

INTELLECTUAL CAPITAL AS A DRIVER OF ECONOMIC RESILIENCE: A BIBLIOMETRIC ANALYSIS

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Abstract:

This study aims to map the development of intellectual capital research literature from 2020 to 2025. The method employed is a bibliometric study drawing on data from the Scopus database, with a total of 967 articles analyzed using VOSviewer. The results indicate that intellectual capital publications have increased significantly, particularly after 2022, and are predominantly contributed by countries such as Italy, Indonesia, India, and China, with the Journal of Intellectual Capital serving as the primary publication outlet. The research focus generally covers aspects of financial performance, human capital, knowledge management, relational capital, and structural capital, while emerging themes such as digitalization, green intellectual capital, and entrepreneurial orientation are gaining growing scholarly attention. In addition, this study identifies research opportunities in relatively underexplored topics such as sustainable development, digital transformation, and SME resilience in emerging economies. This study provides a comprehensive overview of global intellectual capital research trends and their implications for future research and policy development, particularly in the context of strengthening economic resilience through entrepreneurship and good governance in the digital era, although it is limited by the use of a single database and a bibliometric approach.

Keywords: Intellectual Capital, Economic Resilience, Bibliometric Analysis

Abstrak

Penelitian ini bertujuan untuk memetakan perkembangan literatur penelitian modal intelektual dari tahun 2020-2025. Metode yang digunakan adalah studi bibliometrik dengan menggunakan data dari database Scopus, dengan total 967 artikel yang dianalisis menggunakan VOSviewer. Hasil penelitian menunjukkan bahwa publikasi terkait modal intelektual mengalami peningkatan signifikan, terutama setelah tahun 2022, dan didominasi oleh negara-negara seperti Italia, Indonesia, India, dan China, dengan Journal of Intellectual Capital sebagai outlet publikasi utama. Fokus penelitian umumnya mencakup aspek kinerja keuangan, modal manusia, manajemen pengetahuan, modal relasional, dan modal struktural, sementara tema-tema yang sedang berkembang seperti digitalisasi, modal intelektual hijau, dan orientasi kewirausahaan semakin mendapat perhatian ilmiah. Selain itu, penelitian ini mengidentifikasi peluang penelitian pada topik yang masih kurang dieksplorasi seperti pembangunan berkelanjutan, transformasi digital, dan ketahanan UKM di negara berkembang. Penelitian ini memberikan gambaran komprehensif mengenai tren global penelitian modal intelektual dan implikasinya bagi pengembangan riset dan kebijakan, khususnya dalam konteks penguatan ketahanan ekonomi melalui kewirausahaan dan tata kelola yang baik di era digital, meskipun memiliki keterbatasan pada penggunaan satu database dan pendekatan bibliometrik.

Kata Kunci: Modal Intelektual, Ketahanan Ekonomi, Analisis Bibliometrik

1. Introduction

Economic resilience has become one of the most discussed concepts in management and policy circles over the past five years, and for good reason. The COVID-19 pandemic exposed just how quickly external shocks can unravel business models that seemed stable, and the years that followed brought their own pressures supply chain disruptions, digital acceleration, tightening environmental regulations, and shifting governance expectations. Against this backdrop, a question that once felt abstract has become genuinely urgent: what actually makes firms and economies capable of absorbing shocks and bouncing back? Increasingly, the answer points not to physical infrastructure or financial reserves alone, but to the knowledge, relationships, and organizational systems that firms have quietly built over time what scholars call intellectual capital (Vishnu & Gupta, 2020; Kweh et al., 2022).

Intellectual capital, at its core, refers to the intangible assets that create value within an organization. These are typically grouped into three components: human capital, which covers the knowledge, skills, and capabilities of people; structural capital, which includes the systems, processes, and organizational routines that retain knowledge even when employees leave; and relational capital, which captures the value embedded in a firm's relationships with customers, suppliers, partners, and the broader community. While this framework has been around since the late 1990s, what has changed dramatically in recent years is the range of questions being asked about it. Researchers are no longer just asking whether IC improves financial performance they are asking how it shapes innovation, sustainability outcomes, SME resilience, and the capacity of firms to navigate digital transformation (Xu & Liu, 2020; Ting et al., 2023).

The financial performance dimension of IC remains the most empirically documented. Across banking, manufacturing, technology, and services sectors, studies consistently find that human capital efficiency essentially, how productively an organization deploys its people's knowledge generates the strongest and most reliable effects on profitability, return on equity, and market value (Smriti & Das, 2021; Dalwai & Salehi, 2021). Structural capital complements this by ensuring that knowledge is not lost when individuals leave, while relational capital gives firms especially smaller ones access to resources and opportunities that would otherwise be out of reach. Together, these three components form an intangible foundation that, when well-developed, makes organizations measurably more adaptive and competitive even under conditions of economic stress (Tran & Nguyen, 2022).

What has made the recent literature particularly interesting is the growing connection between intellectual capital and sustainability. Green intellectual capital which embeds environmental awareness into each of the three IC components has emerged as one of the fastest-growing themes in the field, with studies showing that firms with stronger green IC capabilities perform better on environmental metrics and are more successful at green innovation (Wang, 2021). This is not a coincidence: the same organizational capabilities that drive financial performance also turn out to be what firms need to meet rising ESG expectations. Knowledge management sits at the center of this dynamic, serving as the process through which human expertise is converted into structural routines and relational partnerships that sustain both economic and environmental performance over time (Shujahat et al., 2021).

Given how rapidly this literature has grown and diversified, mapping its current state is both timely and necessary. Bibliometric analysis offers a rigorous way to do this identifying not just what topics are being studied, but which are gaining momentum, which remain underexplored, and how the field's geographic and thematic center of gravity has shifted over time (Donthu et al., 2021). The aim is to provide a comprehensive picture of where IC research stands today and, more importantly, to identify how it connects to the broader agenda of strengthening economic resilience through entrepreneurship, good governance, and digital transformation.

2. Research Methods

This study is a bibliometric analysis aimed at providing a comprehensive understanding of research trends related to Intellectual Capital. In conducting the study, the researcher followed the four stages outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), namely identification, screening, eligibility, and inclusion, to address the research questions (Khan et al., 2023). The Scopus database was selected as the primary source for data collection. The selection of Scopus was based on its position as one of the leading references that provides high-quality articles from various international journals worldwide.

This study specifically reviewed journal articles while excluding books, reports, conference proceedings, and other sources, as they were considered to have limited contributions to theoretical development and empirical evidence. All analyses were conducted using the Scopus database as the sole data source. The research focused on the subject areas of Business, Management and Accounting, as well as Economics. To avoid linguistic bias, the search process was limited to articles published in English, and the study period was set from 2020 to 2025. The final search query used in this study was as follows: TITLE-ABS-KEY ("intellectual capital") AND PUBYEAR > 2019 AND PUBYEAR < 2026 AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "ECON")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (EXACTKEYWORD , "Intellectual Capital")).

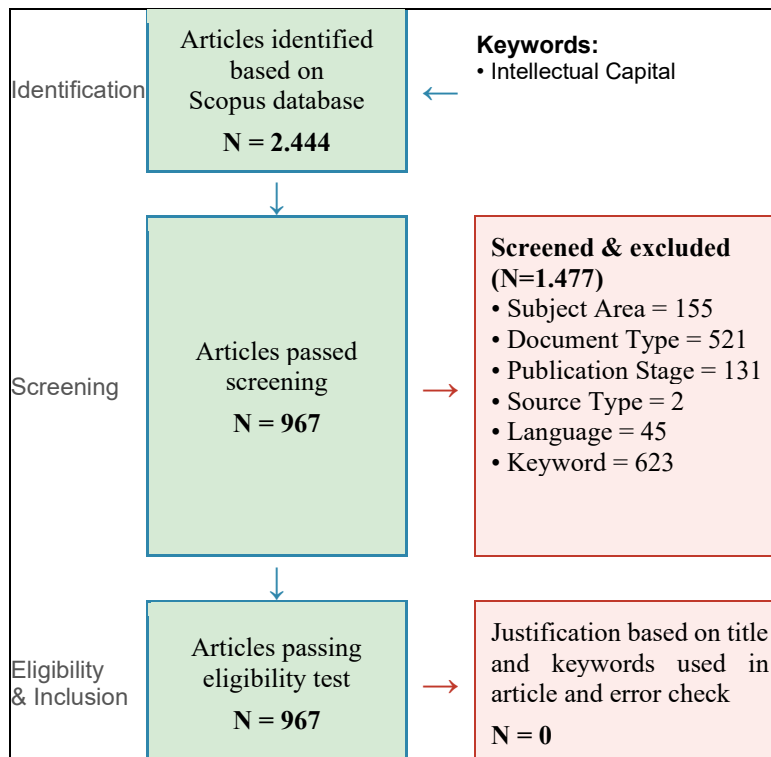


Figure 1. PRISMA Research Protocol

The analytical process was carried out using VOSviewer software to construct and visualize bibliometric networks, with a primary focus on keyword co-occurrence mapping (Van Eck & Waltman, 2010). This technique allows for the detection of major thematic clusters, conceptual linkages, and prevailing research themes within the intellectual capital literature. The resulting network visualizations further support a more structured comprehension of the research landscape, encompassing both well-established topics and nascent areas that hold promise for future scholarly inquiry.

Through this approach, the present study offers a comprehensive mapping of the intellectual capital literature within a global context, capturing its multidimensional aspects ranging from human capital and structural capital to relational capital and emerging themes such as digital transformation and green intellectual capital. The outcomes of this analysis are intended to serve as a meaningful reference for researchers, practitioners, and policymakers in tracing the trajectory of intellectual capital research and in informing evidence-based decisions aimed at strengthening organizational and economic resilience.

3. Results and Discussion

3.1. Publication Trends

The publication trend related to intellectual capital during the 2020–2025 period demonstrates a generally increasing pattern despite several fluctuations across the years. The decline in 2021 reflects the disruption caused by the COVID-19 pandemic, which temporarily slowed research activity and shifted academic focus toward more pressing crisis-related topics. The steady recovery from 2022 onward was driven by growing global interest in intangible assets as organizations and policymakers recognized the central role of human capital, knowledge systems, and stakeholder relationships in building economic resilience in the post-pandemic era. Overall, this upward trend indicates that intellectual capital has gained growing attention in academic research due to its important role in enhancing competitive advantage, innovation, and organizational performance in the knowledge-based economy era. The decline observed in the most recent year is likely attributed to the incomplete indexation process of publication data, which has not yet been fully updated in the database.

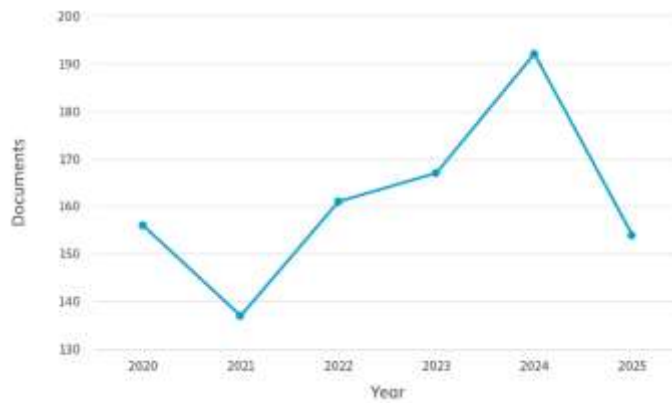


Figure 2. Publications Trends

3.2 Leading Country Research

This section discusses the most active and influential countries in intellectual capital research. The figure presents a comparison of publication volumes based on the country of origin of the authors. Italy and Indonesia occupy the top two positions, reflecting their dominant role in driving intellectual capital scholarship at the international level. The high publication output from both developed and developing nations including India, China, Malaysia, Pakistan, and Vietnam indicates that intellectual capital has become a globally relevant research agenda across diverse economic systems. Meanwhile, the presence of United Kingdom, Spain, and Iran in the ranking further demonstrates the broad international participation in this field, signaling that intellectual capital research continues to attract scholarly attention beyond any single geographic region.

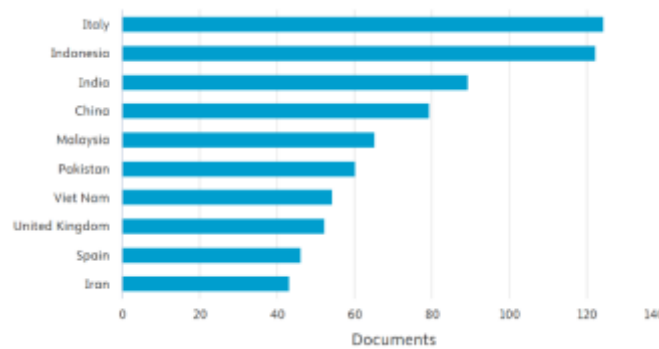


Figure 3. Leading Country Research

3.3 Journal Analysis

This data collection encompasses articles published across various journals, with the following table presenting the top 10 journals based on total publication volume. Journal of Intellectual Capital and International Journal of Learning and Intellectual Capital are the leading journals with the highest number of publications, demonstrating their dominant position in disseminating research related to intellectual capital and knowledge management. The presence of Q1 journals such as Journal of the Knowledge Economy, Technological Forecasting and Social Change, and Journal of Cleaner Production further reflects the high academic recognition of intellectual capital research within the global scholarly community. This distribution also indicates fluctuations in publication output across journals, which may reflect the evolving research dynamics and emerging topic trends within the intellectual capital field over the observed period.

Table 1. Top 10 Journal Intellectual Capital Research

No	Journal	Total Publication	Quartile
1	Journal of Intellectual Capital	161	Q1
2	International Journal of Learning and Intellectual Capital	61	Q2
3	Journal of the Knowledge Economy	20	Q1
4	Cogent Business and Management	17	Q2

5	Technological Forecasting and Social Change	15	Q1
6	Journal of Risk and Financial Management	14	Q2
7	Quality Access to Success	13	Q3
8	Knowledge Management Research and Practice	11	Q2
9	Cogent Economics and Finance	10	Q2
10	Journal of Cleaner Production	10	Q1

Sources: Scopus.com

3.4 Co-Occurrence Analysis

To identify potential directions for future research related to intellectual capital, an analysis of keyword occurrences and emerging thematic trends was conducted using bibliometric approach. The figure 4 presents a co-occurrence network visualization obtained through bibliometric analysis using VOSviewer software. This bibliometric network is composed of nodes and edges, where larger nodes indicate that a term receives greater attention in the research, while node size also reflects the frequency of keyword occurrence and the thickness of the connecting edges represents the degree of association or how often keywords appear together. Finally, the colors on the nodes serve to group keywords that frequently appear together, which is particularly useful in identifying broader research themes for future exploration with *intellectual capital*, *human capital*, and *structural capital* emerging as the most central and frequently co-occurring terms in this dataset.

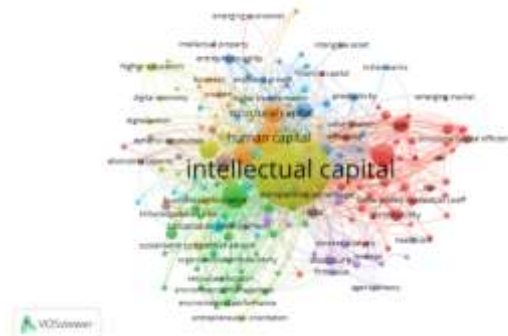


Figure 4. Co Occurance Network Visualization



Figure 5. Co Occurance Density Visualization

The figure 5 presents a keyword density visualization in which the color of each point indicates the density level of items at that location. The color scheme employed ranges from blue, green, to yellow, where yellow points indicate a high concentration of items with greater weight, while blue points signify fewer items and lower weight in the surrounding area. The analysis results show that *intellectual capital* serves as the primary keyword with the closest associations to terms such as *human capital*, *structural capital*, *competitive advantage*, and *business performance*. Other clusters reveal connections to themes of *sustainable development*, *value creation*, and *dynamic capabilities*, while *agency theory*, *environmental management*, and *entrepreneurial orientation* also emerge as significant yet less dense topics in this field, with lighter-colored areas indicating higher research concentration and low-intensity regions reflecting potential spaces for further investigation.

3.5 Co Authorship Analysis

The figure shows various clusters in the author collaboration network, distinguished by different colors. These clusters illustrate how authors are grouped based on similarities in their research focus within the topics of intellectual capital and knowledge management. The co-authorship network represents patterns of collaboration among authors in producing scientific publications, where the density level reflects the extent of interconnectedness between nodes through linking edges. Authors such as raimo, nicola and bontis, nick appear to have the most prominent collaborative networks, as indicated by the large node sizes and high concentration of connections surrounding their names.

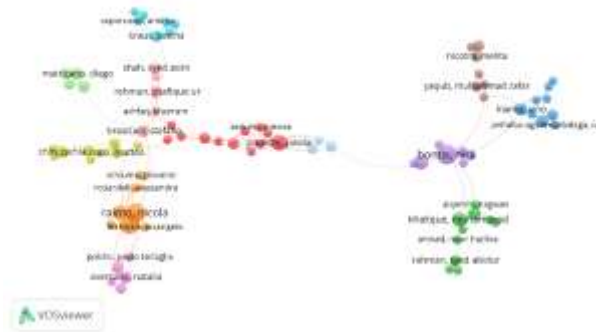


Figure 6. Co Authorship Network Visualization

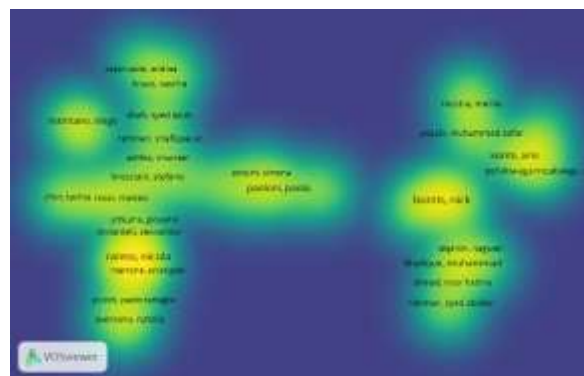


Figure 7. Co Authorship Density Visualization

This density figure 7 reinforces the findings of the previous network by visualizing collaboration intensity through a color gradient ranging from blue (low) to yellow (high). Three main density centers are identified, namely the left cluster centered on raimo, nicola, the middle cluster driven by paoloni, paola, and the right cluster dominated by bontis, nick and khalique, muhammad. The highest density is concentrated around raimo, nicola and bontis, nick, indicating that these two authors are the most productive and most frequently collaborating actors in this dataset. Meanwhile, paoloni, paola serves as a potential bridge between the two main clusters, reflecting her strategic position as a knowledge broker across academic communities.

4. Conclusion

This study confirms that intellectual capital plays an important role in sustaining competitive advantage, innovation, and long-term organizational performance amid economic and digital transformation. Bibliometric analysis of 967 Scopus-indexed articles shows that IC research grew significantly between 2020 and 2025 and is increasingly dominated by emerging economies such as Indonesia, India, China, and Malaysia. The findings also reveal that IC research is strongly connected to themes of financial performance, knowledge management, human capital, and sustainability through extensive collaboration networks and multidisciplinary studies.

These findings carry several important implications. From an academic perspective, this literature mapping serves as a foundation for identifying research gaps and developing more focused studies, particularly in underexplored intersections between intellectual capital, digital governance, and SME resilience. For educators, the results can inform curriculum development and teaching materials related

to knowledge management, organizational performance, and sustainability. Meanwhile, for policymakers, this study provides an evidence-based overview of global IC research trends, supporting the formulation of more effective policies that promote knowledge-based economic development, strengthen governance frameworks, and build the intangible asset base upon which genuine economic resilience depends.

This study has several limitations related to data sources and methodology. The use of only the Scopus database and English-language journal articles may exclude relevant studies from regional publications, conference proceedings, and non-English literature. In addition, the bibliometric approach focuses mainly on quantitative metadata analysis and does not deeply evaluate the content or methodological quality of individual studies. However, topics such as digital transformation, entrepreneurial orientation, sustainable development, and green intellectual capital remain underexplored and offer important opportunities for future research.

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