of questionnaires, workshops and interviews with students in order to integrate traditional didactic methods with transmedia.

Scolari (2016) adds about the different resources to which, over time, literacy has adapted. Therefore, remember that from a traditional perspective, if the book was the main working resource, later, from a media literacy perspective, television was the central resource of analysis. Lastly, it states that in transmedia literacy it is digital networks and interactive media experiences that become the center of analysis.

Another concept that contributes with this study is critical multiliteracy (Santos, Fernandes, and York, 2022). This concept considers critical literacy approach to compose alternative curricula for schools and universities (Street, 2014). From this perspective, the multiplicity of experiences, social and cultural context, when interpreted and given meaning in people's life contexts, contribute to education as a dialogical, liberating, and emancipatory practice. The study maps different cyberfeminist content to understand how they can inspire feminist pedagogical practices in cyberculture. It also explored the connection between women's subjectivity and the potential for critical multiliteracy gathered by women in cyberculture (Santos, Fernandes, & York, 2022).

Therefore, transmedia literacy and critical multiliteracy help us connect cyberfeminist themes with those of education and intersectionality. These are concepts that enrich media literacy by categorizing new digital skills as a new informal learning strategy. Thus, it is possible to analyse cyberfeminist contents as informal teaching strategies that also apply to formal education.

4. Method

Aiming to 1. understanding the strategies of the selected cyberfeminist profiles; 2. identifying gender and race differences in the construction of cyberfeminist discourses; 3. identifying main challenges in translating cyberfeminist content into school vocabulary, and answer the research question of: how cyberfeminist Instagram profiles contribute to intersectional education for gender equality? This study used a qualitative perspective with semi-structured interviews (Minayo, 2015) to analyse, @coletivoandorinha, @feministasemmovimento and @feministas.pt profiles between the years 2021 and 2023.

Three interviews were carried out with a representative of each profile. The three were women between 20 and 40 years old and we chose to use just the profile names instead of each representative. The interviews lasted around 35 minutes and were made in an online format, as required by the interviewees. The interview guide

contained a total of 13 questions subdivided into three areas: 1) Organization; 2) Communication; 3) Cyberfeminisms.

As Instagram is currently one of the most used social media by young people (Marktest, 2022), it was decided to use it as a research tool. The selection process involved the visibility and engagement criteria on Portuguese feminist Instagram profiles. As a Brazilian PhD student, it was interesting to include a profile with a Global South feminist perspective to improve the content in terms of an intersectional, standpoint view (Collins, 1986) and place of speech (Ribeiro, 2019). The most suitable profiles for analysis therefore were @asfeministas.pt, (The Feminists.pt), @feministasemmovimento (Feminists on the Move), and the Brazilian based in Portugal @coletivoandorinha (Andorinha Collective).

The AsFeministas.pt is a feminist communication platform for the fight against patriarchy, capitalism, and all forms of oppression. They identify themselves as socialist feminist and aims to contribute to a broad, plural, and transformative feminist movement. The content communicated by the platform claims for the rights of women, black women and the LGBTQIA+ community.

The Feminist on the Move profile is an NGO that fights against discrimination, through an intersectional and inclusive feminism perspective. They believe that it is possible to have an active, inclusive, democratic feminism that is attentive to the violence suffered by women and girls. They pursue eliminating multiple gender discriminations, ensuring the materialization of gender equality, in an intersectional and transgenerational way.

The Andorinha Collective is organized mainly by Brazilian students, professors, and researchers from diverse areas. They seek to communicate and discuss issues related to the Brazilian political situation through an alternative narrative. They promote interdisciplinary discussions in the areas of politics, art, and education to build sustainable alternatives to rapid social changes in Brazil and around the world.

Considering the divergences between public and private spaces, the ethical issues behind working with the internet are difficult to define, but, according to Kozinets (2015), the main thing about ethics in using internet data is honesty between the researcher and the online community members. The same concern was raised with the interviews. The issue of participants' consent was addressed in order to clarify the purpose of the research, the procedures of data collection and how it would be used by the researcher.

5. Results

5.1 Strategies of Cyberfeminist Profiles

In terms of strategies the @asfeministas.pt develops courses and organize debates to cooperatively create new ideas to transform society. They also organize protests and manifestoes in partnership with platforms organizing the March to End Violence against Women, the 8M Marches and the LGBTQI+ Pride March in Lisbon.

The @feministasemmovimento is a formalized association, institutionalized by Portuguese law, but they state that "in practice the association is horizontal, we ensure equality among all members". They promote dialogue between scientific research on gender equality, the Portuguese government, and other social groups. Also contribute both through the request of parliamentary groups and through spontaneous actions of the association "since they are always attentive to the projects that are about to be approved or suggested for discussion in the Portuguese Parliament".



Figure 1: @asfeministas.pt

The @coletivoandorinha intend to be a safe and welcoming place for Brazilian immigrants, connect with other Brazilian collectives around the world and integrate Portuguese agenda in international and intersectional struggles. The collective articulates topics such as immigration, Brazilian and Portuguese politics to build an alternative communication path on complex issues that connect both countries.

Concerning the resources required to maintain an active Instagram profile, all three profiles rely on the volunteer work. That is why @feministasemmovimento says, “we don’t always achieve consistency on social media, as we don’t always have volunteers available to carry out this job”.

Regarding the communication with the community, the @feministasemmovimento adds that most of the time it happens through social media, while @coletivoandorinha and @asfeministas.pt report that besides the mobilization on the streets, they also interact with other feminist collectives and associations, participating in public conferences, and organizing book club meetings.

5.2 Gender and Race: Identity Differences

Concerning cyberfeminist identity, the @asfeministasemmovimento and @coletivoandorinha consider themselves as cyberfeminists, while @asfeministas.pt doesn’t. The @feministasemmovimento believes that the @asfeministas.pt is more suitable for the cyberfeminist identity once they “develop more strategic content for social media”. Both @asfeministas.pt and @feministasemmovimento consider social media only as an activism tool in order to disseminating feminist actions.

In terms of gender and racial diversity the @feministasemmovimento states that they are organized only by women and intersectionality is their central perspective. They reported participation in a shelter project for victims of domestic violence in Lisbon as an example of how they are aware of overlapping differences and add, “most of the victims were migrants of different nationalities and cultural specificities”.

@feministasemmovimento also highlighted concern in producing texts and manifestoes where intersectionality is present, demonstrating integration with feminist agendas about racial and ethnic diversity, gender equality, age, sexuality, and others.



Figure 2 @feministasemmovimento

However, the @coletivoandorinha has a more diverse gender scenario, since its organization is created collectively by women and men. They also have a discourse committed to intersectionality and state that: “We believe that struggles become more powerful and must be thought of in a context and together. There is no point in considering yourself a feminist if you are not anti-racist or if it doesn’t stop global warming. All the struggles resulting from the overexploitation of workers, in different forms and cruelties, perpetrated by the same capitalist system, structurally exploitative, racist, patriarchal”.

In contrast, @asfeministas.pt positioned itself in a more generic way, saying that the collective is created by women who fight against all types of oppression and, in its own words “we pay attention to the intersection of various struggles, and we keep in mind that freedom for all women covers all women”.

5.3 Challenges Between Cyberfeminist and School Vocabulary

In terms of cyberfeminist and education @feministasemmovimento engages in educational actions on gender equality and domestic violence prevention. While, @coletivoandorinha underscores the importance of progressive content on social media to counter conservatism “social media is a consolidated category in contemporary times and it is important to keep this place occupied by interesting, transformative, and progressive content, otherwise conservatism will prevail”. The @asfeministas.pt believes “the content we develop, as well as the initiatives and activities of discussion, book club, debate on feminist issues and training in the feminisms field, contribute to the education of young people”.



Figure 3: @coletivoandorinha

Also, the @feministasemmovimento contributes to education through informative publications, campaigns, and school actions. @coletivoandorinha sees social media as a vital platform for transformative content and mentions an independent association, "Diaspora," focusing on youth and education and @asfeministas.pt emphasizes discussions, book clubs, debates, and training as educational contributions.

When asked about accessibility of cyberfeminist content the @feministasemmovimento identifies the need for improvements, such as creating school-specific content adapted to digital platforms. @coletivoandorinha says there is a lack of time and resources for a specific educational project. However, @asfeministas.pt believe that the diversity of the collective, made up of “women of various ages and academic degrees” contributes to developing more accessible cyberfeminist content for young students.

6. Discussion and Conclusions

Cyberfeminism is one of the most important themes of the fourth wave and as a social movement, it has a political proposal that challenges the traditional social structure against gender inequality. The analyzed profiles demonstrated a great ability to communicate their political views, illustrating their perspective through various media.

Regarding profile strategies, we noticed a very organized discourse about feminist movements, pointing out their main political affinities with current feminisms. The profiles showed connection with the fourth wave agenda, especially intersectionality, but each one maintaining their perspective, collaborating to a diverse digital environment, and communicating to different audiences as well.

The profile @Asfeministas.pt is a young group active in street protests, connected to world issues. It is a collective that mobilizes protests on and off the social media, making transnational feminism happen. Their posts advocating violence against women in Iran (2022) are a great example of the borderless dialogue between feminisms such an important topic on the fourth wave agenda.

The @feministasemmovimento also demonstrates its political vision through posts, online campaigns such as “Não é Não” and some outdoor activities like the participation in the 8M march in 2023. However, they state that their main communication and mobilization strategy is through social media.

Also, @asfeministas.pt and @feministasemmovimento believe that social media are just a tool to publicize feminist actions. Expressing this, the profiles highlight two problems: 1. The current difficulty in defining cyberfeminism, especially after the popularization of the fourth wave, and 2. Hierarchies between activisms, which reinforce a conservative perspective on forms of protest and suggests a scale of importance among types of feminism.

The @coletivoandorinha showed a very critical position, especially the posts analyzed during the pandemic period (2021-2022) while Brazil was under the Bolsonaro government and didn't have a safe health policy. Thus, the majority of posts analyzed at that time condemned the president's negligent treatment to international bodies. This case exposes how cyberfeminism is an ally in fighting gender inequalities and political injustices, especially in the pandemic where work overload fell mainly on women and black women.

Concerning content production and communication with the community, all work is done by volunteers. As they reported during the interview, many ideas, or different projects that they would like to develop aren't always possible, because it depends on the volunteers, who are not always available, after all they have their own jobs and families. Thus, the layers of cyberfeminist action are so diverse that they compromise alternatives for expanding and operating the project. From an intersectional perspective, these layers are readapted in a more inclusive way, which tries to understand all the differences between women volunteers and direct them towards more subversive action, as suggested by Collins and Bilge (2021).

Regarding gender and racial differences, most of the profiles are produced only by women, other than @coletivoandorinha, which claims to have important collaborations with men as well. The element of gender diversity in the construction of profile content is interesting because it helps to include masculinity themes in cyberfeminist discussion. In dialogue with bell hooks (2013), in a society organized by patriarchy, violence also drastically affects men, therefore one of the fundamental sources of power to change it is to educate boys and men from a feminist perspective (hooks, 2004; 2013). Therefore, including men and people of other genders in the construction of cyberfeminist content is one of the ways to increase the discussion about masculinities and help everyone fight inequality.

Another important discussion is including intersectionality in cyberfeminist content. The profiles analysed are committed to this, some more attentive of having an intersectional approach in practice, especially when they have projects to care for women in vulnerable situations, as is the case with the profile @feministasemmovimento. However, @coletivoandorinha has a more assertive position on intersectionality, with an anti-racist speech and an appeal to global warming. This may be because they are a Brazilian based in Portugal profile, and the racial discussion in Brazil is very advanced, including the environmental one.

These ideas are related to four wave feminism, and cyberfeminism appears to be an important source to spread the news and connect worldwide activists, students, politicians, entrepreneur, and governments to pay attention and take actions to social inequality's issues. Also, cyberfeminisms have an interesting role in terms of intersectional education. The dialogue between social media and feminism praises the intersectional perspective that denies the separation and hierarchization of social differences, allowing a more horizontal look at identities (Collins & Bilge, 2021). Thus, a more equitable way of dealing with differences, such as gender, race, age, sexuality.

Considering how cyberfeminism contributes to intersectional education on gender studies, we highlight that intersectionality is considered both a knowledge project and a political weapon capable of challenging inequalities (Collins and Bilge, 2021). Therefore, combining intersectionality, cyberfeminism and critical education (Freire, 2019) can be an interesting possibility to challenge and fight against gender inequalities.

After data analysis, we realized that all profiles believe that cyberfeminism can help in education for gender equality, but the profile @coletivoandorinha admits that it doesn't have enough resources to invest in a specific educational project. While @asfeministas.pt never thought about the educational potential of cyberfeminism, but believes that the content it develops, as well as discussion activities, book clubs and debates, contribute to the education of young people on the gender equality issue.

The @feministasemmovimento was the only one to present material actions in collaboration with some schools in Lisbon where they develop informative presentations on the prevention of domestic violence and gender equality. This is a good example of how cyberfeminism can integrate intersectional education in the field and make cyberculture dialogue more inclusive in the school curriculum.

Since the emergence of feminist waves and the popularization of themes on gender equality, feminist pedagogies began to be included in the formal curriculum, and the school began to have a formative dimension from the perspective of feminist epistemologies (Rosa, 2021). But in practice, the applicability of feminist pedagogy is reduced to specific criteria of each educational institution. Due to bureaucratic issues and the inadequate training of education professionals, the curricula end up dissolving into rare extracurricular activities throughout the school year (Rosa, 2021).

These curricular issues are aggravated when the traditional teaching format cannot keep up with the rapid technological transformation with the appearance of new Information and Communication Technologies (ICTs) and social media (Castells, 2014). This is why studies such as critical multiliteracy (Santos, Fernandes, & York, 2022) and transmedia literacy (Scolari, 2016) help to suggest alternative curricula that include technologies, feminist pedagogies and cyberfeminism. The inclusion of new technologies, like cyberfeminism, isn't an easy task and concerning the emergency of conservative forces in the world, especially regarding gender equality, it has become more difficult. But it is an essential step in combating inequalities for a more sustainable world.

We also analysed how cyberfeminism content can be more accessible to young students and the @feministasemmovimento believes that improvements are still needed, such as the creation of specific content for school vocabulary, adapted to the format of each digital platform. They said that they are starting to implement changes focused on education, but it is still early, mainly because they depend on voluntary work, which complicates the situation. Similar problem with the @coletivoandorinha, which doesn't have enough financial resources to dedicate a specific part of the collective's work from an educational perspective.

Therefore, the dialogue between cyberfeminism, intersectionality and education are very productive because it combines practical and theoretical ways of approaching difference. They stimulate critical thinking through people's multiple experiences and value subjectivities to fight against inequalities. They are powerful allies in the process of social transformation, as they can provide theoretical and practical support for political bodies committed to social justice and gender equality.

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Awareness of Women's Inclusion in STEM: Twitter Data in Italy

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Abstract: This paper focuses on assessing public awareness of women in STEM disciplines. The underrepresentation of women in STEM has garnered recent attention, and this study is grounded in Social Cognitive Career Theory, which examines how individual, contextual, and experiential factors impact interests and goals in STEM. Individual factors, such as self-efficacy beliefs and outcome expectations, play a crucial role in shaping career choices. Contextual factors influence women's leadership roles, particularly in male-dominated environments, and may differ in female-majority settings. Additionally, social modelling, where individuals learn from observing others, contributes to self-efficacy. Our study focuses on contextual factors that influence awareness of women in STEM. We employ a panel-type econometric model spanning 2014-2022 and analyse 29,985 tweets to explore the influence of socioeconomic factors on public opinions in various Italian regions. Italy's significant regional disparities make it an ideal setting for this research, considering factors like human capital, industry, and government. The managerial implications underscore the importance of understanding public opinion to inform decisions that promote women's inclusion in STEM fields for policymakers and corporate management. This study's unique use of geolocated data on Twitter adds a novel dimension to the intersection of STEM and women.

Keywords: Twitter, STEM, Women, Awareness

1. Introduction

The abbreviation STEM stands for Science, Technology, Engineering, and Mathematics.

Beyond the overarching scarcity, women continue to face enduring underrepresentation in numerous quantitative fields, including but not limited to economics, engineering, and computer science (Owen, 2023).

Despite the fact that women make up 53% of STEM graduates on a global scale (Sirimanne, 2019), their representation dwindles to a mere 34% of STEM graduates within the European Union (EU) (European Commission, 2019), and just 40.6% in Italy as of 2020 (ALMALAUREA, 2022).

Reducing the gender gap in STEM education should be a priority for the European Union since it will boost economic growth. According to projections, these investments may raise GDP per capita by 0.7–0.9 percent by 2030 and by 2.2–3 percent by 2050, which would be a more significant growth (Serrano et al., 2023).

This gender gap in STEM enrolment has wide-ranging implications for the Italian labour market, where gender-based segregation in both vertical and horizontal career paths remains prevalent. Not only does this underrepresentation limit the pool of qualified STEM professionals, but it also perpetuates gender imbalances in the workforce, contributing to the enduring wage disparity (Sterling et al., 2020; Beede et al., 2011; Michelmores and Sharon, 2016).

At both corporate and public institutional levels, the scarcity of women STEM graduates significantly hinders their opportunities for career progression, thus perpetuating the absence of women in top-tier positions and leadership roles (Amon, 2017; Bilimoria et al., 2014). Consequently, it is imperative for governmental bodies to address this issue and champion gender equality in STEM education and professions, especially in light of the increasing demand for scientific and engineering skills. A highly skilled workforce, encompassing STEM expertise, is indispensable for the economic development of companies and the nation (Saucerman and Vasquez, 2014).

This study draws from the well-established Social Cognitive Career Theory (SCCT) in the STEM fields (Sevilla and Snodgrass Rangel, 2023). SCCT posits that individual, contextual, and experiential factors influence interests, goals, and goal-oriented behaviour, as documented in works by (Lent et al., 1994).

Within individual factors, self-efficacy beliefs pertain to individuals' personal convictions regarding their capacity to successfully accomplish specific tasks. These beliefs are closely linked to outcome expectations, which relate to the specific results anticipated from their actions (Lent et al., 1994; Bandura, 1977).

Moreover, individual and contextual factors, including gender, ethnicity, prior high school education, social support networks, and obstacles, contribute to shaping self-efficacy, perceptions of success, and career aspirations. This insight is consistent with Lent's research (Lent et al., 1994; Lent et al., 2002).

The relationship between social cognitive theory and the significance of role models is evident (Bandura, 2001), for instance, emphasized that witnessing a relatable role model succeed in a similar task significantly influences one's self-efficacy. Social modelling fulfils various roles in facilitating personal and societal transformation. These roles encompass instructive, motivational, social prompting, and social construction functions. In the instructive role, models convey information, ethical principles, cognitive abilities, and novel patterns of behaviour (Bandura, 1986; Bandura, 1977).

Graph 1 shows the theory behind the study specifically Social Cognitive Career Theory and the influence in promoting social roles.

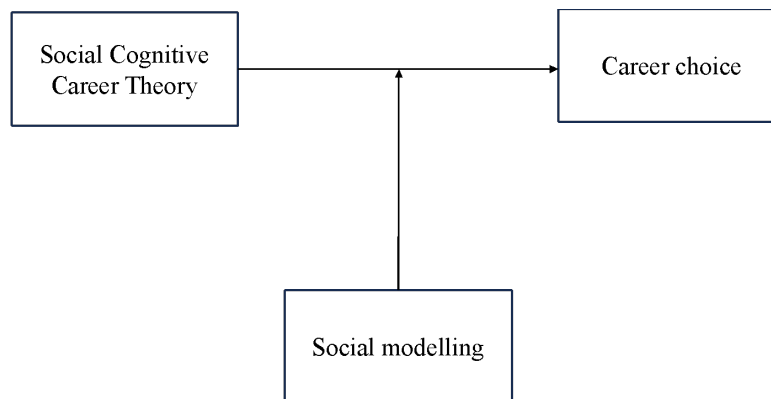


Figure 1: theory behind the study. Source: personal elaboration.

In recent times, Twitter has emerged as a valuable data source for capturing public sentiment through Social Opinion Mining (SOM). SOM involves the extraction of thoughts, emotions, and attitudes from user-generated online content by employing techniques such as sentiment analysis and topic modelling (Cortis and Davis, 2021). Virtual communities on social media platforms enable real-time, open exchanges of ideas and opinions, rendering them crucial data sources (Aladwani and Dwivedi, 2018; Kizgin et al., 2020; Mashayekhi et al., 2023).

Despite the widespread use of Social Opinion Mining (SOM), it's noteworthy that only a limited number of studies have ventured into this domain (e.g., Alkhamash, 2019; Stella, 2020; Floyd, 2021). Furthermore, most of these studies have primarily focused on the English language and have not considered the geolocation of tweets. This study stands out as the sole investigation of the Italian context, particularly at a regional level.

Specifically, our study aims to assess whether public awareness and discussions on the subject have witnessed changes over time.

This study aims to explore the impact of socioeconomic factors on raising awareness and promoting the emergence of social role models. We specifically concentrate on three socioeconomic dimensions that may affect awareness concerning women in STEM fields: human influence, corporate involvement, and institutional influence. Additionally, we take into account certain control variables.

2. Data

Twitter is a popular source for Social Opinion Mining (SOM) studies. Data is easily accessible through Twitter search APIs using criteria like keywords, locations, dates, and usernames (Cortis and Davis, 2021; Sharifi and Shokouhyar, 2021).

To gather data for this study, tweets in Italian from January 1, 2014, to December 31, 2022, were downloaded using Twitter's API and Twarc2, as recommended by (Uma Maheswari and Dhenakaran, 2023; Saha et al., 2019).

Keywords were selected based on the literature, combining "STEM" with terms related to women, common hashtags for women in STEM, and specific STEM fields like math, engineering, and chemistry (Alkhamash, 2019; Stella, 2020; Floyd, 2021).

The resulting keywords are:

- Word associated with STEM: Gendergap, women, woman, woman, women, researcher, girls, students, student, professor, professors, WomenInScience, WomenScienceDay, scientist, scientists,

womenofscience, womeninscience, UnstoppableWomen, genderequality, womenscientists, womenofscience;

- Single word use: Womenatscitech, womenintech, womenintechnology, girlsintech, girlsintechnology, girlswhocode, womenwhocode, womancoder, girlcoder, femalecoder, womeninCS, womeninIS, womeninIT, WomenEngineers, WomenInAI, StemWomen, WomenInEngineering, engineeringgender, womenengineer, WomenInChemistry, WomeninMath, WomenInMaths, womeninmathematics, DonneinTech, donneinphysics.

We extracted 76,448 tweets with specific keywords and geolocated them using "author.location" data. A Python script provided latitude, longitude, and user locations. Due to incomplete author location information, a 29,985-tweet sample (39.22% of the initial dataset) was obtained.

In Table 1, analysing the time trend over the years, it can be observed that public awareness and interest have increased over time, from 668 tweets in 2014 to 8,746 tweets in 2022.

Table 1: Number of tweets over the years, source: personal processing.

	Tweet about STEM and women	Tweets about STEM and women geolocated	% of tweets geolocated on the total
2014	1,507	668	44.33%
2015	1,567	610	38.93%
2016	5,440	2,171	39.91%
2017	7,748	3,454	44.58%
2018	9,507	4,208	44.26%
2019	8,150	3,768	46.23%
2020	6,749	2,561	37.95%
2021	11,839	3,799	32.09%
2022	23,941	8,746	36.53%
Total	76,448	29,985	39.22%

Table 2 shows all the variables used in the study.

Table 2: Variables used in the study, source: personal elaboration.

Variables	Description	Source
Dependent		
Tweets	Number of tweets made in a certain region in a specific year	Twitter
Independent		
Risk of poverty	% of people at risk of poverty	Eurostat
Women doing research	% of women involved in research and development or are researchers	Eurostat
Women Patenting	Number of women who have patented	OECD REGPAT
Active women	Thousands of economically active women	Eurostat
Female education	% of women who have an educational attainment between 5-8 on the ISCED scale	Eurostat
SDG 10	Dummy equal to 1 if there is at least one company in the region that claims to support SDG 10 in a given year	Refinitiv
Board Diversity Policy	Number of companies that have a gender diversity policy on the board of directors	Refinitiv
Diversity & Opportunity Policy	Number of companies that have a policy to promote diversity and equal opportunities	Refinitiv

Variables	Description	Source
Female unemployment	Female unemployment rate	Eurostat
Men's Assembly	Male quota of members in Regional Assemblies	EIGE Gender Statistics DB
EQI	European Quality of Government Index	European Commission

2.1 Sources

The variables used in this study were derived from a diverse set of data sources. These sources encompass *EUROSTAT*, the *EIGE Gender Statistics DB*, the *European Commission*, *OECD REGPAT* and *Refinitiv*.

EUROSTAT, serving as the statistical arm of the European Union, is responsible for aggregating and processing data contributed by EU Member States. Information pertaining to various factors, such as the risk of poverty, the participation of women in research activities, the economically active women, women holding educational attainment levels between 5-8 on the ISCED scale, and unemployment women statistics.

EIGE Gender Statistics DB acts as a repository for gender-related data from across the European Union. It aims to provide statistical insights that can be used by European Commission's endeavours in advancing gender equality. Data from this source is the male representation in Regional Assemblies.

The *European Commission*, a prominent institution within the European Union, plays a central role in promoting the consistent implementation of the EQI (European Quality of Government Index), a crucial variable used to assess institutional quality on a European scale.

The *OECD REGPAT database*, curated by the OECD, aggregates data on patents registered with institutions like the European Patent Office (EPO) and the Patent Cooperation Treaty (PCT). This source facilitated the extraction of inventor names, allowing for the subsequent determination of their gender and the calculation of the total number of inventors.

Finally, *Refinitiv*, a globally recognized American-British data and infrastructure provider for financial markets, supplied information related to companies that profess their commitment to supporting Sustainable Development Goal 10 (SDG 10). Additionally, data on businesses with gender diversity policies at the board level and policies promoting diversity and equal opportunities at the corporate level were obtained from Refinitiv.

2.2 Variables

The economic situation of people living in a certain region (*Risk of poverty*) is measured by the percentage of the population at risk of poverty.

In order to measure the research commitment of women in a given region, the variables *Women doing research*, which represents the percentage of women researchers, and *Women Patenting*, i.e. the number of women inventors, were considered. To create this variable, all the patents made in Italy were extracted from REGPAT, the inventors (those who designed and created the patent in companies) were considered and using the *World Gender Name Dictionary database* they were classified into men and women. *Active women* measure the thousands of economically active women in a region. The variable *Female education* was used, which represents the percentage of women who have an educational level between 5-8 on the ISCED scale. Finally, *Female unemployment* represents the female unemployment rate.

To consider the influence of the industrial sector active in a region, a series of variables were considered to assess the attention of companies towards inclusion and diversity issues. *SDG 10* is a dummy variable equal to 1 if there is at least one company in the region that claims to support SDG 10 in a given year. *Board Diversity Policy* measures the number of companies that have a gender diversity policy on the board of directors and finally *Diversity and Opportunity Policy* which represents the number of companies that have a company-wide diversity and opportunity policy.

The final aspect under scrutiny pertains to the governance of different Italian regions. The *EQI*, or European Quality of Governance Index, draws upon data sourced from regional governance surveys conducted within the European Union. These surveys initially commenced in 2010 and have been periodically repeated in 2013, 2017, and 2021. The EQI is constructed upon extensive feedback from citizens, encompassing their perspectives and encounters with public sector corruption. It also gauges the level of public trust in the equitable distribution and

quality of public services. *Men's Assembly* is the variable that represents the male share of members in the Regional Assemblies and is an index of gender parity in top positions in regional public institutions.

3. Methodology

To explore the temporal evolution of public awareness ((Fu et al., 2020)), under the influence of economic and social conditions across diverse regions of Italy, we formulated a panel model. In this approach, the 21 Italian regions (with the Autonomous Provinces of Bolzano and Trento considered separately) were designated as the observational units spanning the years 2014 to 2022. The resulting dataset encompasses a total of 189 observations. Given the inherent characteristics of the dependent variable, specifically the count of tweets originating from each region, we employed a panel model using logistic regression with a Poisson-type distribution (Sun and Zhao, 2013).

The choice between a random-effects or fixed-effects model was deliberated through a Hausman test, leading to the selection of the fixed-effects model. The fixed-effects model allows for individual regional variations and incorporates intercepts to account for individual heterogeneity ((Campello et al., 2019)).

The subsequent section delineates the intricacies of the models:

Model 1: *Tweets* = $f(\text{Risk of Poverty} + \text{Women doing research} + \text{Women patenting} + \text{Active women} + \text{Female education} + \text{Female unemployment} + \text{SDG 10} + \text{Diversity policy on the board} + \text{Diversity and opportunities policy} + \text{EQI} + \text{Men's Assembly})$

Model 2: *Tweets* = $f(\text{Risk of Poverty} + \text{Women doing research} + \text{Women patenting} + \text{Active women} + \text{Female education} + \text{Female unemployment} + \text{SDG 10} + \text{Board Diversity Policy} \times \text{Diversity and Opportunity Policy} + \text{EQI} \times \text{Men's Assembly})$

4. Results

Table 3 presents the descriptive statistics of the variables used in the econometric model. The average of *tweets* is 158.65 but the standard deviation is high at 494.1 indicating that there is significant disparity in the regions. Other variables that have a high standard deviation are: *Women Patenting* and *Active women*.

Table 3: Descriptive statistics of the variables used, source: personal elaboration.

Variables	Mean/%	Std. Dev.	Min	Max
Tweets	158.65	494.1	0	5889
Risk of poverty	26.27	12.44	8.1	55.6
Women doing research	34.31	4.75	25.21	45.71
Women Patenting	75.21	135.24	0	747
Active women	516.31	482.67	26.8	2086.7
Female education	21.6	3.44	14.4	30.2
SDG 10	0.17	0.38	0	1
Board Diversity Policy	1.26	3.6	0	29
Diversity & Opportunity Policy	3.13	6.48	0	48
Female unemployment	12.13	5.76	2.8	26.2
Men's Assembly	80.93	9.02	60	100
EQI	-0.92	0.67	-2.23	0.72

Table 4 shows the results of *Poisson logistic regression* with fixed effects.

Table 4: Regression results, source: personal elaboration.

Variables	Model 1	Model 2
	Tweets	Tweets
Risk of poverty	0.043*** (0.004)	0.038*** (0.004)
Women doing research	0.086*** (0.007)	0.032*** (0.007)
Women Patenting	0.001*** (0.0001)	0.001*** (0.0001)
Active women	-0.0003 (0.001)	0 (0.001)
Female education	0.401*** (0.009)	0.411*** (0.009)
SDG 10	-0.006 (0.029)	0.306*** (0.039)
Board Diversity Policy	-0.096*** (0.007)	-0.193*** (0.009)
Diversity & Opportunity Policy	0.05*** (0.006)	0.002 (0.006)
Female unemployment	-0.233*** (0.011)	-0.199*** (0.011)
Men's Assembly	-0.02*** (0.002)	-0.070*** (0.004)
EQI	-0.104* (0.052)	3.025*** (0.285)
Board Diversity Policy x Diversity & Opportunity Policy		0.003*** (0.0001)
Men's Assembly x EQI		-0.040*** (0.003)

In model 1 *Risk of poverty*, *Women doing research* and *Women patenting* are statistically significant ($p < 0.001$) with coefficients of 0.043, 0.086 and 0.001 respectively. *Active women* is not statistically significant and has a negative sign. *Female education* is statistically significant ($p < 0.001$) and has a positive sign with a coefficient of 0.401. *SDG 10* is not statistically significant and has a negative sign. *Board Diversity Policy* is statistically significant ($p < 0.001$) and has a negative sign with a coefficient of -0.096. *Diversity & Opportunity Policy* is statistically significant ($p < 0.001$) and has a positive sign with a coefficient of 0.05. *Female unemployment* and the *Men's assembly* are statistically significant ($p < 0.001$) and have a negative sign with a coefficient of -0.233 and -0.02 respectively. Finally, *EQI* is statistically significant ($p < 0.05$) and has a negative sign with a coefficient of -0.104.

In model 2 *Risk of poverty*, *Women doing research* and *Women patenting* are statistically significant ($p < 0.001$) with coefficients of 0.038, 0.032 and 0.001 respectively.

Risk of poverty sign is probably due to the fact that the more people are at risk of poverty, the better the population understands the need to integrate everyone into the world of work, even in specific sectors.

The presence of women actively engaging in research can likely be attributed to the fact that these individuals, possibly even publicly recognized in the media for their accomplishments, serve as inspiring role models for other women. Their experiences can contribute to the wider dissemination and increased awareness of topics related to women's participation in STEM fields. When women observe their counterparts achieving success and

establishing careers in research, it can serve as a source of inspiration and motivation, encouraging them to consider pursuing careers in these fields as well.

The rise in the number of women involved in patenting and attaining success with innovative technologies and ideas can have a significant impact on raising awareness of women's capabilities in STEM subjects. These women serve as living examples that challenge gender stereotypes suggesting a lack of interest and aptitude in these areas. As mentioned previously, they act as positive role models for other women interested in pursuing STEM careers. Their visibility not only fuels their own passion but also instills a belief in their abilities. In doing so, they foster a network and community that actively supports and empowers other women in their STEM pursuits.

Active women is not statistically significant and has a negative sign. *Female education* is statistically significant ($p < 0.001$) and has a positive sign with a coefficient of 0.401. This might be attributed to the accomplishments and prominence in academia. These women exemplify the abilities, expertise, and dedication that challenge gender stereotypes, inspiring others to pursue STEM careers. They serve as role models. A rise in female graduates or doctorates may signify a shift toward gender equality and STEM inclusion within institutions and culture.

SDG 10 is statistically significant ($p < 0.001$) with a positive sign and a coefficient of 0.306. Companies declaring their commitment to SDG 10 send a powerful message to women in STEM. It signals the company's dedication to reducing disparities and fostering equal opportunities, potentially motivating women to pursue STEM careers, thereby boosting awareness and interest.

Board Diversity Policy is statistically significant ($p < 0.001$) and has a negative sign with a coefficient of -0.193. *Diversity & Opportunity Policy* is not statistically significant and has a positive sign with a coefficient of 0.002. The relationship between *Board Diversity Policy* x *Diversity & Opportunity Policy* is statistically significant ($p < 0.001$) and positive with a coefficient of 0.003.

Board Diversity Policy has a negative sign, and this indicates that taken individually this policy does not have a positive impact on awareness about women in STEM subjects. Although this policy alone may not suffice to raise awareness about women in STEM, when coupled with a comprehensive company-wide diversity and opportunity policy, it can create a synergistic environment that advances gender equality and inclusion. The board-level policy can drive increased female representation in leadership roles, fostering a workplace where women feel valued. Simultaneously, the diversity and opportunities policy may open new avenues for professional growth in STEM fields for women, facilitating their participation and progress. Together, these combined policies can have a positive impact by enhancing awareness of women in STEM and cultivating an inclusive and fair organizational culture.

Female unemployment is statistically significant ($p < 0.001$) and has a negative sign with a coefficient of -0.199. This is likely because unemployment can lead to a decrease in job opportunities for women in STEM, creating a sense of discouragement and reducing women's motivation to pursue a career in that field.

Men's assembly is statistically significant ($p < 0.001$) and has a negative sign with a coefficient of -0.070. *EQI* is statistically significant ($p < 0.001$) and has a positive sign with a coefficient of 3.025, while finally the relationship between *Men's assembly* x *EQI* is statistically significant ($p < 0.001$) and negative with a coefficient of -0.040.

In regions with strong institutions, they can facilitate gender equality in STEM through educational initiatives, awareness campaigns, and project funding. Conversely, when women are underrepresented in leadership roles, it can diminish attention to these issues, limiting opportunities and visibility for women in STEM. The combined effect of these variables can negatively impact women's awareness in STEM. Even with the positive influence of quality institutions, a greater male presence in top positions can mitigate it. Consequently, policies aimed at gender equality by institutions may face obstacles due to the imbalance in positions of power, potentially reducing their attention and effectiveness.

5. Conclusion

The issue of women in STEM fields has gained significant attention, impacting not only those who have chosen STEM careers but also influencing the aspirations of young women considering their educational and career paths. The study reveals that awareness on this topic has grown over time, influenced by external socio-economic factors. Understanding public opinion on this crucial matter is vital for supporting policymakers and corporate leaders in fostering women's inclusion in STEM.

Investing in initiatives to promote women's participation in research can enhance awareness in STEM subjects. Effective scientific communication is key. Presenting women's research in an accessible and understandable manner can raise awareness in society about the valuable contributions made by women in STEM. Having more female scientists in STEM fields introduces diversity to research areas, leading to discoveries that benefit communities. Additionally, they serve as positive role models, challenging gender biases and emphasizing the importance of female mentorship to encourage lasting female presence in STEM.

Companies striving to achieve these goals can promote various programs and initiatives such as professional development, mentorship, scholarships, and partnerships with academic institutions. Collaborations with external organizations can amplify the commitment to diversity and inclusion, fostering knowledge exchange and resource sharing. Such exchanges can raise awareness among women in STEM through knowledge dissemination events, awareness campaigns, and joint projects. Pursuing these sustainable development objectives can also serve as a marketing tool to showcase commitment and garner more attention and visibility on these important issues, ultimately driving social and cultural change. This dissemination can also inspire other companies to show interest in and advocate for these causes.

A limitation of the research is the potential omission of certain relevant keywords. Future developments could involve expanding the sample of analysed tweets to include English tweets from Italy and using bot detection algorithms to filter automated accounts' influence. Replicating the study at a European level could provide a broader understanding of the situation across various countries.

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Enhancing Workplace Inclusivity for TGNC (Transgender/Nonconforming) Communities: “A Path to Psychological-Safety”

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Abstract: Discrimination against transgender and gender nonconforming (TGNC) individuals remains a pervasive issue, significantly impacting their psychological safety and overall well-being. This marginalised community faces an array of challenges, including experiencing homelessness, poverty, and harassment, which are interconnected and, to a considerable extent, a consequence of systemic discrimination. Studies by Tebbe et al. (2019) reveal that the TGNC community grapples with disproportionately high rates of homelessness, poverty, and harassment, thus highlighting the systemic nature of the challenges they confront. Workplace discrimination within the TGNC community extends across a spectrum, impacting individuals' authenticity and potential for forced engagement in underground economy work to offset poverty, including survival sex work and drug dealing (Par & Howe, 2020). Workplace discrimination is a pivotal determinant of psychological safety and well-being for TGNC individuals. Frazier et al. (2017) emphasise the critical importance of preventing discrimination and conflict in the workplace, which contributes to negative mental health outcomes. The consequences of discrimination are profound. A significant portion of the TGNC community reports a history of suicidal ideation, ranging from 45% to 77% (Testa et al., 2017). Promoting psychological safety and well-being for this marginalised community is not only a moral imperative, but also a pathway to fostering more prosperous and inclusive societies. This research utilises a qualitative methodology, through semi-structured interviews among diverse gender identities. By exploring the lived experiences of TGNC individuals in the workplace, this study uncovers the impact of discrimination on psychological well-being. The results of the findings demonstrate how to improve the psychological-safety of gender-diverse communities through

Keywords: Transgender, Psychological-Safety, Workplace, Inclusivity, Gender-Diversity

1. Introduction

The transgender and gender nonconforming (TGNC) community face discrimination rates that systemically influence all factors of this community's psychological safety. This includes living with homeless, poverty, and harassment rates (Tebbe et al., 2019). Experienced workplace discrimination is a large spectrum for this community. On one end, it ranges from individuals feeling unable to live authentically and fear of being fired. Conversely, it has forced more than a quarter of reported unemployed TGNC individuals into survival work, such as survival sex work and drug dealing (Par & Howe, 2020).

Workplace discrimination can be a determining variable for someone who identifies as transgender or gender-expansive in being able to experience workplace psychological safety. Sharma (2019) states that more companies are benefiting their performance by having leadership and management make intentional initiatives to create more diverse environments for their employees. There is an increase within the newer generations of employees who are driven by making their work meaningful. Including expectations of purpose with elements of diversity, equity, and inclusion (Herndon & McCline, 2017). Efforts in this area are proven to increase productivity and promote workplace loyalty and performance (Kundu & Mor, 2017). For TGNC individuals, workplace peer acceptance can be life-changing. When employees view their peers as equals and value inclusion, workplace psychological safety increases, improving the environment for everyone (Frazier et al., 2017). When management participates in transformational change and make cultures DEIB (Diversity, Equity, Inclusion and Belonging)-centered, TGNC individuals must be included in this effort. Thompson et al. (2018) present why all levels of management must be responsible for creating motivation and employee incentives for action.

The general business psychology problem is discrimination experienced by TGNC individuals in the workplace. The specific business psychology problem is understanding how transgender individuals experience workplace discrimination and the impact of stigmas associated with gender identity in the workplace. The gap in the literature is the limited amount of research on gender-diversity and its impact on workplace discrimination and the psychological safety of TGNC workers.

2. Literature Review

For individuals who identify as transgender or gender-expansive, a different reality sets them apart from the other LGB community (lesbian, gay, bisexual community) and their cisgender (not identifying as transgender) colleagues. These experiences vary depending on the individual. They range from physical aggression to micro-aggressions, such as underemployment, unemployment, and survival employment. In approximately half of U.S. states, there are limited or no protections against workplace discrimination for sexual orientation, gender expression and gender identity (Lee et al., 2019).

Existing literature has demonstrated the trends of lack of acceptance, poverty, and impact on mental health for the TGNC population. Some studies cover the barriers to career upward mobility, like promotions (Rudin et al., 2020). Others put a greater emphasis on violence experienced on a daily basis due to the TGNC population not having access to higher standards of living due to their gender identity (Lim et al., 2020). There is a gap present in current research on how leaders can make changes in the workplace for special populations like the TGNC community.

3. Understanding the TGNC Population

3.1 Intersectionality

Issues involving the transgender and gender-expansive community will always include other intersectionality in social identity, such as those who are Black, Indigenous, and Person of Colour. This has further contributed to this population being historically underrepresented in research (Beauregard et al., 2016). As well as underrepresented in the yearly murders of transgender sex workers due to the nature of not being acknowledged as being transgender or being undocumented. Parmenter et al. (2021) discuss the impact of how those within the LGBTQ+ community who identify as people of colour may not have equal access to LGBTQ+ community resilience resources. This can contribute to the lack of reporting and data collection, which ultimately impacts the quality of life. Tillery et al. (2018) presents their research on how sexual minorities may not report violence, and they may have the perception that their allegations will be dismissed by law enforcement. This aligns with other research discussing how those living with the intersectionality of being a transgender sex worker experience a triple threat of sexism, racism, and classism through policing (Bolívar, 2017).

3.2 Femininity and Sexism

Trans Women and those who identify with femininity, specifically face a significant disadvantage in this population (Yavorsky, 2016). A study conducted by Schilt & Connell (2007) observed how male employees respond differently to trans masculine identifying individuals, compared to attitudes about trans women. Similar to other studies, this did not take into account "passing" or if a trans individual was perceived as transgender or cisgender. In these instances, it is also challenging to determine if the cis coworkers were even aware the trans masculine identifying person was even transgender versus the trans women studied in this survey (Asquith et al., 2019). This study can also be compared to another, where male individuals presented higher cisgender and heterosexist attitudes than female individuals in general.

These different forms of discrimination are due to variables such as gender identity expression and sexism. Prior research has demonstrated the impact of trans feminine individuals' income decreasing due to their gender identity (Leppel, 2021). Salaries were impacted by gender identity for Trans Women, which have reported falling by one-third after transitioning (Davidson, 2016). As mentioned earlier, this study does not include those who may have been fired for not coinciding with the bigender normatively.

4. Workplace Psychological Safety

Han & Roh (2020) discuss how workplace psychological safety impacts team collaboration, decision-making, and general safety behaviours. Workplace psychological safety consists of the stakeholders' trust in organisations and their security of being in an environment conducive to productivity through management, structures, and processes. Lerner (2021) presents that for the transgender community, this includes recognition, accountability, and policies as influential factors contributing to one's experience of safety in the workplace. Research has demonstrated that those from underrepresented demographics need a secure climate where they work in order to feel comfortable continuing to invest in their future at a workplace (Arasli et al., 2019). When workplace psychological safety is not prioritised, it can lead to other issues. This includes burnout, negative job

performance, and experienced discrimination (Mueller, 2019). Other researchers have also presented that workplace psychological safety is a necessity in order for organisations to grow (Smeets et al., 2021). This is why workplace psychological safety is considered acting as a dominant driver of learning from errors, as leaders of an organisation can create change.

5. The Impact of Discrimination on Employees

Discrimination, as faced by employees, does not have a one size fits all experience. Kleps (2022) argues that discrimination is not universally recognised. This means that the definition is subject to a shifting and continually contested concept as it relates to the communities experiencing it. Research has demonstrated both the physical and mental implications of discrimination on employees in the workplace. Kim et al. (2020) presents how depression increases risks associated with physical and mental problems. Research by Staiger et al. (2018) discusses how those who experience discrimination in the workplace reported more significant distress as well as more physical health problems. There is also the elevated risk of long-term sickness absence due to mental disorders and growing distrust of organisations where it goes without intervention by management, as discussed in research by Clark et al. (2020) and Guo (2017). This creates both long- and short-term issues when examining a decrease in overall work productivity.

6. Inclusive Workplace Cultures

When there is both positive and negative workplace psychological contract, it can have a domino effect and impact the entire organisation (Sharma & Prasad, 2022). This influences areas such as vital resources, time, energy, respect, and dignity. In organisations where inclusive workplace cultures are valued, there is higher job satisfaction and organisational commitment (Clark et al., 2020). In addition, research by Haq et al. (2018) shows the impact of a lack of inclusive workplace cultures. Where discrimination may be a part of the culture, this study demonstrates that in these organisations, there is a positive correlation between workplace bullying and employee cynicism and distrust.

In organisations that prioritise an inclusive workplace culture, efforts to demonstrate allyship by leaders are crucial. Research by Dunn, N. (2021) demonstrates the importance of the impact of leadership, management, and resource groups in workplaces, including "allies." This is because it shows collaborative support and understanding of each group's identity and unique purpose. Dowell et al. (2019) state that by management implementing efforts of diversity it can be used as a collaborative interaction to promote positive group performance and communication. Inclusive workplace cultures make an effort to have individuals share knowledge to promote collaboration and alignment of stakeholders.

7. Methodology

In this qualitative research study, an interpretative phenomenological analysis (IPA) study combined with hermeneutic phenomenology was used. This approach involved the use of semi-structured interviews to capture the lived experiences, experiential reflections, and meaning-making processes of transgender and gender-expansive individuals within the workplace setting. The primary objective of this study was to delve into the contextual understanding of workplace psychological safety as perceived by the transgender and gender-expansive community across various industries. Additionally, the research adopted a secondary lens to examine the influence of Transformational Leadership Theory on psychological safety. The choice of an interpretive phenomenological approach was driven by its participant-centric and meaning-making characteristics, which have historically proven valuable in research involving the LGBTQ+ community. This methodology was selected to effectively address the intricacies of experiences, social contexts, and the multifaceted meanings derived from lived experiences (Creswell, 2017; Miles and Huberman, 1994; Saldana, 2015).

7.1 Participants, Ethical Considerations, and Limitations

This demographics of participants in this study is presented as it relates to the understanding of gender-identity as a complex spectrum. The intentional use of "they" as vague pronouns is used to honour each participant's gender-diversity, as well as their pronouns. The nature of this study also implies that all individuals' identity must be protected as well as their psychological safety. Each participant's specific demographic information has remained completely anonymous for the study due to the priority of protecting all parts of their identity beyond the identity of being transgender and gender-expansive within the TGNC community. All participants have been assigned numbers to keep their identity anonymous.

The key limitations of this study included a restricted sample size of individuals comfortable discussing any workplace discomfort, trauma, or discomfort without further harm being done. As well as the access to people based on individuals who are comfortable enough to disclose their gender identity. All 11 participants have orally consented to participate in this study, and after coding their recordings have been deleted. According to Creswell (2018), sample size varies for differing types of qualitative research as it relates to the specific narrative and case of each individual's perception. For an IPA study, a sample size of up to 10 and no less than 3 is appropriate. Pietkiewicz and Smith (2014) recommended small sample sizes to encourage a rich and intimate ability to understand a participant's world. The concept of gender diversity as related to social identity is explored through the eleven participants' narratives. The numbers that have been assigned to each participant are used in this chapter as it relates to the discussion of the findings of the data collection to protect intersectional identities.

7.2 Data Collection

Data collection in this study involved semi-structured interviews with eleven participants. These interviews ranged in duration from 25 minutes to one hour and were designed to elicit a comprehensive understanding of the participants' lived experiences. Specifically, as it pertains to the connections between their social identity in the workplace and the concept of psychological safety. To ensure the protection of participants' identities and mental health, the interviews were conducted via Zoom. Only the audio was recorded and subsequently transcribed. Participants were explicitly instructed to keep their cameras turned off and to use pseudonyms during the interviews. Follow-up interactions included the transmission of only select interview questions through email communication.

During the interviews, participants were encouraged to reflect on their personal experiences and employment history within the context of psychological safety, as it relates to their social identification as transgender and gender-expansive individuals in the workplace. Furthermore, participants were asked to share their perspective on their experiential needs in relation to Transformational Leadership and workplace psychological safety. The semi-structured interviews explored the following set of interview questions.

1. **Interview Question Q1:** "What is the lived experience of transgender and gender-expansive individuals in the workplace?"
2. **Interview Question Q2:** "How are lived experiences of discrimination related to social identity in the workplace?"
3. **Interview Question Q3:** "How do you experience your gender identity as it relates to psychological safety and resources in the workplace?"

7.3 Data Analysis

In this study, the transcription of audio recordings was facilitated through Zoom Auto Transcription. The extracted transcriptions were subsequently downloaded and utilised for the purpose of conducting Data Analysis Interviews. Following this, the transcripts were shared with the study participants to ensure the accuracy and fidelity of their responses. To facilitate data analysis, the interview transcripts were organised and coded using InVivo software. Subsequently, a thematic analysis approach was employed to examine the data, focusing on the identification of patterns and commonalities in the responses and collective experiences of the interviewees. The emergent themes were categorised into two distinct groups, namely appreciative themes and phenomenological themes. This systematic analysis process allowed for a comprehensive evaluation of the meaning-making responses of the interviewees and provided valuable insights into the study's research objectives.

8. Research Findings

The IPA study yielded four core themes, each supported by several sub-themes, encompassing multiple pivotal concepts demonstrated by direct quotations and resulting in the identification of 62 initial phenomenological themes. The formulation of three research questions elicited rich and meaningful responses from the 11 participants who engaged in the study. Using InVivo software, the data analysis involved two cycles of coding. Initially, during the first cycle, 62 codes were identified through a pattern-coding process. As recommended by Miles and Huberman (1994), a preliminary list of approximately 12 to 60 codes is suitable for most qualitative studies. Subsequently, a second cycle of value coding was performed using "meta-code" or sub-themes. This involved grouping labels that exhibited similar coded data. This methodological approach led to the emergence of four core themes, as detailed by Saldana (2015). The choice to employ two coding cycles was deemed efficient, considering that three cycles would have been excessive given the volume of data and the presence of

already salient themes. The interpretive analysis process revealed two themes for each Question and Response Set, and 8 themes in total.

Although the participant accounts contained more than one hundred and fifty relevant quotes that supported the interpretive themes constructed, 14 selected quotes have been included in the results tables to provide direct examples of the progression from individual concepts to overarching themes in the thematic analysis process. The alignment between participant accounts, the cited quotes, and the established themes is visually represented in Tables 1, 2, and 3, which showcase excerpts from the narratives as illustrative instances of the narrative statements that gave rise to these thematic insights.

9. Q&R1 Participant Accounts and Related Themes

In response to Interview Question Q1, which sought to understand the lived-experiences of having the social identity of being transgender and gender-expansive within the workplace, numerous shared narratives and participant accounts were documented. These accounts and corresponding details can be found in Table 1.

Table 1: Q&R1 related themes

Coded Statements/Concepts	Themes	Number of participants mentioning these themes
-We have to put in the extra energy to fight to be recognized as our identity. To answer random or invasive questions about our identity. -when I am asked invasive questions about my body, I refuse to answer and make sure to set a boundary because my coworkers aren't owed that information just to satisfy their curiosity	1. Core Theme: Workplace lack of preparedness for gender-identity diversity	11/11
-Unfortunately due to management not respecting my new gender identity, I felt too uncomfortable to keep working because they wouldn't change my name on the schedule or refer to me as my name and pronouns. -Often members would continue to dead name me as well which only perpetuated the uncomfortable environment. After quitting I went to another gym where I also trained the same people and taught different boxing classes.	2. Need for workplace training, resources and policies	11/11

The transition from participant statements to the emergence of interpreted themes is readily apparent. While the number of direct quotations presented for each theme is relatively limited, the sentiments and comments regarding these thematic patterns were consistently prevalent within the narratives of the participants. This consensus is evident from the number of participants, as illustrated in Table 1. Out of 11 participants, all 11 articulated similar statements contributing to the overarching themes. The majority of the 11 participants shared common experiences as it relates to Workplace lack of preparedness for gender-identity diversity,

The guiding sub research question of “how are lived experiences of discrimination related to social identity in the workplace?” has yielded narratives that have contributed to the first core theme. The core theme, workplace lack of preparedness for gender-identity diversity, is a result of a frequently described experience of “need for workplace training” which was prevalent 30 times throughout the participant’s experience. It is also reflective of how this study’s participants had high recurring expressions of how their workplace responsibilities were often hindered by the organisational culture and both physical and virtual environments. During the data collection process, it became evident that each of the participants talked about experiences where their workplace facilitated documented accounts of harassment. This was while stakeholders in leadership had no training nor resources to prevent these incidents to rectify them. The TGNC population frequently encounters situations where their workplace has never had any other transgender and gender-expansive identifying individual at their work. This lack of visibility is a theme often associated with the accounts of lack of preparedness as demonstrated by this participant. In this excerpt, Participant 3 describes how they feel like their job has repeatedly put extra mental health burden on them by having them have to repeatedly educate the staff, taking away from their own workplace responsibilities.

The subtheme of “Need for workplace training, resources and policies” in Table 1 demonstrates the experience that all eleven participants shared. Multiple participants during this study referenced their transition process and the monumental moments that stood out to them the most. This is presented through the findings by participants recounting moments of trauma that were initiated in the workplace by processes and policies not accommodating the nuances of transitioning. Such as a name change.

10. Q&R2 Participant Accounts and Related Themes

Addressing Interview Question Q2, which sought to explore the experiences of discrimination through TGNC social identity within the workplace, a range of perspectives and participant narratives emerged as demonstrated in Table 2.

Table 2: Q&R2 related themes

Coded Statements/Concepts	Themes	Number of participants mentioning these themes
-At the first store location of the customer service job, I was isolated, given an unfair workload, misgendered and ridiculed by my coworkers and shift leads... The solution was for me to change to a morning shift, and I felt that I was being punished twice. -We trans people live in a constant psychological turmoil because our social life always carries some sort of back lash and effect in our mental health due to the constant attack to our energies, our identities.	3. Core Theme: Sacrifice of psychological-safety	11/11
-I know of people who have left their jobs due to discrimination and the difficulty that those individuals then have to endure in finding other means of employment is akin to criminality. -I made it very clear to them, that during pandemic still have large private clientele, when all the trainers returned in real life and trainers were trying to rebuild their clients. I was completely disregarded. I was not given any serious leads, no serious buyers, seriously neglected. -There should have been a warning at least, but everyone who harrasses the trans coworkers doesnt even get a warning.	4. Inequitable job practices	10/11

The second research sub question of “Is workplace psychological-safety experienced differently with intersectionality in social identity?” was represented by the following accounts as they relate to the core theme of “sacrifice of psychological-safety” at work. In the first account Participant One discusses a recurring associated theme that arose during pattern coding in cycle one. These were the experiences associated with “isolation”. These types of experience were presented 34 times throughout all eleven participants. The experience of isolation is associated with the core theme of “sacrifice of psychological-safety”, as transgender and gender-expansive individuals are often excluded from others in the workplace. Participant One discusses in this excerpt how their manager’s resolution to harassment being experienced by the Participant, resulted in a punishment for them instead. As shown in Table 2, the participant’s account consisted of feeling double punishment, “the solution was for me to change to a morning shift, and I felt that I was being punished twice.” In this account, Participant One describes feeling “isolated” in addition to being “punished”. Due to the lack of the manager’s experience of being able to handle gender-identity workplace discrimination, the recipient of the discrimination had to sacrifice their own psychological-safety to accommodate the abuser. This is a common theme that is intertwined through the narratives of the other participants as determined by the subthemes. Lastly, in this account by Participant Two found in Table 2, they discuss how other transgender and gender-expansive individuals’ “social life” and identities have resulted in “backlash” to their mental health due to experiencing an “attack” to their energy and identity. An important experience that Participant Two’s excerpt closes with, is that the resilience of living “in a constant psychological turmoil” is not by “choice”. This is experienced by Participant Two and having strength is shared as the only option to face the “effect” on their mental health.

The emerging theme as present in Table 2 of “Inequitable job practices” is present in ten out of eleven participants. For the participants in the study, inequity is experienced through multiple levels of their workplace. While different participants have expressed feelings of “discrimination” existing through managers, clients, and coworkers, “inequitable” treatment in the workplace is a common recurring theme. This narrative builds off of the last experience of Participant One by displaying the meaning-making of what a lack of preparedness for gender-diversity in the workplace results in.

11. Q&R3 Participant Accounts and Related Themes

In response to Interview Question Q3, which delved into the experience of gender identity in the context of psychological safety and resources within the workplace, multiple thoughts and participant narratives of significance came to the forefront. Table 3 showcases the most impactful quotes, representing a clear progression from participant statements to the resulting interpreted themes. This table simplistic glimpse into experiences and recommendations for organisations. These outline how stakeholders can foster inclusive organisational cultures and establish psychologically safe environments for transgender and gender-expansive individuals.

Table 3: Q&R3 related themes

Coded Statements/Concepts	Themes	Number of participants mentioning these themes
-If training were better, or having these conversations... -New manager has had conversations about treating people with respect.	5. Core Theme: Implement collaborative trainings	9/11
-We did some training at work and it gave us the chance to talk about our lived experience and it gave me the chance to talk to my workers and talk about what they experienced. And it gave me the chance to humanize the lived experience and while it did put the work on me, it gave me the space to have that dialogue.	6. “humanize the lived experience”	11/11

The core theme of “Implement collaborative trainings” is present in nine out of eleven participants. This participant discusses how their gender social identity would have been experienced with more respect if there was training in the workplace. While these accounts in Table 3 both highlight the phenomenon of organisational trainings and existing in the workplace with psychological-safety the theme of “collaborative training” is revealed. Additionally, it also demonstrates how when workplaces value diversity there is also opportunity for greater team collaboration.

This next account by Participant 3 demonstrates how the managers who enforced respect for coworkers was a need experienced that also aligns with the theme for greater efforts of collaboration. This account relates to other participants. All of these themes have an intersectional psychological safety impact on each participant which is why it's important to discuss how this need for team collaboration and respect is also directly mentioned when the core theme of workplace lack of preparedness for gender-identity diversity is being discussed.

As shown in Table 3, Participant Ten mentions in their interview that “gave me the chance to humanise the lived experience”. They discuss this experience as it relates to the context of workplaces empowering employees to tell their stories. However, on the other side of this perspective, the theme of work mandated collaborative training as being a necessary implementation is revealed to create positive psychological-safety impact. As shared by all participants. In this same passage, Participant Ten discusses how they had to actively bring their experience through dialogue to demonstrate the value of different lived experiences and to encourage workplace psychological-safety. In this example Participant ten also discusses how the impact of lack of diversity in leadership leads to social identities being unable to experience psychological-safety.

12. Conclusion



Figure 1: Nguyen Workplace Gender-Diversity Psychological-Safety Model (2023)

After determining the prevalent themes and how they were experienced by the participants, a result of this study is a model that can be used to support psychological safety for TGNC individuals in the workplace. As informed by the findings of the interviews, The Nguyen Workplace Gender-Diversity Psychological-Safety Model can be used to solve to inclusivity problems, as being a guide for leadership and their stakeholders to make holistic assessments and interventions. This model provides a visual map of progressive actions which will empower organisations to create safer and more inclusive cultures of psychological safety for their TGNC employees. When an organisation is able to assess their current workplace environment and culture and then implement the suggested progressive actions, workplace gender-diverse psychological safety will improve not only for TGNC employees, but for entire organisational efficiency.

The purpose of this qualitative IPA study was to understand the lived experiences of transgender and gender-expansive individuals in the workplace by exploring how they experience their social identity as it relates to their workplace and psychosocial safety. The emerging themes emphasise the need for transformational leadership change as it relates to protecting the psychological-safety of different social identities in the workplace.

Through Transformational Leadership Theory in workplace processes, resources, and equitable practices all communities with different social identities could benefit. The findings of this study show how increasing the psychological-safety for those who are gender diverse would lead to higher organisational efficiency. Future studies have the potential to explore how through better understanding of social identity, marginalised communities will be able to contribute to overall increase in workplace efficiency. Through the meaning-making and exploration of experiences, this study reveals the opportunity of understanding the social identity of being transgender and gender-expansive in the workplace.

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The Vulva Dialogues: The Sexual-Bodily Experience of Cisgender Women

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Abstract: Sexuality is an essential part of our lives. Despite being personal, it is deeply impacted by our culture and social scripts. Thus, the sexual-bodily experience of the cisgender woman relates to her life experiences through her body. Nonetheless, the female body is often subjected to prejudice, stigma, and misconceptions, driving women into genital alienation. There is plenty of misinformation on the vulva and the clitoris, even within the scientific community, which not only contributes to many women's unawareness of their own bodies, but also puts their health at risk in the hands of poorly trained surgeons. Furthermore, the sexual-bodily experience of the cisgender woman is commonly observed from a phallogocentric perspective, which tends to override and neglect her agency. My research seeks to analyse the most relevant aspects of the sexual-bodily experience of Portuguese cisgender women who date mostly men, focusing on their relationship with their vulva, their clitoris, and their sexual pleasure. I also want to identify the role of medicine and health professionals in that relationship, within the Western medicine perspective of the female body. The fieldwork is being carried out by qualitative methods, divided into three parts: 1) a minimum of 15 semi-structured, in-depth interviews with health professionals (gynaecologists, gynaecological surgeons, and sex therapists) working in the Lisbon Metropolitan Area (LMA); 2) a minimum of 15 in-depth interviews via the Biographic-Narrative Interpretative Method (BNIM) with Portuguese cisgender women residing in the LMA who date mostly men; and 3) a review of how female genitalia are portrayed in anatomy books used in Portugal's top medical schools. Therefore, I aim to understand how centuries of control over the female body and decades of medicalization of female sexuality have impacted the corporeality and sexuality of Portuguese cisgender women, to contribute to an in-depth debate on such matters in Sociology.

Keywords: Clitoris; Female Sexual-Bodily Experience; Female Sexual Pleasure; Medicalization of Female Sexuality; Vagina; Vulva.

1. The Female Body in History

Since the beginning of Christianity, matters related to the female body's sexuality and reproductive cycles have been associated with impurity, temptation, and sin for awakening male desire (Federici, 2017). It was also perceived as "closer to matter" – ergo, further from God – than the male's because of menstruation, rendering a woman "a dangerous agent of Satan" (Delumeau, 2009: 462, 465). Hence, subjugating the female body meant mastering the danger and impurity contained therein. Even in science, the study of the female body was structured by direct comparison to the male's, perceived as the superior and powerful *standard* (Martin, 2001; Strömquist, 2018), whilst female sexuality was merely suited to social demands (Bourdieu, 2017; Strömquist, 2018). In the 16th century, the clitoris was finally noted by anatomists. But "what constituted the clitoris ... what characterized normal anatomy and whether having a clitoris ... was normal were controversial issues" at the time (O'Connell, Sanjeevan and Hutson, 2005: 1189). Up to the end of 1700, "a kind of unisex body model seemed to have dominated the European philosophical and medical thought", on the premise of the male body as "ideal", as the "normal" body standard and the woman's as "an imperfect copy ... and nothing more than that" (Aboim, 2013: 23).

From the 18th century onwards, the idea of two distinct bodies emerged and women came to be seen "as sexual beings, yet ... still... conceived as a womb" (Aboim, 2013: 23). After the Industrial Revolution, the growth of capitalism meant "the female body was appropriated by the State and by men, forced to function as a means for reproduction and accumulation of labour" (Federici, 2017: 34), which reduced the social relevance of women's bodies and sexuality to their reproductive capacity, removing them from productive activities (Aboim, 2012). Consequently, there was a separation between public and private life and between men and women: whilst private/domestic life was associated with motherhood and women, "the public sphere – of industrial production and political citizenship – remained linked to the masculine, reproducing its supremacy" (Aboim, 2012: 98).

The 19th century saw the drive for public health administration and birth control – from a normative and regulatory perspective (Bozon, 2004) – especially based on the 'normal' vs. 'abnormal' dichotomy. This meant medicine and social sciences put sexuality in the public sphere. At the end of the 19th and beginning of the 20th century, a "science of sex (sexology)" emerged (Aboim, 2013: 23). Freud's theory of sexuality made an association between sex and the pursuit of pleasure, whereupon the perspectives of sexual pleasure and female

orgasm began being considered and discussed (Bozon, 2004). However, Freud did a great disservice to female sexuality by claiming vaginal orgasm as superior and more mature than clitoral, completely disregarding the importance of the clitoris for women's pleasure (Enright, 2019) and sexual-bodily experience.

In 1901, the clitoris was included in *Gray's Anatomy* – considered a world reference in anatomy since its first edition in 1858 – only to be completely excluded from its 25th edition by Dr Charles Goss (Enright, 2019). There is no justification for Dr Goss's editorial choice, but "one theory is that Goss was influenced by Sigmund Freud's disparaging attitude towards the clitoris" (Enright, 2019: 55). Nonetheless, the possibility of this choice without any public objection from the scientific community says a lot about the importance given to women's genitalia.

In the 1960s, the so-called "sexual revolution" caused a "massive diffusion of medical contraceptive methods, which act on the female physiology (pill, intrauterine device or IUD, female sterilisation) and are controlled by women" (Bozon, 2004: 43). Such methods enabled greater female sexual agency, allowing women to have more control over their bodies, separating sex from reproduction, and altering women's sexual-bodily experience.

After centuries of oppression and control of the female body, women have overcome several obstacles to the fulfilment of their sexual-bodily experience, achieving greater social, economic, and political empowerment, since sexual agency is essential to other types of agencies (Hawkins, Cornwall and Lewin, 2011; Turner, 2008). Whilst all aspects of the cisgender woman's body play an important role in her sexual-bodily experience, the vulva and the clitoris seem to be the most neglected and controversial.

2. The Sexual-Bodily Experience of the Cisgender Woman

We mark our presence, distinguish ourselves as individuals, build and express our ideal or desired social identities through our bodies (Goffman, 2009; Turner, 2008), which are the object of our conceptions, apprehensions, and contemplations (Crossley, 2001). Our sexuality is a construct mediated by the creation of meaning between our bodies, the signs we associate with pleasure, and our other. It provides us with our history: however private and intimate, it reflects the time and the society in which we live (Merleau-Ponty, 1999; Young, 2005). Hence, the sexual-bodily experience of the cisgender woman concerns her life experiences resulting from her interactions with the world through her body (Young, 2005).

The vulva is one of the most important aspects of a woman's sexual-bodily experience. Like many other parts of her body, it also changes: the colouring, amount of subcutaneous fat and tissue of the vulva, and the amount of pubic hair change through a woman's life (Farage and Maibach, 2005). These changes are perceived by their medical functionality (Braun, 2000; Martin, 2001), and are socially treated as taboo; little is said and understood about them (Braun, 2005; Enright, 2019; Martin, 2001).

The word 'vulva' seems to be stigmatised – as it is rarely used – vis-à-vis 'vagina', often misused in reference to the vulva. Furthermore, it is uncommon to find a direct association between vulva, vagina, and sexuality, albeit vulva and vagina are female sexual organs. Even in medical dictionaries, such as the British Medical Association's (BMA, 2018), the word 'vulva' appears only with a physiological description – followed by an explanation of itching, dermatitis, and other infections that can affect the vulva – without any reference to female sexuality. However, in the same dictionary, the word 'penis' has a clear sexual association, making no mention of any physical symptoms that may affect the male sexual organ, despite them being possible to occur. These asexual descriptions of the female genitalia also appear in popular English and Portuguese dictionaries: Oxford's (2023) and Cambridge's (2023) make no clear reference to female sexuality in their definitions of 'vagina' and Porto Editora's (2023) makes no such reference in their definition of 'vulva'. The same dictionaries define 'clitoris' as if its *glans* were its *entire body*.

Similarly, the social sciences also offer misinformation about the female genitalia: in 2020, a search on EBSCOhost – one of the largest databases for scientific journals – for papers published between 2010 and 2020 which mentioned the word 'vulva' revealed that of the nearly 8,000 papers found, only three were in social sciences. However, the same search for 'vagina' found almost 19,000 papers, of which 51 in social sciences, but most of them used the word 'vagina' *in reference to the vulva*. Thus, one could argue that calling the vulva a vagina is *a choice* – whether conscious or not – to focus exclusively on the reproductive aspect of a woman's body (vaginal childbirth) and/or on male heterosexual pleasure (vaginal penetration), much to the detriment of a broader view on female sexuality (Braun and Kitzinger, 2001).

Expectedly, such confusion and misinformation about the vulva and the clitoris are also common to many women. The Eve Appeal, a gynaecological cancer research charity based in the UK, carried out a study in 2016 with 1,000 British women (O'Malley, 2018) between 16 and 75 years old (The Eve Appeal, 2016). Part of the

study consisted of asking these women to identify the parts in the female genitalia and reproductive organs. Forty-four percent of them “were unable to identify the vagina” and 60% failed to identify the vulva in the illustrations (O’Malley, 2018: 1). Additionally, 65% claimed to “have a problem using the words vagina or vulva, and nearly 40% of 16-25-year-olds resort to using code names such as ‘lady parts’ or ‘women’s bits’ to discuss gynaecological health” (The Eve Appeal, 2016: 1). It appears a level of shame surrounds these women’s relationship with their vulvas. The same can be said of many Portuguese women. According to Marta Cerqueira (2021), a Portuguese Sexologist, “there are 25-, 30- or 35-year-old women who have never seen their vulva” (Cerqueira, 2021: 1). The health professionals I have interviewed so far confirm these statements; many of their patients/clients had not previously seen their vulvas and did not use the word ‘vulva’ referring to their genitalia.

The vulva is subject to scrutiny because of its appearance, which impacts women’s acceptance of their bodies, leading them to “genital alienation” (Labuski, 2015: 29): on the one hand, some have never seen their genitals (Cerqueira, 2021) or can name its parts (El-Hamamsy *et al*, 2022; The Eve Appeal, 2016); on the other hand, some pursue infantile aesthetic ideals of the vulva (Plowman, 2010), resorting to permanent hair removal, bleaching, and labiaplasty, a surgical procedure that removes partially or completely the inner labia, and is analogous to Female Genital Mutilation (Shahvisi, 2023). Labiaplasty, like any surgery, involves risks, “including infection, pain during sex, scarring and lack of sensation” (Enright, 2019: 84), especially if the surgeon has not had access to the correct information on the neurovascular anatomy of the region.

According to the International Society of Aesthetic Plastic Surgery (ISAPS, 2023), 194,086 labiaplasties were performed worldwide in 2022, an increase of over 46% in comparison to 2018. In Europe, Germany was the country with the highest reported number of labiaplasties: 10,528. Notwithstanding, the ISAPS survey only covers 16 countries, not all plastic surgeons in those countries are members of the organisation, and their participation in the survey is voluntary. Furthermore, labiaplasties are also performed by gynaecologists. Therefore, the actual number of labiaplasties performed in the world every year is most likely much higher than what is shown in the ISAPS report. In the UK, doctors have reported their nine-year-old patients being bothered by how their vulvas look (Enright, 2019), and “in 2015-16, more than 200 girls under eighteen had labiaplasty on the NHS; more than 150 of them were under fifteen” (Enright, 2019: 84). In the US, some women opt for the complete removal of the inner labia: “A Californian gynaecologist called Dr Red Alinsod has introduced a procedure that removes the inner labia completely – it’s called the ‘Barbie’ and it creates a ‘clamshell’ look” (Enright, 2019: 85). As stated on Dr Alinsod’s website, his work was “instrumental in the development of vulvovaginal cosmetic surgery” (AIAVS, 2023: 1).

For some, labiaplasty can offer women empowerment of their bodies and improvement of their sexual agency when their vulva is a source of trauma and insecurity (Dodsworth, 2019). Nevertheless, we must consider the reasons causing such traumas and insecurities. Negative associations with the female genitalia must be contemplated as a contributing factor in the increase of female genital cosmetic surgeries (FGCS) (Braun, 2005). All the misinformation, taboos, and stigma still surrounding the vulva, the clitoris, and women’s sexual pleasure have a negative impact on women’s sex lives. The study “Differences in Orgasm Frequency Among Gay, Lesbian, Bisexual, and Heterosexual Men and Women in a U.S. National Sample” (Frederick *et al*, 2018) found that 95% of heterosexual men reached orgasm in all or almost all their sexual experiences versus 65% of heterosexual women. The researchers interviewed approximately 53,000 adults from 18 to 65 years old. One could question how the sexual politics (Millet, 1970) of the female body take place for women in heterosexual sex, how these women perceive the sexual role *expected* of them, whether heterosexual sex is socially perceived – and experienced – from a phallogocentric perspective, what these women understand by pleasure, how they materialise their sexual desire, and what model of sexual agency they experience.

Another aspect of female sexuality that is still very poorly understood and problematised (O’Connell, Sanjeevan and Hutson, 2005; Pin, 2018) is the clitoris, the main source of sexual pleasure for women (Strömquist, 2018). Although the existence of the clitoris has been known since the 16th century and its actual shape since the 17th century, the study of its anatomy has always been subjected to social issues and surrounded by controversy (O’Connell, Sanjeevan and Hutson, 2005). The precise physiology of the clitoris – information on its shape, size, and neurovascular anatomy – is still missing from most renowned anatomy books (Pin, 2018). The anatomy books I have reviewed so far *Anatomia e Fisiologia de Seeley* (VanPutte *et al*, 2016) and the first-ever Portuguese edition of an anatomy book, *Anatomia Humana: Manual para Estudantes* (Ferreira, Furtado and Neto, 2020) – do not have detailed information on the clitoris either but do for the penis. Misinformation about the clitoris puts women’s sexual pleasure and physical health at risk: plastic, gynaecological, and urological surgeries are performed by doctors who usually do not have full knowledge of the clitoris (Enright, 2019; O’Connell, Sanjeevan and Hutson, 2005; Pin, 2018), especially regarding its nerves (Pin, 2018). Thus, the average lay person does not

know the real size, location, and shape of the clitoris, especially since only the glans – approximately 10% of its length – is visible to the naked eye (Gross, 2020).

Despite all the progress women have made in their sexual-bodily experience, one must realise that heterosexual cisgender women's pleasure is still conditioned by a phallocentric hegemony: women's role is perceived as supporting to men's and is often described as *dysfunctional* (Alarcão, Machado and Giami, 2016; Tiefer, 2004). Consequently, there is a tendency for many more men than women to reach an orgasm in heterosexual sex (Frederick *et al*, 2018; Laan *et al*, 2021). When social factors are disregarded and sexuality is perceived in a health-disease dichotomy, women have their alleged dysfunction medicalised, for which 'treatment' is available (Alarcão, Machado and Giami, 2016; Hawkins, Cornwall and Lewin, 2011; Lupton, 2003).

3. Objectives and Methodology

I am researching the sexual-bodily experience of Portuguese cisgender women who date mostly men. Notwithstanding sex and gender being socially constructed (Butler, 2004), I wish to understand the reality of women who have been socialized and always lived in cisgender bodies, due to the repression and silencing women's bodies have endured throughout Western history (Strömquist, 2018; Weitz, 1998). My general objectives are to research:

1. the perception of health professionals (gynaecologists, gynaecological surgeons, and sex therapists) on Portuguese cisgender women's relationships with their genitals and sexuality,
2. these women's sexual-bodily experience, especially their relationship with their genitals and sexual pleasure,
3. the female genitalia, especially the neurovascular anatomy of the clitoris, in anatomy books used in Portugal's top medical schools.

My research question is: how is the sexual-bodily experience of Portuguese cisgender women, and what are the possible influences from health professionals on the women's perception of their genitals and pleasure?

The research is being carried out by qualitative methods divided into three parts. Firstly, I am conducting semi-structured in-depth interviews with at least 15 health professionals working in the Lisbon Metropolitan Area (LMA), using specific scripts per specialty. The use of semi-structured scripts allows me to compare interviews and have better control of the duration of each interview, being respectful of the interviewee's demanding schedule. The professionals are being recruited based on the visibility and scope of their work: their potential social impact, according to their places of work and possible presence in the media (newspapers, magazines, radio, TV, podcasts, and social media).

Secondly, I will conduct biographical narrative interviews, using the Biographic Narrative Interpretive Method (BNIM) with at least 15 Portuguese women residing in the LMA. To recruit the women, I will take advantage of various events focused on women's topics to approach potential interviewees, resort to recommendations from the health professionals I interview, and from my network. Additionally, I have set up a website (www.thevulvadiologues.com) to make the project publicly available to a wider audience, increase recruitment opportunities and, later, upload my thesis/the results of my research, giving feedback to all interviewees and any other parties who have contributed to my research, promoting a broader and more inclusive debate on this subject.

I will apply BNIM (Wengraf, 2001) associated with the semi-structured interview technique. Whilst BNIM will allow me to obtain a more spontaneous account of the interviewees' sexual-bodily experience, the semi-structured approach will allow me to collect sociodemographic data and apply a visual test on their knowledge of female genitalia. BNIM involves asking an open-ended question and letting the interviewee respond freely, without interruptions. The insights I am gaining from the health professionals shall help me elaborate that question. At the end of the interviewee's narrative, the interviewer asks follow-up questions, with keywords used by the interviewee. In my case, since I also want to test their knowledge of female genitalia, after applying BNIM I will provide the women with illustrations of a vulva (Figure 1) and a clitoris (Figure 2) and ask them to name as many parts as they can. The same illustrations will be shown to them afterwards, but with all parts identified (Figures 3 and 4), to offer them reciprocity and create an opportunity for the interviewees to become informed or confirm their understanding of their genitals. Next, I will ask the sociodemographic questions. Whilst BNIM will allow the women to spontaneously share what they consider most significant (Wengraf, 2001) to their sexual-bodily experience and their relationship with their vulva, clitoris and pleasure, the semi-structured part of the interview will enable a comparative analysis between the profiles. Therefore, I expect this association of

two different techniques to generate richer and more comprehensive research material. The next step of BNIM involves a follow-up interview after a preliminary analysis.

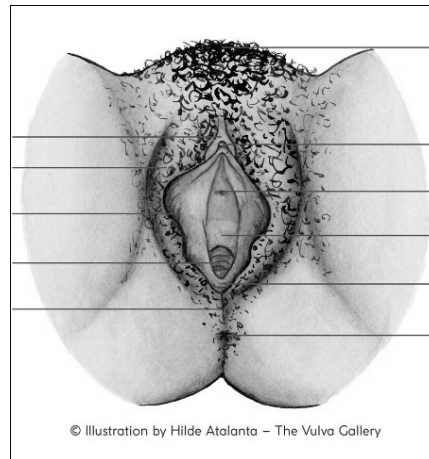


Figure 1: Vulva with no identification (Atlanta, 2023).

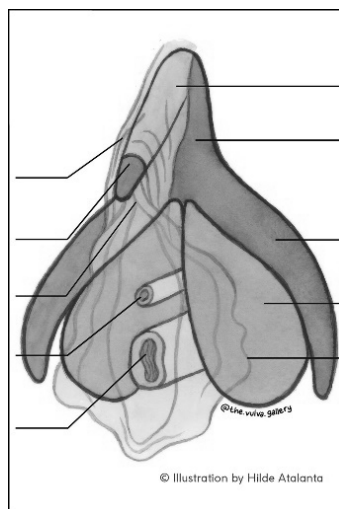


Figure 2: Erect clitoris with no identification (Atlanta, 2023).

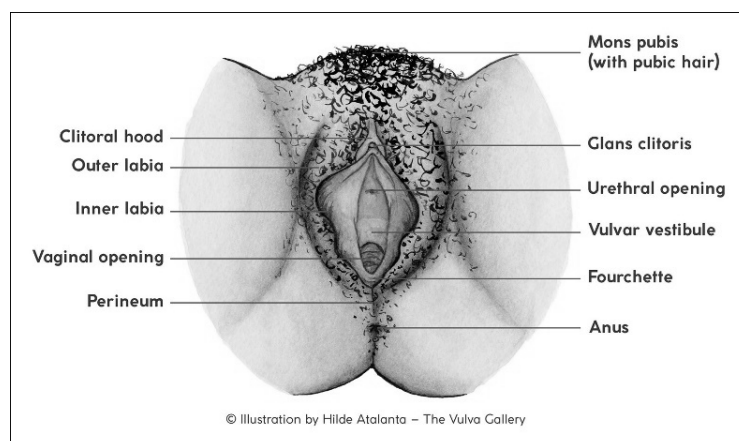


Figure 3: Vulva with all parts identified (Atlanta, 2023).

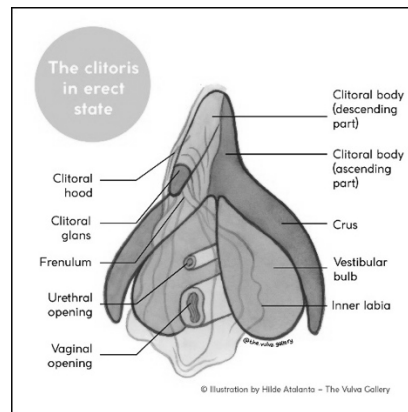


Figure 4: Erect clitoris with all parts identified (Atlanta, 2023).

At the end of each interview, I will make myself be available to the interviewees for additional conversations should they feel the need to add or change anything in their accounts. With the health professionals, I will also ask their permission for future contact for any clarification that may be necessary during my analysis. As for the women, I will inform them about the necessary follow-up to complete the BNIM interview technique, as well as make myself available to listen to them again between the first interview and the next, should they feel the need for additional contact. All interviewees will also be informed about the option to have their participation excluded from the study at any time between their interviews and the submission of the thesis.

All in-depth interviews are being conducted at private sites chosen by the interviewees to ensure their comfort, privacy, and convenience. The narratives of the health professionals used in the thesis will always be contextualized and duly credited, to avoid misrepresentation of their words and intentions in my interpretation. In the cisgender women's case, though their testimonies will be anonymous, I will give them the option to choose their aliases. Despite the anonymity, their narratives will also be contextualized.

Thirdly, I am carrying out desk research on the main anatomy books used in Portugal's top medical schools to verify how the female genitalia – especially the neurovascular anatomy of the clitoris – is portrayed in those books compared to the drawings procured by Jessica Pin (Figure 5), which contain details of such anatomy (Kelling *et al*, 2020). This part of the research aims to understand what kind of knowledge is being passed on to current medical students, bound to perform surgeries on female genitalia in the future.

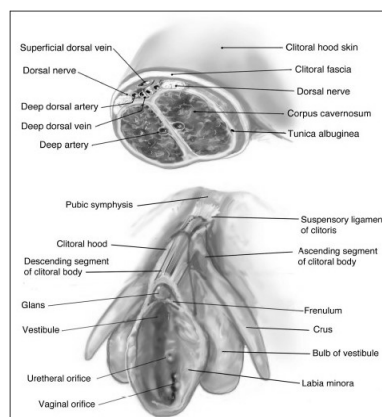


Figure 5: Detailing of the neurovascular anatomy of the clitoris currently missing from most anatomy books (Pin, 2020).

My research follows the best and current practices for conducting sociological research and reporting results, as well as the General Data Protection Regulation (GDPR) of 27 April 2016, and Iscte's Code of Ethical Conduct in Research (Iscte-IUL, 2016). The testimonies of the interviewees will be used exclusively for this study and any academic work derived from it. These guarantees will be formalized by an informed consent form signed by all parties involved. All material related to the study – the signed forms, my notes, the recordings, the transcripts, and any other documents related to the recruitment, interviews, and data analysis – is being stored on an external hard drive, without any backup in the cloud, to guarantee that only I have access to them.

Lastly, it is important to point out my position as an observer and speaker: I am a cisgender, heterosexual, feminist, and socialist woman, which will certainly bring a greater critical perspective in the observation and analysis of the data. I also aspire to raise public awareness of women's genitals – especially its correct name and the real shape and position of the clitoris – and advocate for its correct representation in medical literature being used in universities throughout Portugal. Therefore, my research aims to offer some contribution to the contemporary understanding of the sexual-bodily experience of cisgender women, as well as address aspects that are paramount to this topic and deserve greater prominence within the social sciences debates.

4. Conclusion

As stated thus far, the cisgender woman's body has long been oppressed and silenced. Part of this silencing involves misinformation in the educational and medical fields, being reinforced in the symbolic field, through our social discourse. Such oppression, silencing and misinformation puts women's health and sexual-bodily experience at risk. Albeit my fieldwork is just beginning, so far it seems Portugal follows suit in some of the same trends observed in other European countries and the in the U.S. Ergo, I intend to use the results of my research to shed more light on female genital alienation in Portugal, and thus contribute to deeper discussions and understanding of the sexual-bodily experience of Portuguese cisgender women.

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Diversity and Inclusion in the South African Telecommunications Industry: an LGBTQIA+ Employee Perspective

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Abstract: Despite improvements globally in actions and campaigns supporting the LGBTQIA+ community, individuals who belong to the community continue to face immense backlash and challenges in their lives for their choices and beliefs. In Africa, there are still over 30 countries that criminalise acts of homosexuality. People who identify as LGBTQIA+ often face discrimination, harassment, and violence because of their sexual orientation or gender in social and workplace settings. This study aimed to understand the experiences of employees who align with the LGBTQIA+ community and how they navigate diversity and inclusion in the workplace. While examining whether organisational culture may enable the seamless reasonable accommodation and inclusion of LGBTQIA+ employees in the workplace. The study focused on one sector at this time to further understand if the South African telecommunications industry is embracing diversity, equity and inclusion of employees who identify as LGBTQIA+. The two theories which guided the study were the queer theory and institutional theory. These theories assisted in providing a greater understanding of the concepts and phenomena studied. Providing a lens that enabled an understanding of how an individual's unique experiences in the workplace may be perceived, as a deterrence for inclusion. Following a mixed qualitative methodology, data was gathered using a two-phase approach. The first phase entailed purposively selecting eight participants who engaged in a reflective diary. The second phase involved a set of interviews with fifteen participants. Data gathered from both phases were coded and thematically analysed enabling a triangulation of findings. Which revealed that diversity and inclusion measures are unmet. Employees who identify, as belonging to the LGBTQIA+ community are challenged each day with many resigning in an attempt to escape discrimination, harassment, and abuse. Participant's commitment to continue with the diary study for fear of being identified as the first limitation. The second limitation was the industry's reluctance to share their insights. Trust had to be built to continue with the research process. Recommendation for further research in this area and for studies to include other sectors with larger samples.

Keywords: Diversity, Inclusion, Organisational Culture, Workplace, LGBTQIA+, South Africa.

1. Introduction and Background

The LGBTQIA+ community is a group which experiences a lot of discrimination, judgment, harassment and bullying because of their sexuality and gender preferences (Ricciardo, et al., 2021). As society assumes heterosexuality and gender binary as a norm, these societal assumptions lead to an increase in the discrimination and harassment of people who identify as LGBTQIA+ (Mackay, 2021). LGBTQIA+ individuals' identities are devalued because of society's larger acceptance of heteronormative (Goshorn, Mason, & Sperandio, 2022).

In Africa, three out of five countries have laws that criminalise acts of homosexuality including any public expression of gender or sexuality that does not conform to societal standards or heterosexual norms (Pichon & Kourchoudian, 2019). Homophobic behaviour is still widespread globally and in a country like Cameroon people can be sentenced to up to five years in prison for same-sex relationships (Maidment, 2021). This means people who identify as LGBTQIA+ must hide who they are for fear of being castrated or arrested.

2. Research Problem

People who identify as lesbian, gay, bisexual, transgender, intersex, queer/questioning, and asexual plus form a large community globally. However, LGBTQIA+ individuals are more likely to be discriminated against, harassed, or subjected to some form of violence because of their sexual orientation or identity when compared to those who identify as heterosexual (Subhrajit, 2014). Although there have been significant improvements over the past two decades in the human rights sphere regarding gender and sexual diversity, discrimination against LGBTQIA+ individuals have not ceased to exist (Australian Human Rights Commission, 2015).

Homophobic behaviour is still widespread globally and in a country like Cameroon people can be sentenced to up to five years in prison for same-sex relationships (Maidment, 2021). This means that people who identify as LGBTQIA+ must hide who they are for fear of being castrated or arrested. To date, LGBTQIA+ individuals continue to face exclusion and discrimination (Pearce, Gardiner, Cumming-Potvin, & Martino, 2016; Terra, et al., 2021). Homosexuality is still illegal in certain countries and in some of those countries, homosexual acts are punishable

by the death penalty (Knight & Wilson, 2016). In such instances, LGBTQIA+ individuals are not at liberty to publicly express themselves or their sexual orientation for fear of what could happen to them or how they may be treated.

Society still assumes heterosexuality and gender binary as a norm, these societal assumptions lead to an increase in the discrimination and harassment of individuals who identify as LGBTQIA+ (Mackay, 2021; Subhrajit, 2014). LGBTQIA+ individuals are not as free as one may assume, this is exacerbated by the stigmas associated with being part of the LGBTQIA+ community, the treatment and judgment passed on them. LGBTQIA+ individuals are often stereotyped, stigmatized, or labelled according to what others perceive them to be without really knowing the person they work alongside (Pichler & Ruggs, 2018). The LGBTQIA+ community is challenged in larger social contexts, and they continue to face several challenges globally including in the workplace (Subhrajit, 2014). Globally 64 countries have laws that criminalise homosexuality, in Africa, there are still over 30 countries that prohibit same-sex relationships, in countries like Sudan, Mauritania, and Somalia the death penalty is prescribed for those who are homosexual (Bhandari, 2023; BBC News, 2023). In a workplace environment, the majority of those who identify as LGBTQIA+ are fearful of disclosing their sexual orientation as they think that it might lead to them losing their job (Subhrajit, 2014).

Some organisational processes and business environments still do not reasonably accommodate employees who identify as LGBTQIA+ (Ricciardo, et al., 2021). Whilst in South Africa, the LGBTQIA+ community or employees' rights are protected under several regulations such as the Employment Equity Act (EEA) which prohibits discrimination based on sexual orientation and provides procedures to follow in handling such discrimination (Benjamin, 2019). There is still a large number of organisations that do not take the initiative to be inclusive, considerate or reasonably accommodate LGBTQIA+ employees for example, including gender-neutral restrooms, implementing the use of pronouns, creating a conducive and safe workplace or amending human resource benefits such as adoption or parental leave.

3. Research Objectives

The objectives of this study were the following:

- To understand the workplace experiences of LGBTQIA+ employees within the SA telecommunication industry.
- To explore how diversity and inclusion can be used as tools or agents for the reasonable accommodation of the LGBTQIA+ community within the SA telecommunication industry.
- To examine whether organisational culture may enable the seamless inclusion of LGBTQIA+ employees within the SA telecommunication industry.

4. Research Methodology

To provide an understanding of the research question and interpret the social interaction, the study adopts a qualitative methodology approach. This research approach aided in providing an understanding of how individuals who identify as LGBTQIA+ navigate daily in the workplace, and what their lived experiences are like. Following a mixed qualitative methodology, data was gathered using a two-phase approach. The first phase entailed purposively selecting eight participants who engaged in a reflective diary. The second phase involved a set of interviews with fifteen participants. The data gathered from both phases were coded and thematically analysed enabling a triangulation of findings.

5. Theoretical Framework

The two theories which guided the study were the queer theory and institutional theory. These theories assisted in providing a greater understanding of the concepts and phenomena studied. Providing a lens that enabled an understanding of how an individual's unique experiences in the workplace may be perceived, as a deterrence for inclusion.

The queer theory provided a lens to study how an individual's unique experiences in the workplace may create discrimination or privilege for them based on their gender or sexuality. The institutional theory of diversity management was used as a lens to study how LGBTQIA+ individuals in the workplace are reasonably accommodated and managed as they navigate the work environment, organisational culture, and workplace experiences.

6. Literature Review on LGBTQIA+

Many individuals who identify as LGBTQIA+ are afraid to disclose their sexual orientation or identity for fear of being subjected to harassment, exclusion, or discrimination (Dau & Strauss, 2016). To date, LGBTQIA+ individuals continue to face exclusion and discrimination in their lives (Pearce, Gardiner, Cumming-Potvin, & Martino, 2016; Terra, et al., 2021). Some individuals who identify as LGBTQIA+ do not disclose their sexual identity due to discrimination, harassment and silencing experienced in the workplace (Paisley & Tayar, 2016). In the year 1993, the United States of America's government implemented a policy which would allow LGBTQIA+ individuals to join the military however there was a condition that they keep their sexual orientation a secret, the policy was however later abolished in the year 2011 (Sangha, 2015). In Russia, LGBTQIA+ is not illegal however the signing of a propaganda law in March 2012 indirectly criminalises LGBTQIA+ individuals resulting in homosexuals not freely living their lives (Knight & Wilson, 2016). In Africa, homosexuality is still considered illegal in over 30 countries (Bhandari, 2023). There are however some countries such as the US where there have been some changes and improvements as attitudes of the public have improved towards LGBTQIA+ people in recent years and they now enjoy more rights equated to the past (Rhodes & Stewart, 2016).

Hossain, Atif, Ahmed, & Mia (2020) advocate the view that LGBTQIA+ individuals have gained support over the past two decades which has resulted in organisations incorporating employee equality initiatives into their diversity management strategies. As much as organisations like the United Nations condemn violence and discrimination based on sexual orientation and gender identity, there are still countries that punish those who identify as LGBTQIA+. In the workplace, LGBTQIA+ employees also face some form of discrimination based on their sexual orientation or gender identity, this hostility towards them prevents them from performing their core functions, negatively affects their performance and lowers their performance (Bonaventura & Biondo, 2016; Hossain, Atif, Ahmed, & Mia, 2020). In a survey conducted by Afrobarometer in African countries except for Algeria, Egypt, and Sudan it found that people were more tolerating of those who have different religious beliefs than them but did not show the same tolerance for people who identify as LGBTQIA+ (Dulani, Sambo, & Dionne, 2016). The acceptance of religious differences over the acceptance of LGBTQIA+ individuals shows how society still frowns upon homosexuals, and they may also not be accepting of LGBTQIA+ individuals in the workplace.

There is visibility and growth towards the acceptance of the LGBTQIA+ community and their rights globally and in some African countries. However, recent events reveal that homosexuality is still considered illegal in over 30 African countries (Bhandari, 2023). According to the International Lesbian, Gay, Bisexual, Trans, and Intersex Association (ILGA) 2023 review, in Africa, same-sex relationships are punishable by the death penalty in 3 countries, imprisonment of more than 10 years to life in 9 countries, and imprisonment of less than 10 years or other penalties in 20 countries. Not all hope is lost as numerous governments are passing anti-discrimination laws in favour of LGBTQIA+ rights (Subhrajit, 2014). There are only a few countries (South Africa, Botswana, Mauritius, Mozambique, and Seychelles) that have fully codified their laws to ensure that the LGBTQIA+ community is not discriminated against based on sexual orientation (Matebeni, 2023).

The global stance and visibility of the LGBTQIA+ community rights does not necessarily mean that the community enjoys the freedom of expression and is free from violence and hate crime. Uganda and Kenya have recently been in the news for passing harsh laws. These laws seek to further oppress those who identify as LGBTQIA+. Uganda passed the Anti-Homosexuality Bill in March 2023, with this Bill homosexuals can be sentenced to the death penalty, life imprisonment or 10 to 20 years in prison (Bhandari, 2023; Matebeni, 2023). In Kenya the government had banned the registration of a National Gay & Lesbian Human Rights Commission, the purpose of the commission is to work towards changes in policies and overall support to the LGBTQIA+ community, fortunately for the LGBTQIA+ community that ruling was struck down by Kenyan supreme court in February 2023 (Woensdregt & van Stapele, 2023). As a result of the societal stigma associated with LGBTQIA+ individuals, some LGBTQIA+ employees still experience unfair treatment, harassment, violence, and systematic oppression in the workplace (Webster, Adams, Maranto, & Sawyer, 2018).

In South Africa, individuals' rights based on sexual orientation have been in the constitution since 1994 however LGBT+ individuals are still encountering a lot of challenges and human rights issues (Knight & Wilson, 2016). A study titled "The Persisting Discrimination against Black LGBT Workers amidst Progressive Policies in South Africa" by Dhatemwa (2014), found that although South Africa has progressive legislation that is meant to protect the LGBTQIA+ community, they are still a group that experiences a large degree of unfair treatment, are discriminated against, and harassed throughout their careers. In contrast, a recent study by Tshisa and van der Walt (2022) found that some of the participants had positive experiences and were satisfied in the workplace whilst other participants were either neutral or had negative experiences. More still needs to be done in the

workplace for LGBTQIA+ employees to be reasonably accommodated and feel included. LGBTQIA+ employees especially the younger generation coming from townships of South African face even more challenges of homophobia (Benjamin, 2016). They are often stereotyped based on their sexual orientation and gender identity. The issue of equal rights, opportunities, and non-discrimination on the basis of sexual orientation seems to be on paper and not fully implemented or practised.

Formal LGBTQIA+ policies and practices consider the support of equality of LGBTQIA+ individuals in the workplace, these policies can signal the organisational culture, and acceptable or expected behaviours throughout the organisation (Webster, Adams, Maranto, & Sawyer, 2018). Policies and practices are not adequate if the climate in the workplace is not LGBTQIA+ supportive, employees must be made aware of the support available to them and the channels or means to follow to address discrimination in the workplace. Management in organisations is key in creating a work environment that is inclusive, welcoming, and supportive (Tshisa & van der Walt, 2022). Supportive workplace relationships consider the interpersonal resources available to LGBTQIA+ individuals in the workplace, these can be in the form of support groups, networks or visible allyship.

7. Ethical Considerations

This research study was conducted following the ethical considerations and guidelines of the Human Research Ethics Committee (Non-Medical) at the University of Witwatersrand. An ethics clearance certificate with protocol number H22/11/81 was obtained from the University of Witwatersrand ethics committee before conducting the research.

The researcher also obtained written consent from the study participants before they took part in the study. The participants were taken through what the research process entails, explaining that their participation is voluntary and there will be no compensation for their participation in the study. Confidentiality and anonymity will be maintained and guaranteed, if there is a need to mention a name or organisation details, pseudonyms will be used. The researcher also informed the participants that should they feel uncomfortable at any stage of the study they can request to be excused from participating and they will not be disadvantaged or penalised for doing so.

The participant's information letter as provided by the Wits Business School was shared with the study participants detailing the purpose of the study and its nature. The researcher assured the participants that any of the information collected during the research period would only be used for this study, it would not be shared with anyone else, and the information would be stored securely for three years.

8. Findings and Discussions

The data that was gathered from the reflective diaries and interviews revealed that diversity and inclusion measures are unmet. It highlighted that employees who identify, as belonging to the LGBTQIA+ community are challenged each day with many resigning in an attempt to escape discrimination, harassment, and abuse endured in the workplace. One of the research participants revealed that although he meets his performance targets, he did not receive a salary increase for three consecutive years, when asked why that was the case, he shared that his manager is homophobic and had made it clear that if he does not resign, he will make his life “a living hell”. The findings also revealed that the South African telecommunications industry does have policies that are supposed to protect the LGBTQIA+ community in the workplace, however, it does seem that there is a gap between policy documentation and implementation which results in the community members not being reasonably accommodated or treated fairly. Below are a few extracts from some of the research participants' journal entries and interviews providing a more verbatim account of their experiences.

I have noticed here at work that for our community we have to put in extra work just to show that we're capable, we can do the work and yet I'm still not recognized. I have raised this with Human Resources, but nothing came of it, considering that the person I was reporting was the Head of Department. - RPart01

Where I work, I find that there isn't anything done for LGBTQIA+ people, we are just the alphabet people. For example, there are no gender-neutral bathrooms and are no growth opportunities. A lot of people see us as a lifestyle unlike disabled people – so certain things are not considered. No law forces my employer to reasonably accommodate me, the policies are general and not explicit about LGBTQIA+. - RPart02

What I have noticed is that I need to hide my identity, and speak less because I have missed so many opportunities because of my sexuality and how outspoken I am. However, the issue is not my organisation or the culture in it but the team I work with, other LGBTQIA+ people in the same organisation have it all well and they don't have the same experience as me. - RPart03

I work in a call centre environment and the majority of my colleagues are very young, they like throwing comments at me for being gay. They would say things like "Ooh a pink shirt darling" or "You're such a softie, are you sure you can carry out that task" in a very insulting tone. Everyone would laugh about these comments including the managers. - RPart04

Some of the research participants described their workplace experiences as depressive and hostile since Human Resources does not take any actions when they report some of the incidents or treatment received.

While only one participant indicated to be working in an environment that meets diversity and inclusion measures. Below is an extract from their experience.

You know that sense of importance and knowing that I can belong here, and I can be as free as I want to be. I don't have to have multiple personalities. I don't need to be a different person when I'm at work. - RPart05

9. Limitations

The LGBTQIA+ community is a very closed one, especially if you are not part of it, that on its own is very limiting and makes it hard to gather data that will enrich the research. Participant's commitment to continue with the diary study for fear of being identified as the first limitation. The second limitation was the industry's reluctance to share their insights. Trust had to be built to continue with the research process. Recommendation for further research in this area and for studies to include other sectors with larger samples.

It is also important to mention and note that a study of this nature may be viewed by others as controversial or sensitive therefore the researcher has to be mindful of the language used to avoid causing any harm and damage in any manner or of any nature. The researcher's mindfulness and the intention not to cause harm may in itself be a delimiting factor as sometimes the researcher may want to use certain terms in the discussions but there is always a reminder that those terms can be misconstrued as derogatory, this is a necessary factor to raise from an ethical and non-bias point.

10. Recommendation for Future Research

Considering the challenges that the researcher encountered during the data collection phase, it is recommended that future researchers have multiple strategies for data collection in case the initial strategy does not work. It is important to think of challenges that may be encountered beforehand. If the study participants belong to closed communities, researchers should strive to build relationships with community leaders and gatekeepers. Another recommendation for future researchers is to consider collecting data from LGBTQIA+ employees, and the organisation's representatives and from analysing company documents such as diversity, inclusion, and equity policies.

11. Conclusion

In conclusion, strides have been made in promoting diversity, inclusion and equity for individuals who identify as LGBTQIA+. Organisational culture plays a vital role in creating and promoting a workplace environment that is free from discrimination, harassment, and exclusion of those who identify as LGBTQIA+. Although the treatment of the community differs across the world and Africa lagging, some countries are rallying behind efforts and movements that call for an end to the discrimination, harassment, and exclusion of LGBTQIA+ individuals. Most organisations have policies that promote diversity, inclusion, and equity of LGBTQIA+ employees, however, the implementation thereof is quite slow. Even with the slow implementation of such policies that promote diversity, inclusion, equity and reasonable accommodation of LGBTQIA+ employees, organisations are making commitments to embrace diversity in the workplace, particularly for LGBTQIA+ employees.

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Masters Research Papers

Wonder Woman on Screen: From Feminist Symbol to Stereotypical Figure

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Abstract: Wonder Woman, a founding female figure in superhero fiction, was initially celebrated as a symbol of women's empowerment in the 1970s but faced criticism in the 2010s for embodying fetishized objectification. This article aims to explore the gender representation of the 1970s TV series *Wonder Woman* and the 2010s *Wonder Woman* movie through a feminist approach. The portrayal of Wonder Woman in the TV series challenged the traditional stereotypes of femininity and the subordinate roles of women under patriarchy at that time. The *Wonder Woman* movie, however, lacked diversity under an intersectional framework and signified the beauty myth for male pleasure, which undermined her validity as a feminist icon. Through close analysis, it is revealed that the white feminist privilege and fetish fashion of superheroines traditionally recognized as feminist icons are problematic, calling for more scholarly attention on discriminatory gender representation in contemporary popular culture.

Key Words: Wonder Woman, Gender Representation, Intersectionality, Feminism

1. Introduction

DC Comics, also known as DC, is a major American comic book publisher and the primary division of DC Entertainment. Produced by DC Comics, Wonder Woman is one of the most influential female superheroes in Western society. As a founding female figure in the genre of superhero fiction, Wonder Woman became an iconic symbol of feminism in the 1970s when the *Wonder Woman* TV series was aired. In view of the historical underrepresentation and misrepresentation of female characters, the cinematic portrayal of Wonder Woman challenges the dominance of male characters in the genre of superhero fiction (Robinson, 2004, p. 95). Thus, as suggested on the cover page of *Ms.* magazine in 1972, Wonder Woman was regarded as a pivotal figure of feminism at that time (Steinem, 1972). However, in 2016, Wonder Woman had her feminist role of "Honorary Ambassador for the Empowerment of Women and Girls" revoked in the UN, for she was criticised as "oversexualized" (Marso, 2016). Even though the commercially successful film *Wonder Woman* enjoyed widespread popularity among viewers in 2017, the ongoing feminist critique of Wonder Woman continued, criticizing her as a figure of fetishized objectification and sexual disempowerment (Killian, 2019). Contrasting with prevailing 1970s viewpoints, notable shifts in feminist perspectives on Wonder Woman's media representation on screen became evident in the 2010s.

Existing feminist research on Wonder Woman, mainly based on comics, focuses on her toughness (Inness, 2018, p. 56), female autonomy (Ormrod, 2018), and spectacular body (Emad, 2006). Despite the popularity, the TV series and movies related to Wonder Woman are relatively unexamined through feminist approaches. As popular culture became a natural site for feminist identity formation and female empowerment, it is important to explore the portrayal of Wonder Woman on TV and film in view of her increasing visibility in contemporary culture and feminist discussion.

Since various versions and adaptations of the stories related to Wonder Woman have been produced in the TV and movie industry, I mainly focus on the first episode of the *Wonder Woman* TV series starred by Lynda Carter in the 1970s and the *Wonder Woman* movie starred by Gal Gadot in 2017. The contents of these two audiovisual media adopt similar storylines of how Wonder Woman saves Steve Traver and fights against the Nazi party for the USA, which make them suitable for comparison. Although many scholars criticize the wave metaphor of feminist movements for it conflates the ongoing discussion within feminism into an unilinear and sequential timeline (Reger, 2017), I employ it to frame the shifting cultural contexts where Wonder Woman in different eras should be situated. Within the context of feminist discourse spanning different waves of feminism, the feminist identity of Wonder Woman on screen is revealed to shift from a feminist symbol to a sexist figure, corresponding to second-wave feminism and fourth-wave feminism.

2. Feminism and Comic Wonder Woman in the 1970s and 2010s

The 1970s and 2010s marked the rise of second-wave and fourth-wave feminism, concurrent with the evolution of Wonder Woman's gender representation. Existing feminist studies on Wonder Woman mainly focus on her

identity in comic books as a cultural construct, discussing her shifting roles from a feminist icon to a symbol of gender stereotype (Robinson, 2004, p. 63; Emad, 2006; Wright, 2017, p. 10).

2.1 Second-Wave Feminism and the 1970s Comic Wonder Woman

In the mid-19th century, first-wave feminism emerged with the Seneca Falls Convention, advocating for women's suffrage from a legal perspective. With roots in first-wave feminism, the founding of the National Organization for Women marks the complicated origins of second-wave feminism and its internal divisions. The second wave of feminism, spanning from the 1960s to the 1980s, was referred to a series of feminist activities that sought to challenge the oppression of women in various areas, including sexual autonomy, workplace equality, and domestic violence (Thornham, 2004, p. 37). Feminists in the second wave criticize the systematic oppression of women as "other" under the dominance-submission binary model of masculinity and femininity (Firestone, 1970, p. 98). Regarding femininity as their highest value and only commitment, women who internalize the ideology of femininity are sexually passive with their reproduction processes under male control, which is another social issue that second-wave feminism addresses (Friedan, 1963, p. 63). As diverse and multifaceted second-wave feminist movements are launched, a range of diverse branches of feminism emerge to address gender equality and sexual autonomy from different perspectives, including radical feminism, liberal feminism, socialist feminism, etc.

As a fictional character, the comic image of Wonder Woman is viewed as a symbol of second-wave feminism among feminist scholars for she challenges the oppression of women (DiPaolo, 2007, p. 151). As a powerful warrior, Wonder Woman is prodigiously strong, invulnerable to physical harm, sophisticated in combat prowess, and immortal. From a feminist perspective, her superpower, traditionally associated with male fictional characters like Superman, interrogates the stereotypical yet prevailing notions of womanhood as vulnerable, dependent, and submissive at that time (Wright, 2017, p. 10). Moreover, Wonder Woman is closely associated with radical feminism for her storylines question the patriarchal norms. According to J. Lenore Wright (2017), the feminist spirit of Wonder Woman originates in her homeland Paradise Island, a fictional all-women utopia, that challenges the institutionalized oppression and exclusion of women in politics, economics, and social lives (p. 8). Paradise Island implies radical feminist ideas in the second wave, arguing that gender is the primary contradiction and women can constitute a sex-class (Echols, 2019, p. 3). Meanwhile, Diana Prince, the cover identity of Wonder Woman, can be associated with liberal feminism in the second wave since she resolves her personal dilemma as a female immigrant by engaging in male-dominated political and military systems like the Department of Metahuman Affairs (Cobble, Gordon and Henry, 2014, p. 163). Mitra C. Emad (2006) sees these storylines as a calling for political reform on gender inequality women face in their personal experiences. As an unconventional and emancipated female character, Wonder Woman became a feminist symbol for women who seek to address gender discrimination in their personal lives by advancing their socio-political status.

2.2 Fourth-Wave Feminism and the 2010s Comic Wonder Woman

Originating in the early 1990s, third-wave feminism critiques the overgeneralization of white female experiences in second-wave feminism to address racial and social class inequality intersecting with gender issues. Borrowing ideas of intersectionality from third-wave feminism, fourth wave of feminism, which could be dated back to 2008, emerged with the savvy use of digital media (Looft, 2017). Specifically, modern feminist activists utilize social media as an essential tool to pursue social justice and gender equality in fourth-wave feminist movements (Baumgardner, 2011, p. 250). Rather than regarding females as a homogeneous social group, feminists in the fourth wave engage with the intersectionality of race, class, and sexuality among women in the online movements (Curtis and Cardo, 2017). In addition, feminists in the fourth wave adopt fashionable feminist ideas that emphasize the plurality of female discourses through clothing. Under the conservative political agendas promoted by increasing right-wing politicians like abortion bans, the solidarity among fashion designers and feminist activism can be witnessed as more and more feminist online slogans, such as # Metoo, are printed on clothes to raise public awareness (Caldeira, 2020). The diversity of fashion designs for different female body sizes under the feminist viewpoint of body positivity, which is exemplified in ads shot by plus size models like Paloma Elsesser in 2017, can be interpreted as the milestone of "fashion embraces feminism" (Tittton, 2019).

However, the comic stories of Wonder Woman in the 2010s not only lacked racial diversity but also amplified the thin ideal of female fashion. In the Odyssey storyline from 2010 to 2011, most of the female figures were portrayed as white and heterosexual figures from traditional Eurocentric mythology, indicating the lack of racial and socioeconomic diversity in the stories of Wonder Woman (Ormrod, 2020). Even though Wonder Woman is praised for her "girl power" message in popular culture (Lachover, Davidson and Ramati, 2021), it should not be

neglected that her stories fail to challenge the heteronormativity and racial prejudice from the perspective of fourth-wave feminism (Maddox, 2011). In addition, the comic images of Wonder Woman's costume still adhered to kinky and flesh-baring clothing in the traditional national flag-like style in the 2010s, which was politicalized not for self-identity under feminism to show her conformity under patriotism (Emad, 2006). Even with jackets and trousers, the costumes of Wonder Woman were designed for heterosexual male pleasure, which foregrounded her mesomorphic body type with sexual attractiveness as an inherently hypersexual character.

3. Wonder Woman in TV Episode: a Symbol of Feminism

In the first episode of the *Wonder Woman* TV series aired in 1976, Wonder Woman was portrayed as a powerful, charming, and independent female figure, challenging the conventional gender roles and stereotypes associated with femininity. Moreover, the plots and character designs in this episode implied feminist critiques of patriarchy.

3.1 The Contention Over Traditional Femininity

The first episode of the *Wonder Woman* TV series begins with a scene on Paradise Island, a peaceful society governed by females, which is borrowed from Greek mythology. The utopian all-female society on Paradise Island, although in a fictional world, challenges the normalization of labour division between men and women based on biological differences. It shows that women can do the work typically associated with males, such as participating in political activities or engaging in wars, which can be read as questioning the "class/caste system" based on "natural reproductive difference between the sexes" and "tyranny of sexual division based on biology" proposed by Shulamith Firestone (1970, p. 198). Wonder Woman, as the symbol of Paradise Island, has numerous valuable qualities that redefine femininity. Despite the high social status of Wonder Woman as a princess on the island, she treats other women from different classes and races with respect as well as equality, helping them with chores like taking care of the patients. In the competition for the honour of becoming Wonder Woman, she does not utilize her superpower to gain herself advantages. As a heroic figure and role model, her identity challenges the gendered prejudices of femininity, which is stereotypically referred to as submissive, appearance-focused, and emotionally fragile (Echols, 2019).

Challenging the gender stereotypes on women, Wonder Woman actively engages with American social issues, symbolizing female empowerment. After escorting Steve Trevor, an American Major accidentally crashes his plane on the Themyscira, to the US, Wonder Woman disrupts the conspiracy of the Nazi party. She intervenes in the secret mission of stealing classified information of national interest by single-handedly defeating a squad sent by the Third Reich. She also prevents a raid against an American bomb factory in Brooklyn conducted by Nazi Colonel Oberst von Blasko. As an admirable crime fighter, Wonder Woman finds fulfilment by actively engaging in American social and political life rather than through "sexual passivity" or "nurturing maternal love", which disputes the "feminine mystique" proposed by Betty Friedan in 1963. To some extent, Wonder Woman reshapes the image of femininity as an inspiring female figure. The female audience of the *Wonder Woman* TV series might be motivated to pursue career paths other than a housewife, which was believed as the only definition of female fulfilment in the 1960s (Friedan, 1963).

3.2 The Dispute Over Patriarchy

In the TV episode, Wonder Woman attempts to challenge the collective male dominance by disobeying the rules set by men in the US. After stopping three male thieves from robbing the bank, Wonder Woman is questioned, if not interrogated, by a policeman in a contemptuous manner. Rather than filling out forms required by the police officers to show her obedience, Wonder Woman simply walks away, demonstrating the potential female agency to unhinge the structure of repressive patriarchy (Acker, 1989). She also contests the exploitation of female workers conducted by a male circus owner, who treats her as a hypersexualized performer. Exploiting her labour, the greedy circus owner asks Wonder Woman to bounce bullets with her bracelets without any safety precautions during a circus show. Upon realizing that the circus owner intends to kill her to evade paying for her work, Wonder Woman uses her superpowers to demand a fair salary for workplace equality. Resisting the unfair treatment imposed by the male policeman and circus owner, Wonder Woman challenges the patriarchal social structure that Kate Millett (1970, p. 136) may describe as "male ruling females". By opposing the male dominance that problematizes gender relations, Wonder Woman demonstrates the potential women's autonomy and self-reliance in her individual efforts from the perspective of liberal feminism, which can be read as calling for social reform addressing gender discrimination and equality.

After defeating Nazi colonel Oberst von Blasko and female spy Marcia in the US, Wonder Woman says: "You obviously have little regard for womanhood. You must learn to respect" and "Women are the wave of the future" (Wonder Woman, 1976). By emphasizing "womanhood" and "women" as an umbrella term for all females from different ethnic and class backgrounds, the statements made by Wonder Woman provide a sense of unity, which is in line with the notion of "sisterhood" in the second-wave feminism (Morgan, 1970, p. 187). It is undeniable that the term can be problematic and dishonest as a bonding mechanism for it neglects the "heterogeneity" and "hierarchical structures" among women (hooks, 1991, p. 135). But in this TV episode, the term "sisterhood" signifies not only collectivism but also solidarity amongst women, especially feminists, in recognition of the shared effort against sexism under patriarchy (Evans, 2015, p. 79). In addition, in the conversation between Wonder Woman and her mother Queen Hippolyta back on Paradise Island, Hippolyta says: "I name this island paradise for an excellent reason: there is no man on it. Thus, it is free of their wars, their greed, their hostility, their barbaric, masculine behaviours." The all-women government ruling the island can be read as women's liberation under radical feminism that dismantles patriarchy as the structure of male domination. As the masculine characteristics are portrayed as undesirable traits, Wonder Woman and Amazon people question the notion of male superiority under patriarchy while cherishing sisterhood with an inspirational purpose from a radical feminist perspective.

4. Wonder Woman in Movie: a Figure Under Gendered Stereotypes

In the *Wonder Woman* movie released in 2017, Wonder Woman was portrayed as a stereotypical white middle-class woman in the storyline that lacks racial diversity. No longer a symbol of feminism, her clothes in the movie signified the beauty myth under the male gaze.

4.1 The "Whiteness" of Wonder Woman

In the opening scene of the movie, Wonder Woman is portrayed as a pale and slender female with a tall nose. She wears a sumptuous evening dress and stylish high heels in Paris. As a researcher on cultural anthropology and archaeology, which is her cover identity, Wonder Woman has her own office in the Musée du Louvre with considerable pricey antiques as her collection. She acts in an innocent and natural way of enjoying unmarked privileges without any explanation of how she manages to succeed (Clark Mane, 2012). Her privileged status can be traced back to her childhood living on Paradise Island before she arrived in the US. The young Wonder Woman is acted by a white child actress, which reinforces and reaffirms the "whiteness" of Wonder Woman. It should be noted that there are only two actresses who are explicitly portrayed as women of colour on Paradise Island, a maid and an unskilled female warrior trained by other warriors. It is evident that women from racial minority backgrounds take subordinate, if not inferior, roles on Paradise Island. Wonder Woman is, or at least should be, one of the women of colour on the island. However, due to her high rank in the monarchy as a princess, she is served and protected by female figures from various races, signifying the intersectionality of gender issues and race issues with class (Davis, 2008). The film depiction of Wonder Woman and Paradise Island in the movie shares some similarities with the TV series in the 1970s. Although such cinematic portrayal might be acceptable or even welcomed in the 1970s, it should be read as the symbolic annihilation of women from underrepresented communities, signifying the class privileges of white women. The privileged position of white females should be criticized for it reinforces the representational power of whiteness "as the symbol of humanity" (Lavender, 2011, p. 157). In such circumstances, the sisterhood foreground on Paradise Island can be read as a bounding force for non-white women, forcing them to embrace the acceptable forms of resistance for gender equality set by white women, which is symbolized as the movie plot of sending Wonder Woman, a woman with "whiteness", to be the superheroine representing the Amazons and "the face of feminist movement" (Beck, 2021, p. 97).

In addition, the diversity of sexuality is also excluded from the narrative of the film since the heterosexual relationship is presented to be normalized as the only pattern of romantic relationships. The queer elements are inherently embedded in the Amazon as an all-female society (Ormrod, 2020, p. 45). Therefore, in the first half of the movie, Wonder Woman can be viewed as a queer icon, stating that "men are essential to reproduction, but not necessary to the pleasures of the flesh". However, all the figures attracted to Wonder Woman portrayed in the movie are male and Wonder Woman is converted to heterosexual orientation in the end. Fighting against Ares as the climax of the movie, Wonder Woman states that "I believe in love", but all the memories she can recall in the flashback are her romantic experiences with Steve Trevor, her male lover. By implicitly coining the term "love" to heterosexual relationships only, it signifies the dominant position of heterosexuality and the attempt to normalize as well as naturalize it. Therefore, Phil Jimenez (2018) criticizes Wonder Woman in the

movie as a “love icon” rather than a symbol of feminism or queer icon under the intersectional theoretical lens for the movie fails to challenge heteronormativity.

4.2 The Clothing Choices of Wonder Woman

On Paradise Island, all the Amazons, including Wonder Woman, wear leather off-shoulder tops and mini-skirts. Their clothes are designed in a skin-tight style, accentuating their breasts while revealing their slim arms, shoulders, and thighs. Compared with the clothes the Amazons had in the 1970s *Wonder Woman* TV series, the dressing style in the movie is more revealing, if not more sexualized. In addition, the Amazons wear their studded leather war armours throughout the day in the movie, whether they are training for war, playing around, or just reading bedtime stories. In comparison, the Amazons portrayed in the TV series can choose their clothing from athletic styles, bohemian styles, and other clothing choices. To some extent, the dressing style of the Amazons in the film signifies their physical aggressiveness with swords, shields, and amors, which can be associated with masculinity, especially hegemonic masculinity. The aggressiveness is explicitly shown as Antiope, the general of Paradise Island, uses the metaphor of “scorpion must sting” and “wolf must hunt” to describe the Amazon people. Their choices are made in a specific context where revealing sexuality and showing aggressiveness is normalized on Paradise Island based on Rosalind C. Gill’s (2007) ideas of the cultural context of fashion choices. Rather than “autonomous choices” (Duits and Van Zoonen, 2006) that challenge the stereotypical notion of femininity, Amazon’s clothing style in the movie should be understood in terms of the external influence of the inherently militaristic culture of Paradise Island. Therefore, it is problematic to read the clothing of Wonder Woman, along with other Amazonia, as a feminist symbol of their confidence in their fit bodies and sexuality with hidden messages of sex-positivity and self-reliance (see Ormrod, 2020). In view of the pervasive repressed self-representation in the Amazon society, Wonder Woman, as the princess and symbol of Paradise Island, might be far from a feminist symbol wearing the iconic Amazonian style of clothes that signifies militarism and masculinity.

After Wonder Woman lands in the United States, the first instinct of Steve Trevor, the American pilot saved by Wonder Woman, is to change the clothes worn by Wonder Woman for they are not in line with the beauty fashion in America. When Wonder Woman sees girdle as tummy-control shapewear in a luxurious boutique before changing her clothes, she asks Etta, the female secretary of Steve Trevor, “Why must you keep them (tummies) in?” (Wonder Woman, 2017). Etta, who is relatively overweight, rolls her eyes and replies “Only women with no tummies would ask that question”. Aided by Etta, Wonder Woman tries 226 outfits, including a vintage Lolita dress, a striped linen shirt with a pencil skirt, and a jacket skirt suit. However, it should be noted that clothes in the stores are predominantly presented with tummy-control design features, such as a belt around the stomach area, which signifies the prevailing cultural discourses of the “beauty myth” of a standardized slim body under male gaze (Maddox, 2021). The discourse defines the “objective and universal beauty” that all women “must want to embody” (Wolf, 2002, p. 14).

In the movie, the emphasis on tummy-control cloth design can be interpreted as a beauty myth that advocates beautiful women should have defined stomachs as the “docile body” proposed by feminists using Foucault’s work (Butler, 1990, p. 144). Wonder Woman’s and Etta’s perceptions of bodies are disciplined under the prevailing sociocultural discourses of attractiveness. Therefore, their consciousness about the tummy-control design can be read as a perpetual self-surveillance process through monitoring their own bodies and comparing them with the ideal body promoted in the boutique. It also explains why Etta rolls her eyes in a sarcastic way and responds to Wonder Woman’s question with an envious attitude, although she does not have any harmful intention. The appearance of Wonder Woman makes her reflect on her overweight body size and becomes slightly frustrated about it. Coming from a foreign country with no prior knowledge of the beauty myth in America, Wonder Woman happily accepts it and becomes enthusiastic about trying out different stylish outfits, rather than challenging it like the Wonder Woman in the TV series. In the TV series, Wonder Woman refuses to change her Amazonian clothes, maintaining her cultural identity until she is forced to wear a different outfit for her cover identity. In the latter half of the movie, Wonder Woman even intentionally steals a beautiful evening dress to signify her sexual capital in order to attract the German general Erich Ludendorff in her mission. Dressed in a stylish outfit, Wonder Woman embraces, rather than challenges, the fashion that is designed for male pleasure, which makes her an objectified figure for male pleasure.

5. Conclusion

In conclusion, the cultural shift of Wonder Woman from a symbol of feminism to a figure under stereotypical gendered representation on screen is closely related to the decline of second-wave feminism in the 1970s and the emergence of fourth-wave feminism in the 2010s. Wonder Woman was an inspirational role model and symbol of female empowerment in the 1970s, redefining the biased ideas of femininity and challenging patriarchy. As a fictional character, she demonstrates the independence and agency of women as an inspiring role model for females in the TV series as is encouraged in second-wave feminism. However, in view of the inclusiveness and racial diversity advocated by fourth-wave feminists, the storylines of *Wonder Woman* movie in the 2010s fail to acknowledge the various ethnicities, class backgrounds, and sexual orientations among women as a heterogeneous group. Her clothing choices demonstrate her yielding gestures to the millenarian cultural context on Paradise Island and the beauty fashion serving male pleasure in the US from the perspectives of fourth-wave feminism. To a certain extent, the shifting roles of Wonder Woman from a feminist icon to a stereotypical figure marks the changing agenda of different waves of feminism for a more progressive view on gender issues.

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Work in Progress Papers

How to Measure the Impact Generated by the Gender Equality Plan?

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Abstract: Gender Equality Plans (GEPs) are the primary policy tool to advance gender equality in research and innovation in Europe. The European Commission has mandated an institutional requirement for all public and research performing organisations applying for Horizon Europe 2021-2027 grants. These entities must develop GEPs addressing organisational culture, work-life balance, gender balance in leadership, recruitment and career progression, gender mainstreaming in research and teaching, and measures against gender-based violence. The Commission has outlined four mandatory elements for GEPs: they must be public documents, allocate resources for implementation, be based on sex/gender-disaggregated data collection and monitoring, and include training and capacity building. This new requirement is expected to stimulate significant activity at institutional and state levels across EU countries. From the research presented here, we expect an ongoing self-assessment of the progress of the actions implementation to reduce gender inequality and valuable suggestions for the future GEP UniBs 2025-2027 design and planning.

Keywords: Impact Drivers; Actors' mobilisation; Person-Centred Approach.

1. Introduction

Since 2015, Gender Equality Plans (GEPs) have been the main policy instrument to promote gender equality in research and innovation in Europe. With the new eligibility requirement for entities applying for the Horizon Europe 2021-2027 calls, the European Commission has introduced an institutional mandatory requirement for all public and research performing organisations applying to become beneficiaries of Horizon Europe grants. Horizon Europe applicants must elaborate their context-related GEPs based on a comprehensive understanding of gender equality. GEPs must cover organisational culture and work-life balance, gender balance in leadership and decision-making, gender equality in recruitment and career progression, gender mainstreaming in research and teaching, and measures against gender-based violence. The European Commission also specified four mandatory elements: the GEP must be a public document, resources must be dedicated to its implementation, it must be based on the collection and monitoring of sex/gender disaggregated data, and training and capacity building must be provided. This new requirement is expected to generate a wave of activity at institutional and state level in the EU countries.

To date, no single monitoring and evaluation tool for GEPs has been validated. If targets are not defined for monitoring progress, success or scope of communication, the assessment of the undergoing organisational transformation is arduous. This shortage could also reduce the commitment of stakeholders toward the objectives.

For these reasons, monitoring and evaluation tools must be seen as instruments to support effective actions and accountability. Secondly, by establishing a monitoring system that can evaluate the actions and resources allocated, knowledge of the changes is also improved.

Since 2015, European-funded projects carried out by research performing organisations have seen different shapes of monitoring and evaluation, with the effort to produce synthetic indices calculated based on a mix of qualitative and quantitative parameters (GenderTime project-UNIPD-GEI). This mixed methodology considered only academic personnel, or quantitative methods that considered endogenous and exogenous factors (PLOTINA project-UGI), but which, having to synthesise, have placed aspects that are not comparable or with little possibility of comparison on the same evaluation level.

In recent years, new European projects have brought proposals for monitoring and evaluation, including not only the evaluation of the effectiveness of actions, but also the very complex topic of "social change".

A comparison of experts involved in several European funded projects (LIBRA; Gender-SMART; CASPER) led to the identification of critical aspects including the possibility of comparing certain results between research institutions; the time it takes before the results of GEP interventions become evident; and above all, the desire to implement mutually consistent monitoring and evaluation systems (Ferguson 2021).

One of the approaches used to monitor and assess structural changes through Gender Equality Plans is an institutional capacity building model, which emerged from a journey that started in 2012 partially thanks to the Horizon 2020-funded projects in which many universities and research centres participated. Developed by the consultancy firm Yellow Window in 2013, this model is designed to assess the gender mainstreaming capacity of public administrations, both of the European Commission and of each EU Member State. The strength of this model is that it focuses on the implementation process and what drives it. As such, it is well equipped to take into account different stages of institutional development and different starting points.

A second tool proposed is that of actors' mobilisation (Kalpazidou Schmidt, Cacace, 2019), which focuses on the mobilisation of internal actors to support the change process. According to this perspective, what happens in an institution is evaluated from the perspective of the internal processes that are set in motion for gender equality. The model encompasses the creation of an internal agent of transformation, the activation of internal decision-making bodies, the interaction between the dynamics set in motion and the structural circumstances, and finally the resulting outcomes in terms of sustainable institutional change.

The consortium partners in charge of external monitoring and evaluation (Knowledge & Innovation and ISAS, respectively) in the Horizon 2020 LIBRA and Gender-SMART projects, which focus on the design and implementation of gender equality plans, used the Impact Driver model for their work, either in combination with the Actors Mobilisation model (LIBRA project) or by integrating the two models (Gender-SMART project).

In the CASPER project, funded by the European Commission to assess the feasibility of introducing a gender equality award and the certification system in research and higher education institutions in Europe, this work was taken up and further developed. The result is an effective evaluation model that includes 12 impact drivers and 6 stages of institutional capacity building and enables the measurement of institutional processes and the degree of institutionalisation. The model can be used as a self-assessment tool, as an awareness-raising and capacity-building tool, but also for evaluation by external experts.

The tool - already tested by a group of research organisations (Central Europe University; University of Cagliari; Cyprus University of Technology; University of Deusto; Oxford Brookes university; French Agricultur Research Center for International Development; European Institute of Oncology) allows for a comparative analysis through its indicators and scales, providing valuable insights into the factors influencing the change process.

2. Case Study University of Brescia (UniBs)

The case study under investigation concerns the GEP of the University of Brescia. It is considered representative because it is the first time the GEP has been introduced at this university and the medium-small size of our university is representative of approximately 30% of Italian universities.

The drafting started in December 2021. A multidisciplinary commission was appointed, with the participation of lecturers from the various departments, technical administrative staff and students, dedicated to the shared construction of the UniBs GEP.

The objective was immediately shared of producing a document that follows the indications of the Vademecum promoted by the Conference of Italian University Rectors (CRUI) for the drafting of the GEP; it collects the indications of the Gender Balance to enhance what has already been carried out by UniBs and is proposed as a planning document for the three-year period 2022-2024. Operationally, the coordinating role was entrusted to an internal Commission figure and the areas of in-depth study were defined (the 5 defined by the GEP on the basis of the CRUI Vademecum) with responsibility assigned to a contact person.

For each area of intervention, each working group proposed objectives, which were then shared across the board. Hence, for each objective, each working group proposed functional activities to achieve the objectives.

Another significant aspect concerned the effort to define a predictive cost for each action in each area of intervention, dividing the types of cost into internal resources needed to implement the actions, and external costs to be planned in the University Budget.

Following the approval of the GEP in 2022, the Academic Board initiated the structuring of the Gender Commission, which is in charge of implementing the actions for the three-year period.

Given these premises, it is deemed interesting to apply the Gender Equality Impact Drivers Revisited model defined in 2022 by Mergaert, Cacace and Linkova, to the analysis of the GEP implementation process within the University of Brescia, since:

- The 12 impact drivers identified appear to be sufficiently structured to accommodate the different dimensions of the three-year plan defined, especially in terms of improving internal knowledge; involvement and dissemination of the culture of gender equality inside and outside the research institution; orientation of governance towards change. As mentioned earlier, the indices hypothesised above were synthetic and inadequate as attempts to summarise inconsistent results in a single measurement value.
- The 6 steps allow the temporal determination of the progress of these change factors and tell the story of the stage the research organisation is in, with also the possibility of reading some factors more developed/advanced than others and being able to act on some of them.
- The 4 components of the internal stakeholders' mobilisation model very succinctly represent what the same authors argued in a previous article: "the cultural change of an organisation must take place through the involvement of governance and the grassroots, through a top-down and bottom-up participative process. Acting in the absence of internal, authoritative change agents, who 'contaminate' different internal and external stakeholders with the promotion of gender equality initiatives, will not lead to a truly stable transformation process'.
- The 4 components deemed strategic for the verification of effective internal change within the institution (recruitment; career advancement; work-life balance and the gender dimension in research) take into account aspects relating to horizontal and vertical segregation; verification of the actual neutrality of research, especially in STEM studies; compliance with existing regulations (e.g. promotion/application committees); and monitoring and effectiveness of the activities implemented.

3. Expected Results

The analysis will be carried out in December 2023-March 2024. The analysis of the UniBs GEP according to this model will take into account some elements that have emerged from the evaluation of the tool by research organisations that have tested it:

1. Some Indicators Are Simpler To Assess, Others More Complex;
2. Economic And Personnel Resources For Implementation Or Leadership Could Be "Vulnerable" Factors, I.E. They May Change Over Time;
3. The Tool Needs To Be Used By Someone Who Knows The Research Organisation And It's Functioning Very Well (Difficulty In External Evaluation Without Support From Within);
4. It May Happen That Less Institutionalised Organisations Are More Lenient In The Self-Assessment Process.

The results will provide a self-assessment with respect to the ongoing progress of the GEP actions implemented to date (2 years after start-up) and will make it possible to

- assess the human and economic resources put in place against the results obtained;
- highlight critical issues;
- enhance actions that are not very effective;
- enhance actions that are bringing more results.

4. In Conclusion

This study explores what are the impact factors for assessing institutional capacity in a complex organisational context such as research performing organisations and higher education institutions, emphasising a person-centred approach and the quality of stakeholder relations. Case studies offer valuable insights, enabling learning based on practical experience, especially in heterogeneous groups. This pioneering research can expand by comparing other universities and incorporating various research methods.

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Emotion Work of Paid and Unpaid Caregivers of the Elderly in Chile

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Abstract: In most societies, care work is still considered a private, gendered activity, under the assumption that women would innately perform such tasks. Caring for the elderly represents particular emotional challenges, being emphasised that this dimension of caregiving needs more attention. Building on Arlie Hochschild's (1983) conceptualisation of emotion work and incorporating Tonkens' (2012) observation to include meso- and macro-level into the scope, I argue that emotion work is not only an individual experience, but it has a component in which the norms associated with the emotions to be displayed in caregiving correspond to a frame of reference historically constructed. Hence, this paper aims to understand how emotion work is characterised and configured by caregivers of the elderly in Chile. Using a qualitative approach, between April and June 2023 I conducted 9 in-depth interviews with caregivers of older adults in Chile (8 women, 1 man), and asked them to keep an 'emotional diary' for at least 4 weeks. Conducting a constructivist grounded theory analysis, the main findings indicate differences between the emotion work performed by paid and unpaid caregivers. Paid caregivers manage emotions regarding affection and pity towards older adults, and mainly anger towards older adults' families, which is supported by a construction of old age based on the notions of abandonment and loneliness. Alternatively, the emotions of family caregivers are much more complex to manage, since they are permeated by the existing relationship with the old person being cared for, and they belong to life course decisions. It can be concluded that emotion work is a relational activity where familialistic narratives play a central role in Chile. The management of emotions in caregiving is permeated by the caregiver's options of free decision-making, which are in tension with structures such as gender, class, or access to care support.

Keywords: Elderly Care, Emotion Work, Emotional Labour, Care Work, Caregivers, Qualitative Research.

1. Introduction

Although the emotion work displayed by caregivers of the elderly is recognised in the literature, some scholars have emphasised that this dimension of care still needs more attention (Bauer and Österle 2013; Bondi 2008; Esquivel 2011). Much of the specialised literature has addressed emotion work and the costs associated with elderly caregiving from an individual perspective, although some have pointed out the risk of 'over-pathologizing' the feelings of caregivers (Herron, Funk and Spencer 2019). Additionally, many studies have revealed how the expectations about care in the family environment lead to the display of emotions of affection, love and concern, and how similar emotions are also expected when care is commodified (Lovelock and Martin 2016). However, little research has compared emotion work between paid and unpaid elderly caregiving. Thus, this project seeks to provide a complex picture of emotion work including the mechanisms that interact in configuring it, especially when considering that emotions are not directly caused by situations or events but are mediated by normative reflection that has its correlate at the cultural, social, and ideological level (Hochschild 1983; Tonkens 2012). Specifically, this paper analyses the ways in which the emotion work performed by paid and unpaid caregivers of the elderly is characterised and configured in Chile.

2. Theoretical Framework

Emotion work is understood as the work of intentional management and display of one's own feelings, usually undertaken to influence the feelings of others (Hochschild 1983). In the gender system, social conditions make it more prevalent that women are the main emotion work performers –especially emotion work that affirms, enhances, and praises the well-being and status of others. "The reason, at bottom, is the fact that women in general have far less independent access to money, power, authority, or status in society" (Hochschild 1983, p. 163). Therefore, women are generally thought to manage expression and feeling not only better but more often than men do. These skills have long been mislabelled as 'natural,' a part of woman's 'being' rather than something of her own making. Moreover, as the domestic domain remains the ideological base of emotion and emotion work, it is assumed that 'family care' is necessarily better than 'substitute' care because of the 'commitment and affection' which characterises the former (James 1992).

Tonkens (2012) identifies an analytical gap between Hochschild's micro-level phenomena such as emotions, and macro-level issues such as commodification or gender ideologies. Consequently, I utilise the concept of 'care regime' to refer to *the cultural, institutional, and behavioural arrangements, rules, and understandings regarding care work that contribute to guide and shape feeling and framing rules, which in turn will typically generate predominant emotion work regarding care.*

3. Methodological Framework

3.1 The Chilean 'Care Regime'

As many Latin American countries, elderly care in Chile is strongly reliant on female family members in informal arrangements, lacking a national care policy in the country (Villalobos 2018; Palacios, Pérez-Cruz and Webb, 2022). Moreover, evidence shows that the higher the level of dependency of the elderly person, the higher the proportion of women who perform care work: ranging from 75.8% in cases of mild dependency, and reaching 96.3% in cases of severe dependency (Observatorio del Envejecimiento 2023). This is consistent with studies indicating that Chile is one of the countries with the strongest traditional family-oriented beliefs in Latin America (Domínguez-Amorós, Batthyány and Scavino 2021). Consequently, Chile evidences characteristics of 'implicit familialism' (Leitner 2003), where the lack of both defamiliarising and familiarising policies tacitly considers that family will be the primary caretaker, and thus, there is no alternative to family care.

3.2 Methods, Data Collection and Participants

Utilising a qualitative approach, between April and June 2023 I conducted 9 in-depth interviews with caregivers of older adults in two regions of Chile: Valparaíso, and the Metropolitan region. Among the selection criteria, participants needed to be either *unpaid family caregivers*, or *paid non-family caregivers*. They had to provide care services to older adults with mild to moderate degrees of dependency, and they needed to perform care work at home in private households. Participants were 5 unpaid family caregivers (4 women, 1 man), and 4 paid non-family caregivers (all women). Additionally, I asked the interviewees to use a qualitative diary for a period of 4 weeks (5 participants accepted), which has been considered a rich technique to capture relationships and processes to study emotions (Gray 2012).

3.3 Analysis Technique

The data has been analysed using a constructivist grounded theory approach proposed by Charmaz (2014), who advocates for the development of a theory from a co-constructed process between the researcher and the participants in the field. Therefore, data collection and analysis were undertaken simultaneously and iteratively. The analysis has been based on the main coding strategies from the constructivist grounded theory: 'open coding' and 'process coding'. Similarly, a great emphasis to the diversity and multiplicity of worldviews, values, beliefs, feelings, and assumptions of the individuals has been considered.

4. Results

Important differences were observed between the emotion work performed by paid and unpaid caregivers. In the case of paid carers, much of the emotional management was linked to the construction of old age from notions of abandonment and loneliness. As such, caregivers described emotions of both 'affection' and 'pity' towards the old person. These feelings were mainly attributed to the absence of the families of the care-receiver. This was translated into a new emotional demand for caregivers, as an attempt to "fill the void" of the older adults: *"You get attached to them like, I don't know if the word sounds nice, like pity, sorrow, because of the situation, the experiences they have, the lack of family, of affection, of love from her own family, she doesn't have it. So you kind of try to fill that void"* (E9, paid caregiver).

On the other hand, the emotions of family caregivers are inseparable from their previous relationship. While the main motivation for caring for their elderly relative was affection for that person and a sense of retribution, all family caregivers indicated mixed, intricate emotions. Those are much more complex to handle, as they belong to "existential" questions and decisions with life-course consequences: *"having an older adult really takes a lot out of you. But over time I understood that no, I cannot stop my life, I have to continue with my life. I love my mother, but it doesn't give her the right to decide for me"* (E1, female family caregiver).

Particularly for the male caregiver, there is a questioning of his role by extended family, friends and even health care personnel, which adds to the burden of caregiving. The participant reported difficulties to connect with these emotions, evidencing the male gender mandate of emotional detachment: *"I didn't know how to explain to someone how troubled I was. Because I had a hard time, and I have a hard time talking about those things. And at one point I said "You are in a state that you don't want to recognise, which is depression""* (E6, male family caregiver).

5. Discussion and Conclusions

Emotion work in caregiving is a relational activity where family narratives play a central role. In both caregiver positions, it is assumed and expected that families should be the primarily responsible for elderly care, which is in line with the evidence on the care regimes in Chile (Domínguez-Amorós, Batthyány and Scavino 2021). Even for paid caregivers, the care provided by the family is considered as the best and ideal. This is in line with what James (1992) argues, insofar as it is assumed that 'family care' is necessarily better than 'substitute' care. Moreover, family care is expected, based on affection and retribution, and highly naturalised as a women's task. Questions regarding the care role of the male caregiver from extended family and other sources, reflect how care regimes reproduce the division of labour in care and the emotion work associated. Therefore, it can be concluded that emotional management in caregiving will be permeated by the caregiver's decision-making capacity, with important differences between family and non-family caregivers.

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"STEM in Genere": An Impact Evaluation

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Abstract: Research on labour market disparities between men and women has long since identified horizontal segregation in the educational system as one of the main factors driving the gender pay gap. One of the factors identified in the literature believed to be at the heart of horizontal gender segregation is the lack of representation and visibility of women in STEM fields. In this paper, we investigate the effectiveness of a program named "STEM in Genere", developed within the Gender Equality Plan 2022-2024 of the University of Brescia (Italy), which is aimed at contrasting the underrepresentation and the stereotypical representation of women in science among primary and lower secondary school students. Students of participant classes will meet an educator for a total of 2 hours, in which counter-stereotypical thinking of women in science will be stimulated via learning games. Teachers of participant classes will follow in parallel a dedicated workshop about non-stereotypical science teaching. The effects of the program on students' gender stereotypes in science and study/job aspirations will be evaluated via a randomised controlled trial (RCT) conducted in primary and secondary schools of the Brescia province, an affluent province located in the northern part of Italy. In particular, we will randomise classes within participating schools to have a good balance between the statistical power of the experiment and potential contamination threats. The contribution of this evaluation is threefold. First, we will collect first-hand data on students' views and aspirations in a country - Italy - in which the population traditionally holds quite conservative views about gender roles. Second, we will provide robust, experimental evidence on the effectiveness of the program "STEM in Genere", which is potentially scalable nationwide. Lastly, we will contribute to the methodological debate about question framing in survey methodology, by randomly varying the formulation of the questions in the surveys. Policy implications for educational and learning environments will be discussed.

Keywords: Gender gap; STEM; RCT

1. Introduction

The educational landscape of modern societies is characterised by the presence of both vertical (i.e. related to attainment levels) and horizontal (related to types within levels) gender inequalities. While vertical gender inequalities have reversed over the last two decades, now favouring girls over boys (Lindberg et al., 2010), horizontal inequalities within secondary and tertiary education demonstrate remarkable persistence, with STEM-related fields show a low representation of females. In contrast, humanities exhibit a lower representation of males (OECD, 2021). Even among STEM fields, females tend to select those fields that are less math-intensive and leading to care professions, such as Medicine and STEM teaching (Barone, 2011).

Many commentators have emphasized that the humanistic-STEM and care-technical divides significantly contribute to the gender pay gap. Fields dominated by women often lead to less lucrative careers than those in technical fields, such as computing and engineering (Blau and Kahn, 2017). The challenges women face in the labor market also produce negative economic externalities. In Italy, where this study's case is situated, a recent report from the Bank of Italy estimated that the underrepresentation of females in the labor market, and the significant loss of human capital this entails incurs a significant cost in terms of GDP (Carta et al., 2023).

The factors contributing to horizontal segregation, particularly the gender gap in STEM fields, remain debated within the scientific community. The literature concurs that the underrepresentation of women in STEM is not due to inferior mathematical reasoning abilities (Lindberg et al., 2010), a notion commonly held in the past. In open and democratic societies, this phenomenon is typically attributed to differing interests between men and women. However, the root of these differences is contentious. Early researchers primarily focused on biological predispositions towards caregiving (Lueptow et al., 1995); see also the debate following, (Kahlenberg and Wrangham, 2010), but recent studies increasingly examine the impact of traditional gender stereotypes in shaping societal expectations for appropriate attitudes and behaviors in men and women (e.g. Guiso et al., 2008). This cultural influence is thought to either mask inherent motivations and interests as cultural norms (Cheryan, 2012) or to amplify and reinforce potential biological predispositions for caregiving between men and women (Hooven, 2021). In education, this phenomenon is exemplified by stereotypes that associate STEM fields with typically male characteristics (Diekmann et al., 2010; Makarova et al., 2019) or by the endorsement of *gender essentialism* (i.e. the beliefs that man and women have inherently different inclinations and should behave accordingly) by the teaching workforce (Levanon and Grusky, 2016).

There is also a lack of consensus in the literature regarding the effectiveness of interventions to counteract stereotypical perceptions of gender in STEM careers. Various theoretical frameworks emphasize the importance of adopting non-stereotypical beliefs early in life to shape career and educational aspirations, which begin to form around ages 11 or 12 (Kang et al., 2019). Specifically, the Social Cognitive Career Theory (Lent et al., 2000), building on a's social cognitive theory (Bandura, 1986), suggests that self-efficacy beliefs and outcome expectations influence career choices. Similarly, Eccles' model of achievement-related choices posits that stereotypes indirectly influence educational and career choices through biased estimations of success among available options (Eccles, 2009). Social role theory (Eagly and Wood, 2012) proposes that stereotypical beliefs arise from observing patterns in social roles and occupations, with the prevalence of men in STEM fields reinforcing implicit associations that underpin sectoral preferences.

A common inference from these theories is that exposure to female STEM professionals might alter the association between gender and STEM preferences, either by enhancing young women's perceived likelihood of success in STEM careers or by disrupting the implicit link between maleness and STEM. In recent decades, the focus has been on presenting young students with successful female role models. Despite their popularity and frequent recommendation in educational practices, scant evidence supports their effectiveness. Furthermore, the wide variety of formats in which role model interventions are implemented complicates the identification of factors that enhance their effectiveness (De Gioannis et al., 2023).

In this study, we contribute to the research examining the effectiveness of role model interventions in mitigating the gender gap in STEM fields. Our focus is on "STEM in Genere," a training program aimed at influencing both teachers' and students' perceptions of women's roles in science. This intervention, targeting primary and secondary school students, is funded by the University of Brescia. It will be evaluated through a randomized controlled trial during the 2024-2025 school year, involving a sample of primary and lower secondary students in the Italian province of Brescia. Our analysis will center on the short-term effects of the intervention on gender stereotypes and educational aspirations. Additionally, we plan to introduce random variations in the wording of our tests. This methodological choice is intended to assess language's influence on eliciting gender stereotypes in questionnaires, specifically those written in Romance languages. Furthermore, we will discuss policy implications and provide cost-effectiveness estimates concerning the potential scaling-up of this project.

2. Institutional Context

The educational system in Italy consists of three main cycles: primary (grades 1 to 5), lower secondary (grades 6 to 8), and upper secondary (starting at 9th grade). The primary and lower secondary cycles do not implement tracking, ensuring a uniform curriculum for all students. Tracking begins at the onset of the upper secondary cycle, where families can select a specific track for their children. This phase of education is characterized by significant differentiation, both vertically, in terms of preparation for university, and horizontally, across the humanistic and STEM disciplines. Consequently, schools and classes tend to exhibit considerable homogeneity in both social and gender composition (Guetto and Vergolini, 2017; OECD, 2021). Within this educational framework, the province of Brescia in Northeastern Italy presents a typical socio-economic scenario: a robust industrial sector dominated by small and medium-sized family-run manufacturing enterprises (ISTAT, 2023), alongside a population adhering to relatively traditional values (Lomazzi, 2017). These values often reinforce traditional gender roles, both within family settings and the workplace.

3. Empirical Analysis

3.1 Case Study

The "STEM in Genere" project, hereafter referred to as 'the treatment', is an initiative under the University of Brescia's Gender Equality Plan (GEP) for 2022-2024. This project aims to counteract gender stereotypes in science education among primary and lower secondary students in Brescia. The focus on these educational levels stems from the need to address gender stereotypes in science before the onset of tracking, which is the main factors driving gender differences in enrolment tertiary education in Italy (Barone and Assirelli, 2020). The treatment consists of interactive sessions where trained tutors engage students with educational games about science, scientists' work, and women's role in scientific history. This approach challenges the notion of science as a male-exclusive field. An adapted version of the game "Guess Who?" highlights the lives and achievements of notable scientists of both genders. Also the narrative of science's life, through the instrumentation used and which characterizes specific scientific subject will be the means of conveying the message of gender inclusion in

Science. The opportunity to hear a story, accompanied by the attraction and fascination that illustration exerts on little boys and girls, will be the most effective way to capture the attention of young listeners while keeping them entertained. The duration of these sessions ranges from a minimum of 2 to a maximum of 4 hours per classroom, with materials customized to the students' age group. Additionally, teachers participate in a dedicated training course (Manzella et al., 2023), which has effectively reduced gender stereotypes in educational settings. This training aims to align the project's objectives with the teaching practices in participating classes.

3.2 Evaluation Design

We have developed a randomized controlled trial (RCT) with a delayed treatment design to evaluate the program's effectiveness on students' stereotypical views and aspirations. In the spring of 2024, we will recruit a sample of randomly selected primary and lower secondary schools in the Brescia province. Participating schools must ensure the involvement of at least four classes. In return, the research team will provide each school with a report containing aggregated data about their students' views and aspirations. It will deliver the program to all participating classes within the school year. Randomization will be performed at the classroom level: within each school half of the classrooms will be assigned to the treatment and half to the control group. This design balances the need for statistical power with potential contamination risks. We aim to minimize contamination by delaying the treatment for control classes by three to four months. Data collection will occur via two surveys: a baseline survey at the project's commencement and a follow-up survey approximately four months before administering the treatment to control classes. Figure 1 graphically represents the evaluation process, with horizontal lines tracing each group's journey and dotted vertical lines indicating survey administrations (pre- and post-treatment). The surveys will be conducted simultaneously for both groups, as shown by the red dots.

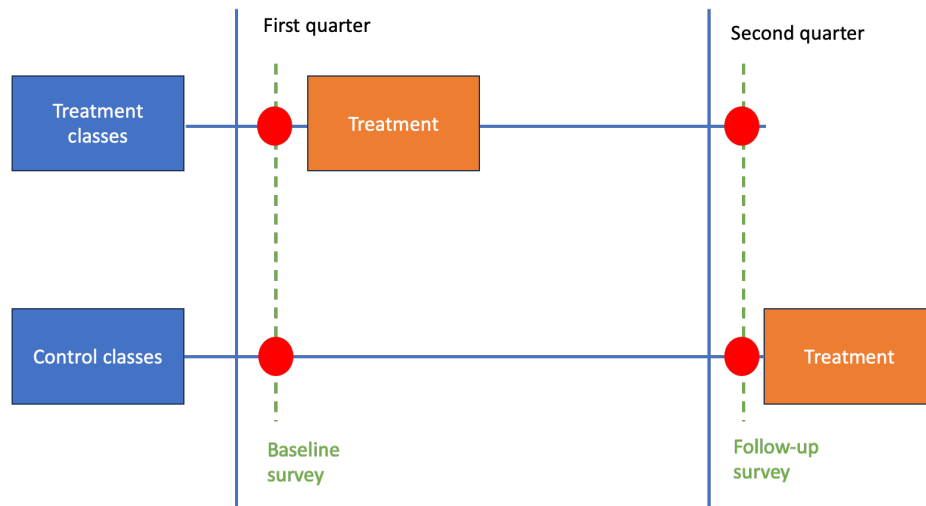


Figure 1: Evaluation design, source: personal elaboration.

The effects will be estimated thanks to the misalignment between the intervention's timing and the scheduling of questionnaire administration in the two groups. Impact estimates will be derived by regressing our outcome measures (see § 2.3) on the treatment status of the classroom, controlling for pre-treatment outcome values and school fixed effects. The treatment effects will be estimated using the following model:

$$(1) Y_{ijcs1} = \alpha + \beta T_{jcs} + \delta Y_{ijcs0} + \gamma S_s + \theta_j + \varepsilon_{ijcs}$$

Y_{ijcs1} represents the outcome of the i^{th} student in enrolled in class c of grade j of school s at the follow-up; T_{jcs} represents the treatment indicator; Y_{ijcs0} represent the outcome variable measured at baseline, S_s and θ_j represent school and grade fixed effects respectively, and ε is the error term. Standard errors are clustered at the school level.

3.3 Measures

A key aspect of this evaluation is the inclusion of classes from first to eighth grade, which vary widely in reading and cognitive abilities. The project aims to assess the program's impact on endorsing gender stereotypes related to science and scientists. These will be measured using explicit scales via questionnaires (for 4th to 8th graders)

and indirect tests for 1st to 3rd graders (for a review of instruments, see De Gioannis et al., 2023). Indirect tests, like a modified version of the Draw A Scientist Test (DAST) (Finson, 2002), will assess the main outcome among 1st to 3rd graders, an age in which reading a text and answering a survey might be too demanding. For 6th to 8th graders, questions about job aspirations will be included as a secondary outcome.

3.4 Methodological Experiment

Regarding our primary outcome, we will embed a survey experiment in our version of the “Draw A Scientist Test”. Issues related to wording in questionnaires have been extensively studied and debated (Schaeffer and Dykema, 2020). Wording of the questions is particularly consequential in our case, since in Romance languages the grammar masculine in its plural form is intended to serve as neutral, thus including also women. To assess the impact of using grammatically masculine versus gender-neutral expressions in tests designed to elicit gender stereotypes, we will randomize two versions of the tests within each classroom. The model for estimating the impact of wording will resemble the one in expression (1) but will include a test fixed effect and an interaction between the treatment and test indicators, allowing for variation in wording effectiveness between treated and control students.

4. Conclusion

Social policies have recently prioritized gender equality in STEM fields. To achieve this goal, eliciting early interest in STEM among girls is seen as a crucial measure. Our contribution to the literature will be the evaluation of the “STEM in Genere” project, an intervention aiming to boost girls' interest in STEM and combat gender stereotypes in education. The project, funded by the University of Brescia, targets primary and lower secondary school students.

The contribution of our work will be manifold. First, thanks to the evaluation design, we will be able to provide empirical evidence about the extent of gender stereotypes in Italy in a large sample of students and about the effectiveness of the intervention. This contribution of the literature is relevant since robust available evidence so far is mostly confined to anglo-saxon countries.

Second, we will embed a survey experiment within our design, to test for the impact of neutral wording on the estimation of stereotypes endorsed by the students. The literature on survey instruments on this topic is still taking its first steps especially in languages other than English, and our contribution could help future work on Romance languages to tailor survey instruments in this research field.

Third, the intervention of this case study is interesting because it could be easily scalable in case of proven effectiveness. The originality of the treatment lies in the interactive and engaging approach taken to challenge and reshape students' perceptions of science and scientific figures. The flexible duration of sessions, from a minimum of 2 to a maximum of 4 hours, adapts to the needs of classrooms, ensuring in-depth engagement easy to manage within the school context. Additionally the teacher training component, based mostly on videos, is potentially scalable with low cost.

This said, it is important to remember some shortcomings stemming from our design, above all the limited external validity and the focus on short-term effects retrieved via questionnaires. In case of detection of positive effects, it would be advisable to expand both the period of our evaluation, including medium term effects (such as track of enrolment in 9th grade) and the test area to include a larger and diverse number of schools and territories.

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Late Submission

Women and STEM skills for innovation and technological entrepreneurship

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Abstract: The role of women in innovation and technological entrepreneurship is fundamental in all countries. However, there are two key factors that decision-makers and public policymakers must consider; the first factor is related to the presence of women in the university and professional fields in STEM (Science, Technology, Engineering, and Mathematics) and the skills that derive from it. The second relevant factor is stereotypes. Female entrepreneurship Professional Field, Pension, equal pay for equal work, marriage rights, and region/country. Gender and generate more innovation and jobs. This research aims to analyze the STEM competencies and entrepreneurship carried out by women and highlight the most relevant factors to reduce the gap. The methodological strategy is based on the use of machine learning techniques for which three databases were used: two from the World Bank Women, Business and the Law, another on business and law from the World Bank, and another on education from UNESCO, with emphasis on STEM competencies. The results show that women's most significant focus on STEM careers is in the health sciences, and the one that offers the lowest degree is engineering. It is also evident that the critical factors for the incursion of women as entrepreneurs in technological sectors are professional field, pension, equal pay for equal work, marriage rights, and region/country, and in these, some stereotypes are present.

Keywords: women, STEM skills, gender gaps, innovation, technology, entrepreneurship, machine learning, stereotypes

1. Introduction

As today's world becomes increasingly digital, technology plays an increasingly important role in innovation and economic development. Today, countries' economic and social prosperity depends on the state of science and technology (Hammond, 2020). In addition to the above, the pandemic caused by COVID-19 has highlighted the need to increase skills in science, technology, engineering, and mathematics (STEM).

In this context, the participation of both men and women in STEM activities is essential. However, women and girls remain underrepresented in STEM studies, careers, and professional fields, although there is wide variation between countries and STEM fields. Beyond the wage gap that this underrepresentation entails, there is also a gender gap in this area, which is reflected in an inefficient allocation of labor and talent and a lost opportunity for the countries' economies (Sánchez, 2021).

According to Bello (2020), the factors of inequality between men and women in STEM fields are complex and diverse, and the magnitude of their impact changes in different contexts.

In addition to the above, today, in the knowledge-based economy, entrepreneurship is considered one of the critical skills needed in all countries. However, a significant challenge is that there must be a common understanding of entrepreneurship as a competence (AKRLappe et al., 2021 and CEPAL, 2023), especially in technological entrepreneurship.

Another relevant point is that according to the International Telecommunication Union (2023), for girls and women to thrive in science, technology, engineering, and mathematics (STEM) careers, they must acquire skills to become users and creators of ICT worldwide. . digital (Shukla et al., (2021). Therefore, encourage and inspire the pursuit of STEM education and engage the entire community and stakeholders to promote collaboration through all possible means (International Telecommunication Union, 2023).

To achieve this, women and girls need digital empowerment from an early age, allowing them access to technologies and opportunities and a place at the digital decision-making table on equal terms with men. These actions are crucial to addressing gender imbalances in science, technology, engineering, and mathematics (STEM) and promoting digital gender equality at a global level (Omar et al., 2017; ECLAC, 2023).

It is currently recognized that gender equality is fundamental in all countries since it contributes to all people's development, health, and social and environmental well-being. Therefore, innovation with a gender perspective (Schiebinger et al., 2020) and with an equity focus in the production of scientific knowledge (Heikkinen et al., 2020), especially in STEM, will contribute to improving sustainability results and in turn, it will make research more responsive to societal needs and promote the development of new ideas, patents and technologies (Schiebinger et al., 2020).

Analyzing women's entrepreneurship and measuring the gender gap is essential to understand better how women entrepreneurs contribute to the economy and society. However, the lack of comprehensive gender-disaggregated data on business creation and ownership presents an obstacle to the analysis of female entrepreneurship. That is due to the lack of standardized and internationally comparable data that includes sufficient data and factors to analyze and diagnose gender gaps related to entrepreneurship.

Therefore, greater participation by women in the STEM sector would benefit them and increase the competitiveness of industries, sectors, and countries by incorporating a greater diversity of perspectives for the development of innovation.

Currently, there are various indicators and measurements to evaluate the role of women in the various economies of the world and laws to reduce and eliminate the gender gap in STEM skills and entrepreneurship. However, a single indicator or measurement of gender equality does not exist. It is capable of capturing the multiple problems that women and girls face at the same time (UNDP, 2023).

For this reason, this research aims to combine different databases to analyze and elucidate the most crucial gender gaps for technological entrepreneurship so that decision-makers have a broader focus and take the necessary actions. Derived from the previous problem, the questions that guide the research are What are the STEM careers most studied by women worldwide? What are the most relevant critical factors to reduce the gender gap for technological entrepreneurship? What are the key factors for the entry of women as entrepreneurs in technological sectors?

This work is structured in three sections. The first section deals with the theoretical framework, specifically the conceptualization and importance of disciplines related to science and technology, known as STEM (Science, Technology, Engineering, and Mathematics), as well as the various types of gaps that exist between women and men the races that stand out the most. The second section presents the analysis with machine learning techniques. Finally, the third section presents the results, discussion, and conclusions.

2. Theoretical framework

Women present a historic and worrying gap in the disciplines related to science and technology known as STEM (Science, Technology, Engineering, Mathematics), except in the case of health professions (García-Holgado, 2022).

According to the World Economic Forum (2021), no country has achieved full gender parity. The global gender gap score in 2021 is 67.7%, meaning the remaining gap to close is 32.3% (World Economic Forum (2021).

Access to education for women allows them to escape poverty and increase their chances of entering the labor market. In addition, it contributes to reducing the gender gap and countries' growth, development, and innovation. However, their presence in STEM fields is challenging, as they sometimes face unfavorable academic environments (Hernández, 2021).

2.1 Conceptualization and importance of STEM competencies and education

For Aguilera et al. (2021), Akerson, 2018 and Breiner et al. (2012), STEM education is an educational approach that integrates knowledge and skills from several disciplines involved in the acronym and which is oriented towards problem-solving and contextualized in situations with different levels of reality and authenticity.

For Grass and Alí et al. (2023), STEM education is the process that promotes integrated and interdisciplinary learning of Science, Technology, Engineering, and Mathematics as pillars for sustainable development and social well-being.

Therefore, STEM skills are fundamental for developing people and countries in an increasingly complex, interconnected, and changing world. Countries where people develop vital skills, learn throughout their lives, and use them fully and effectively at work and in society are more productive and innovative and enjoy higher confidence levels, better health outcomes, and higher quality of life.

The future of work is changing; existing jobs are changing, and new ones are emerging that require knowledge and skills in science, technology, engineering, and mathematics (STEM) (Alam and Sánchez; UNICEF, 2020). However, according to Alam (2020), 125 million primary and secondary school-aged girls in the developing world are out of school.

The exclusion of girls from education begins early and increases throughout their lives. While most upper secondary-aged adolescent girls begin primary education, less than half reach the upper secondary level, where STEM skills can be further consolidated (Alam, 2020), even though they have the same or more children's chances of achieving minimum proficiency in mathematics and science.

The under-representation of women in science fields, particularly in the academic area is a problem present in different countries, as shown in the study developed by Papadakis *et al.* (2018), who evaluated data of alumni of the Computer Science Department of the University of Crete from 1985 to 2017, finding that the disproportion in the number of male students admitted to this department compared to female students, as well as the number of postgraduate male students compared to female students is not only visible for the entire analyzed period, but also increasing over the last years.

Parents play a vital role in children's growth, so their expectations always affect children's academic performance (Boonk et al., 2018) and participation in scientific activities (Boon, 2012). Parents of young students often play a vital role in STEM education (Hill & Craft, 2003; Park & Holloway, 2016), and their beliefs are crucial in establishing positive attitudes toward science in students (Chen & Lin, 2019; Crano & Prislin, 2006).

In several studies, parents who actively participate in children's STEM extracurricular activities (e.g., visiting museums, playing math games, helping with homework, and introducing particular STEM careers) would significantly increase motivation and performance in school their children's STEM learning (Archer et al., 2019; Wang, 2012). The younger the children are, the more influential the effect of their parents' involvement and guidance is (LeFevre et al., 2009; Froiland et al., 2012). Most of the time, parents' positive expectations could have an even more significant effect on children than their behaviors (An et al., 2019)

According to Sobieraj and Krämer (2019), Mavriplis et al. (2010), Smeding (2012), and Wang and Degol (2013), there are various factors why women avoid the path to STEM-related areas, including weaker math skills, implicit gender stereotypes, or structural deficits in school education.

Key factors perpetuating gender gaps in STEM:

- Gender stereotypes: STEM fields are often considered masculine, and both parents and teachers frequently underestimate girls' math skills as early as preschool.
- Male-dominated cultures: Because fewer women study and work in STEM, the field tends to perpetuate inflexible, exclusionary, and male-dominated cultures.
- • Lack of role models: There are few role models to inspire the interest of girls and women in these fields.
- Math anxiety: Teachers frequently transmit math anxiety to girls, assuming that girls must work harder to reach the same level as boys (Sobieraj & Krämer, 2019; Mavriplis et al., (2010); Smeding, (2010));2; Wang & Degol, 2013).

According to Bem (1993) and Master et al. (2017), gender stereotypes can affect perception and behavior. Stereotypes about scientists can also influence the behavior of women and men. For example, when deciding whether to pursue science, technology, engineering, and mathematics, Master and Meltzoff (2016) argue that these stereotypes can act as barriers that prevent girls from studying STEM subjects. According to Papadakis (2018), even books and School textbooks have been a source of gender stereotypes in computer science education in Greece, creating a male-dominated perception in this field.

Sobieraj and Krämer (2019) argue that there are several apparent differences between men and women in terms of perceived competence and motivation to study. Socialization of such beliefs could motivate men to choose a STEM degree program and give them the confidence to experiment with competition after graduation. On the other hand, STEM students partly lack the perception of competence. In line with previous research on stereotypes, this may also have been induced by stereotypical beliefs about women and STEM, where women assume that their effort, skills, and abilities might be worth less compared to STEM students because STEM is a male domain (Hand et al., 2017).

2.2 Women and the gaps in science, technology, engineering and mathematics (STEM) and technological entrepreneurship

The imbalance in the presence of men and women in STEM areas is palpable, and in entrepreneurship, there are more success stories from men than from women. That situation is evident in a term that Kovaleva et al. (2023) mention that is used to describe the "start-up culture" in Silicon Valley, which is "tech bros."

Although entrepreneurship constitutes a critical path to foster economic activity in different regions, the intention of becoming an entrepreneur among women is still less than the intention of men, and this is particularly relevant in STEM fields (Armuña et al., 2020).

Factors derived from deficiencies in education can become obstacles for women to pursue an entrepreneurial career. As shown by the evidence from a study based on the Global Entrepreneurship Monitor for 19 European countries and the USA, there is higher entrepreneurial activity in high-tech sectors in countries where there is greater equality in science education (Dilli & Westerhuis, 2018).

A study by Kovaleva et al. (2023) revealed that factors such as discrimination, social acceptance, and lack of a female role model in tech-related sectors are relevant in reducing women's intentions to start their own companies. It is worth mentioning that, in the same study, other elements like financial risks or high responsibilities are found to be non-gender related, affecting both male and female entrepreneurship.

The concept of entrepreneurship competencies plays an essential role in an individual's final decision to start a new business. These competencies are defined by Armuña et al. (2020) as "the set of skills and knowledge that a person achieves through education or experience" (p. 71), and the self-perception of these capabilities is essential. This study found three areas where female potential STEM entrepreneurs feel less competent: the ability to recognize potential value in an idea, financial knowledge, and digital know-how.

These studies provide valuable insights into the problem of identifying relevant aspects influencing new female ventures and elements that impact the gender gap, obtaining this information from interviews. However, there is still an opportunity to define these aspects using machine learning methods.

On the other hand, the balance of power in business has long been a male domain. While great strides have been made in the quality of life and its technical sophistication, the other side is discouraging. There are surprising extremes of wealth and poverty, regulatory burdens, and a growing culture of litigation, environmental abuse, and more. With their ability to listen, consensual management style, and sensitivity to the bigger picture, women will do a lot to help us achieve a better balance in business and life in general (Brocca et al., 2018).

3. Methodology

This research is quantitative. The methodological strategy is based on machine learning techniques, where three World Bank databases were used, one referring to the fields of women's professional education and another to businesses owned by women.

1. Women Entrepreneurs Finance Initiative (We-Fi).
2. Women graduates by field of study.
3. Women's Law

Two experiments were done; in the first, databases I and II were joined across the State and year fields to find the existing correlations between professional fields of studies and women-owned businesses; in the second one, the merge database was united with the Women's Law data; Machine Learning techniques for unsupervised learning were applied, where three clusters were generated that grouped the countries according to their characteristics.

4. Results and discussion

In the first phase of the work, the most relevant variables for classification expressed through the RRelief metric have been searched. This means that these are the most influential variables to reach the optimal result on the target variable based on the ReliefF metric. ReliefF is part of an algorithm's family that measures the ability of an attribute to distinguish between classes on analogous data instances (Robnik et al., 2003).

Table 1. Most relevant variable

Variable	Relevance (ReliefF)
Professional Field	0.518
Is the mandatory retirement age for men and women the same?	0.27
Is the age at which men and women can retire with full pension benefits the same?	0.248
Does the law mandate equal remuneration for work of equal value?	0.236
Length of paid paternity leave	0.231
Does a woman have the same rights to remarry as a man?	0.215
Region	0.192
Pension	0.188

The first experiment shows that women who study health careers have higher values (database of female graduates) with similar participation in e-participation (Figure 1). E-participation is generally used as a category, counting a variety of areas such as e-consultation, e-legislation, e-petition, and e-deliberation, as well as the use of information and communication technologies to enable the participation of citizens in democratic processes.

Previous studies confirm this finding in exploratory studies about the influence of education on electronic participation; one of them is Pérez-Morote et al. (2022), who have identified a negative impact of gender and education, among others, on electronic participation.

The measurement index used in the database of female graduates by area of study (value) increases for women who study careers in Health, Natural Sciences, and Services and is lower for Engineering and Sciences. It talks about the presence of women in these areas where the parameter e-participation vs study area indicates that this value is higher in those who studied careers corresponding to health and well-being (Figure 2). The United Nations supports this finding in the Women in Health Journal (2022), stating that women contribute to the disruptive digital transformation in health and demonstrate their ability to be solution-oriented based on the activity of several women in various places around the world.

In the second experiment, where the databases Women Entrepreneurs Finance Initiative (We-Fi) and Women graduates by field of study were joined, it was found that the relationship between the value parameter and the number of women who own a business is influenced by the area of professional studies that they choose (Figure 3).

Additionally, the database resulting from the union has been processed using clustering. This unsupervised learning technique has allowed countries to be grouped according to their characteristics. In this work, three clusters have been generated, where Cluster number 2 includes the countries with the most significant number of women business owners. Additionally, it has been found in this study that the most important number of women located in cluster number two have studied careers in the Health and welfare area (Figure. 4).

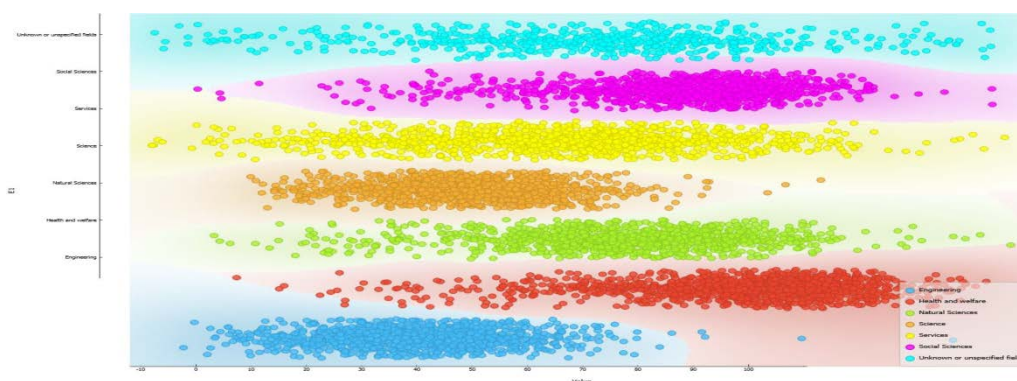


Figure 1. Value vs. women's professional studies area

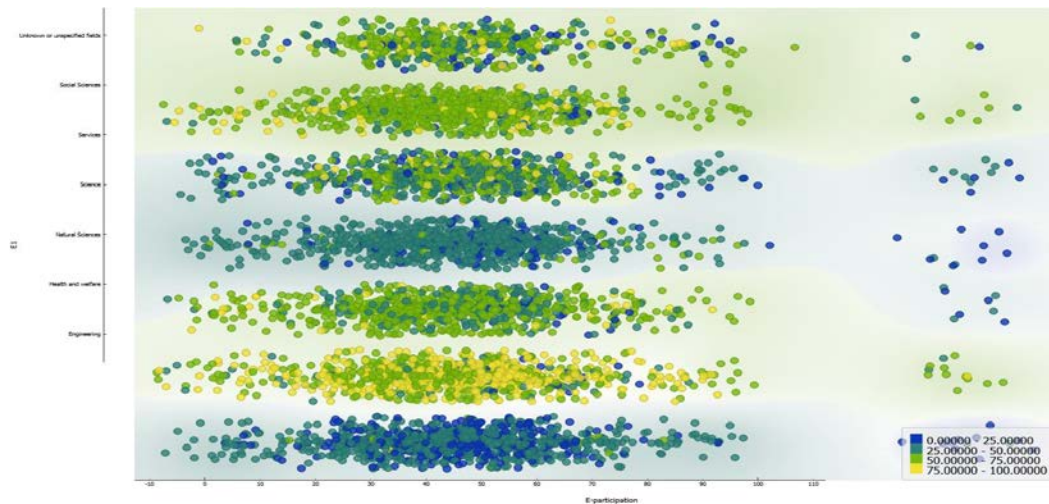


Figure 2. E-participation vs. women's professional studies area

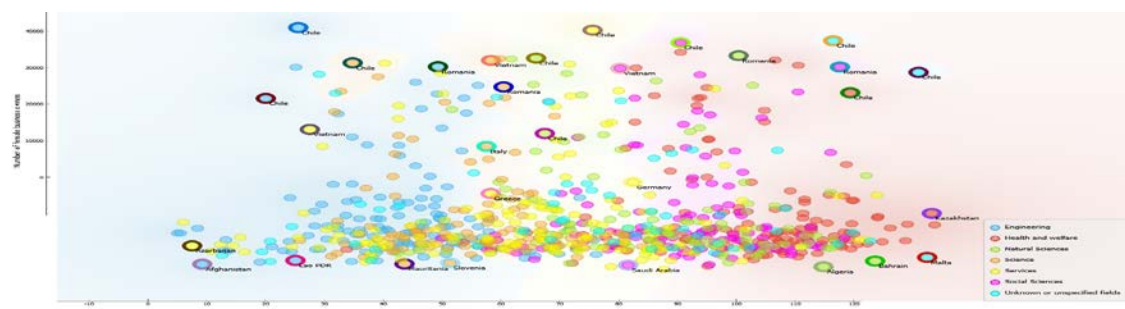


Figure 3. Number of female business owners vs. value parameter colored by professional studies area

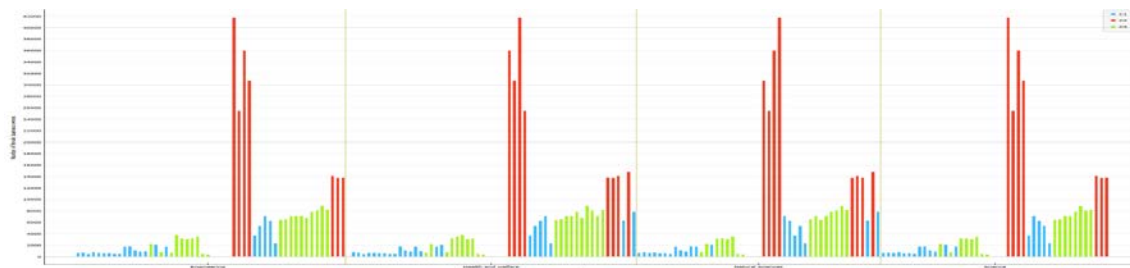


Figure 4 Relationship between the area of professional studies and the number of women business owners grouped by clusters.

Finally, when doing a review by cluster, it is observed that the best-valued cluster (cluster 2) economies belong to countries such as Chile, the United Arab Emirates, Italy, the Korea Republic, Germany, and Romania, among others. These are more prosperous economies than clusters one and three (Figure 5).

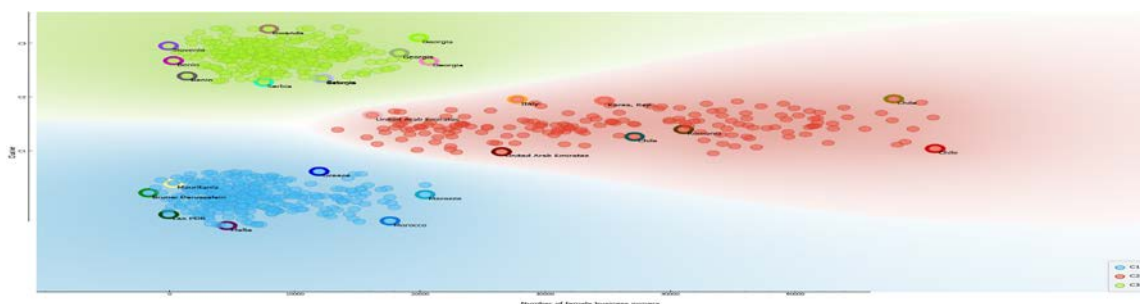


Figure 5 Clustering by country's similarities.

Considering the income group from de WBL Women's Law, the high-income group increases their quantity where the women possess services business; the high-income group has fewer members once the women are in the other professional fields (Figure 6).

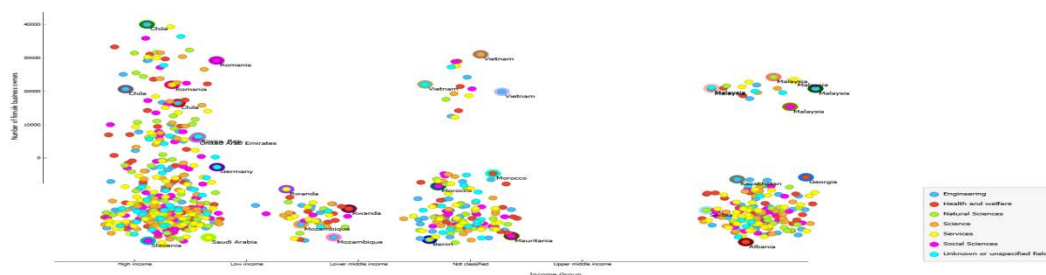


Figure 6. Income Group vs Number of Women Business Owners Grouped by Professional Field.

Through the union of the three databases studied, it is notable that the number of women business owners increases in countries where women select where to live the same way as men. It can also be noted that most businesses are dedicated to the service area (Figure 7). Related to these findings, the World Economic Forum (Koch-Mehrin & Weh, 2023) reported increasing evidence showing the impact of women in law and when they hold public office. Countries with more female political leaders tend to pass more laws that eliminate inequality and score higher on the World Bank's Women, Business and Law (WBL) Index, which measures legal equality of economic opportunity (Figure 7).

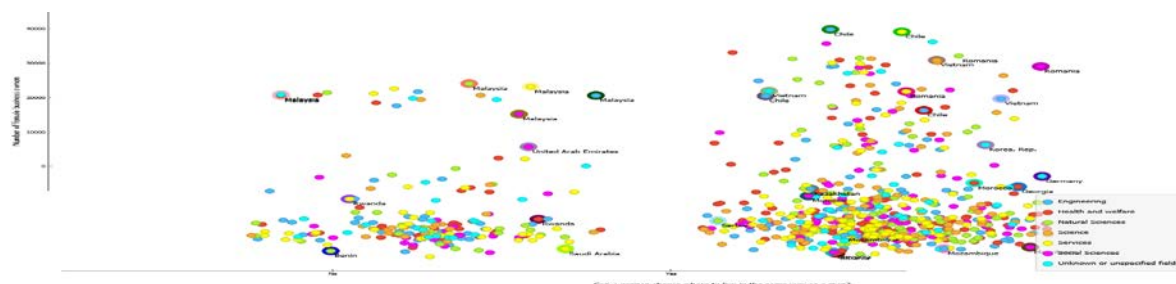


Figure 7. Relationships among the number of business properties of women, freedom to select how to live grouped by Professional Field.

According to the data analyzed, the number of women business owners has diminished over the years. This is shown through the negative trend lines from 2016 in almost all countries reported by WB (Figure 8).

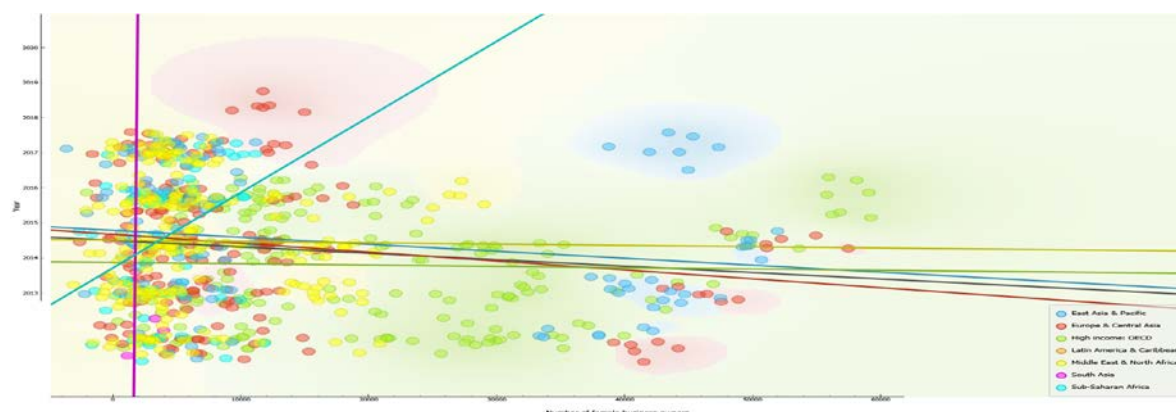


Figure 8. Negative trend in the number of women business owners

5. Conclusions

In order to analyze the elements of the STEM competencies and entrepreneurship carried out by women and highlight the most relevant factor to reduce the gender gap, three public datasets were joined: a) Women Entrepreneurs Finance Initiative (We-Fi), b) Women graduates by field of study, and c) Women's Law. Their union allows the authors to obtain highlights about the actions to improve equality in STEM career participation.

To deal with the vast challenges of this century, among which climate change, digitalization, technological changes, the future of work, and to meet the sustainable development objectives, science is necessary, which is why the world does not. It can deprive the potential, intelligence, and creativity of thousands of women who are victims of inequalities or prejudices (Mondejar et al., 2021). According to the European Institute for Gender Equality (2024), gender inequalities have been documented by weakening women's contributions in the digital field, where there is a lower participation in digital education and under-representation of women in information and communication technologies roles.

The gender disparity in STEM is an opportunity for all countries to be more productive, innovative, and competitive and thus be able to face the dynamics of current markets. Therefore, it is necessary to eliminate the cultural and social barriers that inhibit women's entry into this sector. For this reason, it is necessary to expand and promote opportunities in technical areas that allow women to develop the required skills and give more visibility to the role models of female entrepreneurs in the technological field. Implementing these strategies, educational improvements, skill development, and training emphasizing technological knowledge should support Promoting STEM skills by all countries to promote the teaching of science, technology, engineering, and mathematics as support columns for sustainable development and social well-being, without forgetting that the person must always be at the center.

One of the actions proposed by the European Commission in the Digital Action Plan 2021-2027 (European Economic and Social Committee and the Committee of the Regions, 2020) is to boost women's participation in STEM and support the European Union STEM Coalition to develop new higher education curricula for engineering and information and communications technology based on the STEAM approach to be more attractive for women and growth their participation and career development in STEM subjects. Other countries could adopt this good practice to promote women's participation in the digital age.

The results of this work underpin that countries must continue promoting laws and regulations to generate more laws, regulations, and programs in more countries that encourage the reduction of the gender gap. However, there must also be specific strategies to eliminate stereotypes - since Sometimes they have a more significant impact - even on the law. The results in which clusters in some cases report the countries show similarities that are not obvious, as in the case of cluster 2, where the economies belong to countries such as Chile, the United Arab Emirates, Italy, the Korean Republic, Germany, and Romania, among others are grouped. These are more prosperous economies than clusters one and three. Countries belonging to different continents are grouped; however, they share characteristics that indicate that the actions to be taken to improve the inclusion of women can be similar. The special care could be focused on the clusters that grouped the less prosperous economies, where women have more disadvantages and inequality.

In future work, it is necessary to analyze whether the negative tendency in the number of women business owners has continued after forced.

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