

Rethinking the Future of Intellectual Capital: Emerging Perspectives in IC Theory and Practice

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Abstract: Intellectual capital (IC) theory, emphasizing that the primary source of organizational value is derived from intangible, knowledge-based resources, has long been recognized as a critical driver of sustainable competitive advantage. However, as the business landscape continues to evolve in the face of technological, institutional and socio-political disruptions, and natural disturbances, it seems viable that the theories for understanding IC and practices for managing it should also be updated. This paper seeks to challenge and advance existing IC theory by presenting a forward-looking exploration of the evolving landscape of IC. We propose some critical theoretical and practical updates that can bridge the gap between conceptual advancements and real-world applications. By adopting an ecosystem-oriented approach, we highlight how IC operates across different levels of analysis- from individual to societal - and how multilevel, dynamic, and complex interactions within the IC ecosystem contribute to innovation, value creation, and sustainable development. The paper challenges traditional IC frameworks by emphasizing the fluid, interconnected nature of IC, arguing that a more holistic, dynamic model is essential for understanding and leveraging IC in today's rapidly changing environment. Furthermore, we argue that future IC agendas must address broader concerns, including sustainability, IC ethics, IC diplomacy, fair and socially equitable distribution of value, and societal justice. Recognizing this progress in IC research and practice as essential for sustainable growth and social well-being in the coming era, we aim to contribute to a deeper understanding of emerging paradigms and to align IC theory and practice with future economic, technological and social transformations.

Keywords: Intellectual capital (IC), IC ecosystem, IC diplomacy, IC ethics, Sustainability, Digitalisation, Future

1. Introduction

The concept of intellectual capital (IC) has significantly influenced the discourse on organizational value creation over the past few decades. Traditionally encompassing human capital, structural capital, and relational capital (Edvinsson and Malone, 1997; Stewart, 1997), but recently expanded with new dimensions, such as renewal, entrepreneurial, trust capital, spiritual, and emotional capital (Cabrillo et al., 2024; Buenechea-Elberdin et al., 2017; Bratianu, 2025), IC has been considered as a key driving force of value creation and competitive advantage in the knowledge economy (Kianto et al., 2025). However, the increasing complexity of the contemporary world—driven by rapid digitalization, global socio-political tensions, environmental crises, and institutional realignments—demands a fundamental reassessment of how IC is understood, measured, and managed (Kianto et al., 2025; Kianto and Cabrillo, 2023).

Recent studies have highlighted the limitations of traditional IC models in capturing the dynamic and interconnected nature of knowledge-based value creation in the digital era (Kianto 2007; Bratianu 2025; Pedro et al., 2023; Kianto et al., 2023). Static taxonomies and firm-centric perspectives often fail to account for the multilevel and dynamic nature of IC that shapes IC interactions and flows within and beyond organizational boundaries. In this context, researchers have begun to adopt broader, more holistic views—reframing IC as a complex and evolving ecosystem embedded in social, technological, institutional, and environmental contexts (Matos et al., 2020; Kianto et al., 2023; Konno, 2025; Lin, 2025; Bratianu, 2025; Alppivuori and Kianto, 2025).

Rethinking of IC ecosystem opens new avenues for inquiry that extend beyond performance measurement and strategic management. It encourages critical reflection on issues such as sustainability, equity, ethics, and societal wellbeing (Kianto et al., 2025). The integration of concepts like IC diplomacy (Dumay and Garanina, 2013), IC ethics (Kianto et al., 2023; Ulliah et al., 2022), and the fair distribution of value (Dumay, 2025) highlights the need to reposition IC theory and practice within the broader goals of sustainable development and social justice.

This paper aims to contribute to the rethinking of IC through the lens of complex, dynamic, and ecosystem thinking. We discuss updates to IC that not only accommodate organizational concerns but also foreground the societal and environmental implications of IC activities. In doing so, we seek to advance the current IC research

and practice by suggesting new thinking and novel perspectives for IC and to adapt it to the new dynamic and interconnected digital reality.

2. Reframing Intellectual Capital Theory and Practice

2.1 Intellectual Capital as an Open, Dynamic, and Multilevel Ecosystem

Given the increasing complexity of today's knowledge economy, it is crucial to approach IC from a broader, multilevel, and ecosystem perspective. IC is embedded in a web of interconnected actors and institutions, where its creation and application are shaped by dynamic relationships across multiple levels (Kianto et al., 2025a; Bratianu, 2025). This calls for a multilevel view of IC—encompassing individual, team, organizational, institutional, national, and regional dimensions (Lin, 2025; Bratianu, 2025; Alppivuori and Kianto, 2025)—rooted in personal capabilities, group practices and cultures, and societal infrastructures (Secundo et al., 2016). As highlighted in recent contributions, a narrow, firm-centric focus, although prevalent (Lin and Edvinsson, 2021), is no longer sufficient; understanding IC's role in global societal transformation requires embracing its complex, networked, and dynamic nature of IC (Konno, 2025; Lin, 2025).

The intellectual capital (IC) ecosystem continuously co-evolve that confirms IC dynamics (Kianto et al., 2017; Konno, 2025) and prove that IC circulate through virtuous cycles of learning and unlearning (Nonaka and Konno, 1998) within and between agents, levels, and parts of the ecosystem (Bratianu, 2025). The resulting ecosystem is therefore *complex* because of its non-linear interactions, *dynamic*, because IC is flowing and constantly changing, and *open*, relying on trust-based networks and openness for the co-creation of value (Konno, 2025).

2.2 Intellectual Capital Ecosystem for Societal Innovation

IC ecosystem provides the knowledge resources and capabilities, while innovation ecosystem offers the structure, the place, and diverse participants (Konno and Schillaci, 2021) through which these resources are activated for societal and environmental innovation (Konno, 2025). Quintuple Helix Innovation Model (Carayannis and Campbell, 2010), as an extension of Triple Helix (Etzkowitz and Leydesdorff, 2000) and the Quadruple Helix (Carayannis and Campbell, 2009), integrates knowledge flows across five key knowledge subsystems: academia, industry, government, civil society, and the natural environment. IC serves as the foundation for knowledge creation, exchange, and application within and between these helices. Universities provide the foundation for knowledge creation and human capital development, while businesses transform this knowledge into practical applications and marketable innovations. Governments support the system through regulatory frameworks, funding mechanisms, and infrastructure. Civil society contributes through societal needs, ensuring that innovation aligns with broader social values. The inclusion of the natural environment adds a sustainable dimension to an ecosystem (Koch, 2025). This model highlights the multilevel and systemic nature of IC, emphasizing how dynamic interactions among diverse players in the ecosystem drive innovation, sustainability, and societal transformation (Carayannis, Barth, and Campbell, 2012).

2.3 Intellectual Capital Diplomacy for Societal Transformation

In an interconnected, knowledge-driven world, the effective mobilization of each spark of collective intelligence in the IC ecosystem enhances an individual, organization, and national ability to participate in international collaborations and contribute to addressing global challenges such as climate change, geopolitical crises, and digital transformation (Koch, 2025; Ordoñez de Pablos, 2024). Following the concept of science diplomacy (European Commission, 2023), that may be understood as the use of scientific collaborations among nations to address common problems and build international partnerships, we put collaboration, trust and shared values, and the flow and exchange of IC across borders in the centre of IC diplomacy.

IC diplomacy may be defined as the ability to establish and maintain trustful relationships, mutual understanding and value creation partnerships across organizational or national boundaries through the strategic management and exchange of IC (Dumay and Garanina, 2013). A collective intelligence framework can support the understanding of how multi-level structures, connectivity and contactivity patterns (Lin, 2025) and technological platforms can improve the flow of IC across innovation ecosystems to generate the desired innovation, peace and societal transformation (Secundo et al., 2016).

IC diplomacy promotes individual and collective intelligence and fosters innovation and societal transformation through trustful and open knowledge dissemination (Secundo et al., 2016). When leveraged strategically, IC serves not only as a foundation for excellence and innovation of the ecosystem but also as a catalyst for global cooperation, sustainable development and peacebuilding (Kianto et al., 2025). Shared values bind people together; therefore, IC diplomacy and IC companionship (Szogs, 2025) may be critical tools to build bridges

across geopolitical divides, promote mutual understanding, and align IC research efforts with societal needs (Kianto et al., 2025; Dumay, 2025).

IC diplomacy seems vital for harmonizing IC ecosystems and extracting human capital to address global challenges and advance societal transformation in a way that is inclusive, ethical, and grounded in shared human values.

2.4 Integrating Ethics Into Intellectual Capital Theory and Practice

Ethical capitalism refers to an approach to capitalism in which businesses and markets operate not solely for profit maximization, but also according to ethical principles that prioritize social justice, environmental sustainability, and the long-term well-being of all stakeholders (Koch, 2025). It challenges the traditional shareholder-centric model of capitalism by promoting a more inclusive and responsible economic system (Freeman, 2010; Porter and Kramer, 2011). In ethical capitalism, companies are expected to consider the consequences of their actions on employees, customers, shareholders, partners, communities, the environment, and future generations, integrating ethical decision-making into corporate governance and strategic planning (Sandel, 2012).

As organizations and societies rely strongly on intangible assets and IC, ethical questions related to inclusivity, fairness, and the responsible use of artificial intelligence (AI) become paramount (Kianto et al., 2025; Salmelin, 2025). Future IC research calls for a robust ethical framework that goes beyond traditional intellectual property rights to protect knowledge ownership. *Ethical IC research* must engage with broader societal values, including social justice, equity, and sustainability. Moreover, ethical leadership—grounded in integrity, honesty, credibility, transparency, and a commitment to the common good—plays a crucial role in shaping IC practices that contribute to both organizational and societal well-being (Kianto et al., 2023).

2.5 Intellectual Capital and Sustainability

IC plays a major role in driving growth, competitiveness, and sustainability, improving society's well-being and the economic performance of businesses (Cabrita et al., 2023). It positively influences organizations' sustainable performance in social, environmental, and financial aspects, and emphasizes its role in exploiting business opportunities, encouraging innovativeness, and taking risks for transformation to achieve social, environmental, and economic benefits (San et al., 2022). IC contributes to sustainable business practices and sustainable regional competitiveness, which cannot be achieved without the proper development of intangible resources (Januškaitė and Užienė, 2018). Dwianika and Gunawan (2020) link IC to the concept of long-term value creation, which in turn contributes to the deceleration of climate change and the reduction of negative economic impacts (Hariastuti and Lukmandono, 2022). The future depends on human capacity to adapt, identify opportunities, acquire the necessary skills and knowledge, and transform them into economic value — all while remaining in balance with nature and ecosystems (Cabrita et al., 2023). It is increasingly acknowledged that IC research and practice have to take into account what is supposed to be sustainable to develop organisational wealth, regional competitiveness and sustainable value, and look from an IC ecosystem perspective and not isolated from, but originally integrated with, nature and society (Kianto et al., 2025a). The concepts of IC, sustainability, and both social and economic value should be explored in conjunction in order to develop balanced economic, societal and environmental solutions as well as holistic conceptual models.

2.6 Rethinking Intellectual Capital in the era of Digitalisation

New technologies are disrupting the conventional business, economy and society by impacting almost all sectors (Matos et al., 2020; Inshakova et al., 2020), as well as a wide range of internal organizational functions (Esmer et al., 2019) and occupations (Beke et al., 2020). There is a lack of studies analysing fundamental changes in the role of IC under the influence of digital technologies (Užienė, 2021). IC, as the organizational resource and key driver of wealth creation in the knowledge economy, undergoes various changes under this influence (Viedma Marti and Cabrita, 2012). Understanding these changes is important, as it helps organizations identify and develop IC as a critical asset driving business performance, and supports the rational implementation of Industry 4.0 transformations (Cabrita et al., 2018). AI plays a special role in this context, leading to better performance and higher productivity. However, it may also surpass human potential and diminish emotional value, empathy, and the human spirit. AI is a powerful tool, but using it effectively requires the right skills to harness its full potential. One must also understand the philosophy and methods behind the surface (Salmelin, 2025).

AI, along with other emerging technologies, is having a disruptive effect on IC. It remains unclear which forms of IC are most susceptible to the disruptive nature of AI and digital technologies, and how we should balance the

pursuit of greater added value with the risk of losing the authenticity of IC (Kianto et al., 2025a). Numerous questions in the theory and practice of intellectual capital remain unresolved. For instance, who owns the value created by AI-based IC? Who benefits from it? Can we distinguish between human and machine-based values? How can we ensure the sustainable and fair sharing of risks and value added in the modern world? How can we preserve existing knowledge within organizations while maximizing the value created by new technologies? Against the backdrop of digitalization, the ability to comprehensively assess ongoing technological and social changes is essential to avoid fragmented decision-making, select the appropriate intellectual capital strategy, preserve know-how, and ensure continuous and sustainable value creation.

2.7 The Imperative of Interdisciplinarity

The complexity of IC theory is increasing. It opens the door for new explorations crossing disciplines and integrating insights from various fields to address complex, real-world challenges, including the sustainability crisis, climate change, public health, social equality, global peace, and well-being, that cannot be solved by any single discipline alone (Kianto et al., 2025a). This raises the question of where individual theories begin and end. Are there boundaries between individual theories? Can value creation and the well-being of global society still be examined in the context of a single chosen theory? Future IC theory and practice will inevitably have to transform integrating knowledge and insights from different disciplines, such as economics, psychology, sociology, political economy, environmental science, art and technologies, to provide more holistic understanding of the complex nature of IC, its management and valuation (Kianto et al., 2025). The complexity of management and organizations is growing (Schneider et al., 2017). Responding to their environments, organizations require integration of a wider range of variables, often from different domains, to provide more holistic explanations. IC theory and practice are no exception. They are multifaceted and context-dependent, reflecting broader trends in economic and societal development. Petty and Guthrie (2000) initiated a discussion on the interdisciplinary nature of IC theory, describing it as both its greatest strength and its Achilles' heel. In the current context of increasing environmental complexity, this interdisciplinarity is under growing pressure, as IC theory and practice are increasingly tasked with addressing multifaceted and systemic challenges. Only interdisciplinary research that fosters collaboration, knowledge sharing, continuous learning, and innovation may reveal hitherto invisible solutions and opportunities to fully translate IC into value and global societal well-being (Kianto et al., 2025).

3. Visionary Pathways in Intellectual Capital Theory Development

The aforementioned factors are substantially transforming the theoretical foundations of intellectual capital (IC) and necessitate a critical re-examination of its evolving role within organizational management and broader socio-economic systems. A range of novel conceptual and practical trajectories is emerging, reflecting the dynamic and interdisciplinary nature of IC.

Within this context, eight key thematic domains can be delineated, each warranting rigorous scholarly inquiry and future research engagement: 1) the need for multilevel approach towards IC; 2) an examination for IC dynamics; 3) redefining of value and economic models at the basis of IC; 4) a better recognition of sustainability and ethics in IC research; 5) a focus of the role of AI in IC; 6) a reviewed emphasis on humans and culture; 7) a focus on non-rational and non-technological aspects of IC; and 8) an interdisciplinary approach towards research (Kianto et al., 2025a).

These domains pave the way for further theoretical development of IC and underscore the urgency of sustained scholarly attention. Addressing the new realities of the 21st century requires innovative approaches to IC management. It must be acknowledged that the issues examined within IC theory are becoming increasingly complex, manifesting as multidimensional and interrelated phenomena highly relevant to business, society, and the economy. A more in-depth exploration of these research avenues raises numerous compelling questions for IC theorists, business practitioners, and social scientists alike.

4. Conclusion

To conclude, it is evident that IC theory and practice are facing significant challenges due to the increasing complexity of the knowledge economy, societal changes, environmental pressures, geopolitical shifts, technological advancements, and transformations in value creation. Emerging perspectives call for a shift away from static approaches towards more dynamic and integrated solutions that include considerations of sustainability, ethical values, ecosystem thinking, and digital transformation in IC theory and practice. Additionally, there is a growing recognition of the importance of multilevel approaches that redefine IC not just

as an organizational asset but as a strategic ecosystem-based lens for navigating complexity and fostering innovation at micro, meso, and macro levels within future societies. IC theory clearly extends beyond organizational boundaries, addressing a wide range of issues from individual performance management to broader societal challenges. To remain relevant, scholars and practitioners must align IC practices more effectively with the challenges and opportunities of the 21st century, characterized by increasing complexity, interconnectedness and interdisciplinarity.

The traditional tripartite framework of human, structural, and relational capital remains foundational, yet it no longer fully captures the multi-dimensional, fluid, and ecosystem-based nature of contemporary value creation. Next-generation IC solutions must incorporate the full complexity of the phenomenon, situational awareness, spirituality, and responsiveness to societal changes and global dynamics. With the rise of artificial intelligence, data analytics, and digitalization, there's a need to reconceptualise IC, increasingly incorporating algorithmic, data-driven, and platform-based dimensions. Consequently, issues related to resource ownership and management, along with digital ethics, are becoming essential components of IC management practices. At the same time, IC is getting closely connected with sustainability goals by incorporating environmental, social, and governance issues into its measures, thereby aligning IC with long-term value creation and societal impact rather than short-term performance.

Recent IC research increasingly draws upon diverse fields, including complexity theory, societal transformation, diplomacy, and digital innovation. This interdisciplinary approach opens up richer analytical perspectives and moves IC theory beyond linear, accounting-based models of the past. Future research should delve deeper into these emerging pathways, linking theoretical innovation with practical application and positioning IC as a critical enabler of multilevel, ecosystem-based and sustainable value creation.

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