*IOSR Journal of Business and Management (IOSR-JBM)*
*e-ISSN:2278-487X, p-ISSN: 2319-7668. Volume 26, Issue 5. Ser. 5 (May. 2024), PP 09-20*
*www.iosrjournals.org*

# The State Of Innovation Capability: An Analysis Of Research Frontiers In Organizational Studies

Kallita Magalhães, Silvio Popadiuk.
*Universidade Presbiteriana Mackenzie, R. Da Consolação, 930 - Consolação, São Paulo - Sp, 01302-907*
*Universidade Presbiteriana Mackenzie, R. Da Consolação, 930 - Consolação, São Paulo - Sp, 01302-907*

***Abstract:***
*Objective: To identify the main research fronts on innovation capability, exploring how each of them converges within its cluster and what are the future research opportunities on the subject. Methodology: The method used is a bibliometric study through bibliographic coupling, with a search in the Web of Science database. Originality: Although the theme is of interest to various relevant research areas, including marketing, strategy, technology, and management, there is a scarcity of reviews aiming to identify the study fronts on the subject, as well as the development of a research agenda. Main results: The results pointed to three major clusters in the literature on innovation capability: (1) knowledge, (2) performance, and (3) management. Finally, the bibliometric findings allowed the creation of an agenda for future research. Theoretical contributions: The proposed research agenda can be a reference for researchers in various areas of organizational studies, considering the breadth and interdisciplinary nature of innovation capability. Managerial contributions: Managers can benefit from this study, finding important insights in each of the identified clusters.*
***Keywords:*** *innovation capacity, research forefront, bibliographic coupling*

Date of Submission: 05-05-2024 Date of Acceptance: 15-05-2024

## I. Introduction

The capacity to innovate (CAPIN) is a subject of interest to different organizational areas. In the literature, it appears as the main factor for organizational performance (Mone et al., 1998). This is because companies must be innovative to achieve a competitive advantage and thus obtain superior performance in the market (Santos-Vijande et al., 2013). With the increase in interest in the subject, new subfields and research fronts have emerged with various versions of the concept. In addition, the volume of generated information is growing, making it difficult for stakeholders to stay properly updated and well-informed about the different research fronts present in the scientific literature. Thus, in order to capture the broad scope of studies on CAPIN and systematize publications on the subject, in this study, we opted for a bibliometric method.

In this context, this study presents some unique characteristics when compared to previous bibliographic research on CAPIN. Initially, because it focuses on the bibliographic coupling technique, which in contrast to co-citation and keyword co-occurrence procedures, is an appropriate application when the intention is to detect research trends and priorities (Jarneving, 2005; Zupic & Čater, 2015). This is because this technique considers articles that cite other articles, eliminating the bias associated with the total time of publications, as occurs, for example, in the co-citation procedure (Vogel & Güttel, 2012). That is, the focus remains on seeking new patterns emerging from the literature. Another differentiating aspect of this review is its timeliness. As our main intention is to investigate new research fronts, the sample consists of 823 recent articles on CAPIN.

Thus, the research questions addressed were: (1) what are the main research fronts on the capability to innovate? (2) how do each of these research fronts converge within their cluster? (3) what are the future research opportunities in each cluster? As contributions, we identified three areas representing current trends in research on the subject: (1) knowledge, (2) performance, and (3) management. In addition, our findings show that the three clusters interact with each other, presenting connections and functioning in an integrated manner. The pursuit of competitive advantage through knowledge management, organizational performance, and innovative management practices seems to be the linking element in studies on CAPIN. Therefore, with this study, we contribute both to the understanding of these clusters and to proposing a research agenda for future studies. In the next section, we present a brief theoretical contextualization of CAPIN. Then, we explain our methodological approach and give a brief description of the content of each cluster, highlighting the main articles in each of them. Subsequently, we develop a discussion of the results found, and finally, our final considerations.

### Theoretical Reference

A CAPIN, or Innovation Capability, can be defined as a set of skills within an organization to engage in innovation (Hult et al., 2004). In other words, it refers to the organizational disposition to introduce novelties,

ideas, and experiments, aiming to develop new products, services, or processes. Thus, innovation can only occur if there is previously a capacity to innovate (Laforet, 2011). Consequently, CAPIN is considered an important asset in forming and sustaining competitive advantage (Rajapathirana & Hui, 2018). Moreover, it is CAPIN that drives organizations to continuously develop innovations, thus responding to the market environment and its constant changes (Slater et al., 2010). Therefore, this capability is incorporated into all strategies, systems, and structures that support innovation in an organization.

At the same time, the definitions of innovation and CAPIN are not consistent in the literature, and the two terms are constantly used interchangeably (Garcia, 2002). While CAPIN is characterized by the adoption of a new idea or action, innovation in a classic definition deals with the change of a product or production process (Mansfield, 1958). In this aspect, the literature conceptualizes innovation as any change originating from obtaining and using new knowledge (Rogers, 2003). While CAPIN is the rudimentary element in the innovation process, and a positive impact factor for increasing sales, profits, and competitiveness for many organizations (Kuncoro & Suriani, 2018; Taghizadeh et al., 2018). Therefore, the two concepts are different because innovation itself has a development process and consolidates as it is generated and disseminated in the market (Garcia, 2002). Figure 1 synthesizes these points, illustrating the relationship between CAPIN, innovation, and achieving superior performance in organizations.

**Figure 1 -** Synthesis of the relationship between CAPIN and innovation


Source: Authors.

Furthermore, CAPIN manifests itself in different fields of literature, such as marketing, information technology, and entrepreneurship (Agarwal & Prasad, 1998; Aroean & Michaelidou, 2014; Rodrigues & Raposo, 2011). Research also spans across different levels of analysis. For instance, from an organizational perspective, investigating inter-organizational collaboration in the context of innovation (Alexiev et al., 2016; Donate et al., 2016), and from an individual level approach, with the development of scales to measure individual CAPIN (Agarwal & Prasad, 1998). Another relevant point is the role of knowledge in the innovation process. This is because the literature has pointed out that CAPIN relies on a company's ability to discover new sources of knowledge, as well as acquire knowledge from the external environment that can contribute to the creation of innovative products, services, or processes (Ferreras-Méndez et al., 2015). Lastly, there is a lack of clarity regarding the factors that truly drive innovation, as well as how they influence organizational performance (Hult et al., 2004). In this context, this study is pertinent as it aligns with recommendations for quantitative approaches to literature analysis, especially for a broad topic like CAPIN (Aria & Cuccurullo, 2017).

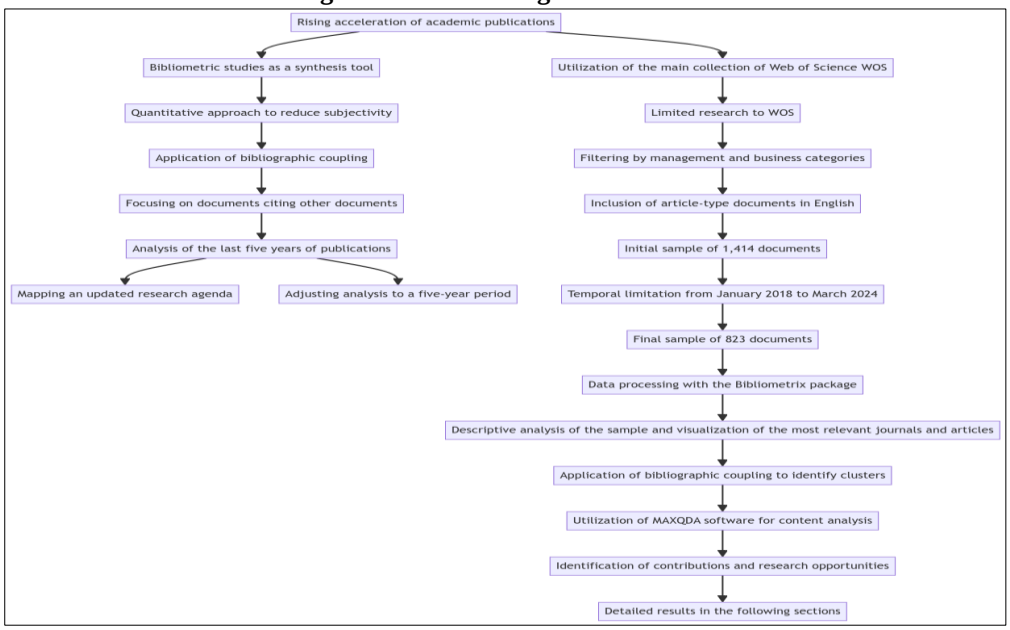
## II. Methodology

There is a growing acceleration in the number of academic publications, making it difficult for researchers to keep up with the advancement of research (Aria & Cuccurullo, 2017,). Consequently, bibliometric studies are gaining prominence as an important tool for synthesizing the literature. Additionally, applying a quantitative approach helps to reduce the subjectivity and bias of the researcher in analyses (Vogel & Güttel, 2012). Among the techniques used in bibliometric studies, we chose to apply bibliographic coupling, which uses the number of references shared by two different studies to measure the similarity between them (Kessler, 1963). In other words, the focus is on documents that cite other documents, rather than cited documents. This makes this approach suitable for understanding ongoing research and emerging fields of study (Boyack & Klavans, 2010). Additionally, we focus on analyzing the last five years of publications on the topic. We made this choice for two main reasons: first, to map an updated research agenda on the topic, and second, because the bibliographic coupling approach fits better in analyses with up to five years between the publication dates of the documents (Zupic & Čater, 2015).

As a research source, we used the Web of Science (WOS) because it is a globally referenced database for literature reviews. Although limiting our search to WOS may exclude some non-indexed journals, given the range of articles included in the literature review, we considered it appropriate to limit our search to this database. Document search occurred in the title field with the string: "INNOVATIVENESS" OR "INNOVATION CAPACIT*" OR "INNOVATION CAPABILIT*" OR "INNOVATIVE CAPABILIT*" OR "INNOVATIVE CAPACIT*" OR "CAPACIT* TO INNOVATE" OR "CAPACIT* FOR INNOVATION*" OR "CAPACIT* OF INNOVATION*" OR "CAPABILIT* TO INNOVATE" OR "CAPABILIT* FOR INNOVATION*" OR "CAPABILIT* OF INNOVATION*". Considering our focus on the business area, we applied the filter of management and business categories. Other selection criteria included including only article-type documents and English language for analysis, resulting in an initial sample of 1,414 documents. To apply bibliographic coupling,

we used a time limitation, considering the period from January 2018 to March 2024. Thus, our final sample consisted of 823 selected documents. The search took place on March 5, 2024. Through the Bibliometrix package, we extracted a descriptive analysis of the sample and performed bibliographic coupling to identify the main clusters in the literature on the topic (Aria & Cuccurullo, 2017; van Eck & Waltman, 2010). With the identification of representative articles from each cluster, we used the MAXQDA software for content analysis of the documents. For this purpose, the articles were read in full and the contributions and research opportunities of the studies were identified. Figure 2 illustrates the methodological flow of this study. In the following sections, we detail the results obtained.

**Figure 2 - Methodological Flowchart**



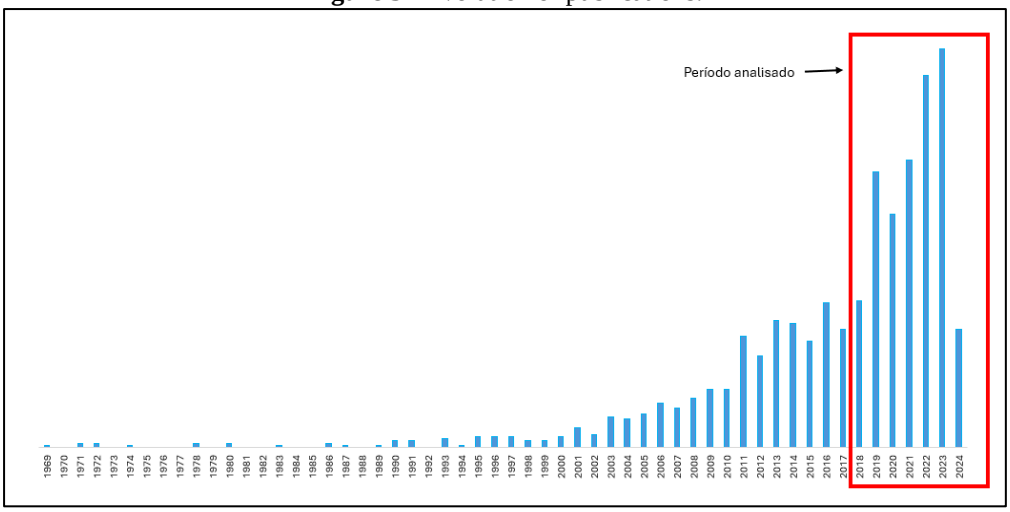

Source: Flowchart adapted by the authors from Oliveira et al. (2018).

## III. Results

### Field characteristics

We begin this section with Figure 3, which illustrates the evolution of scientific production on CAPIN in the business area. The first identified article by Hilfiker (1969) investigates how interpersonal characteristics and innovation impact change in school systems. Only in the 2000s did the volume of publications on the capacity for innovation experience a significant acceleration. Furthermore, on average, there was an annual growth of 7.49% in the volume of studies on the subject.

**Figure 3 -** Evolution of publications.




Source: Authors.

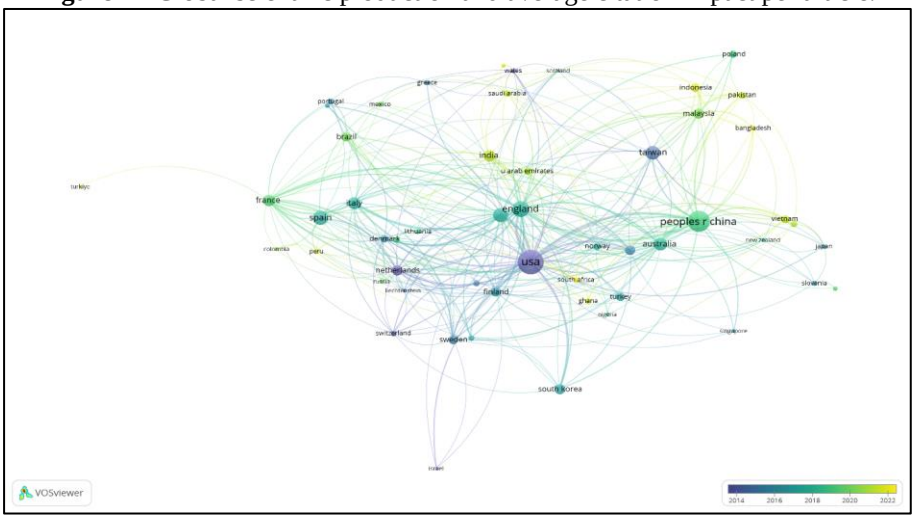
Table 1 presents the top 20 studies in terms of their impact on CAPIN in the business field. Due to the diversity of journals, it is possible to observe a multidisciplinarity of the theme, highlighting areas such as marketing, strategy, innovation, and management.

**Table 1 -** Key articles on the subject.

| Author | Journal | Total citations | Annual average citations |
|---|---|---|---|
| Deshpande et al (1993) | Journal of Marketing | 2.104 | 65,8 |
| Subramaniam & Youndt (2005) | Academy of Management Journal | 2.075 | 103,8 |
| Garcia & Calantone (2002) | Journal of Product Innovation Management | 1.717 | 74,7 |
| Agarwal & Prasad (1998) | Information Systems Research | 1.684 | 62,4 |
| Calantone et al. (2002) | Industrial Marketing Management | 1.592 | 69,2 |
| Hult et al. (2004) | Industrial Marketing Management | 1.203 | 57,3 |
| Furman et al. (2002) | Research Policy | 1.156 | 50,3 |
| Hirschman (1980) | Journal of Consumer Research | 863 | 19,2 |
| Lin (2007) | International Journal of Manpower | 830 | 46,1 |
| McGrath (2001) | Academy of Management Journal | 754 | 31,4 |
| Rodan & Galunic (2004) | Strategic Management Journal | 752 | 35,8 |
| Midgley & Dowling (1978) | Journal of Consumer Research | 744 | 15,8 |
| Steenkamp et al. (1999) | Journal of Marketing | 728 | 28,0 |
| Lu et al. (2005) | The Journal of Strategic Information Systems | 726 | 36,3 |
| Lovelace et al. (2001) | Academy of Management Journal | 604 | 25,2 |
| Romijn & Albaladejo (2002) | Research Policy | 593 | 25,8 |
| Olson et al. (nineteen ninety five) | Journal of Marketing | 565 | 18,8 |
| Camisón & Villar-López (2014) | Journal of Business Research | 541 | 49,2 |
| Sethi et al. (2001) | Journal of Marketing Research | 528 | 22,0 |
| Cho & Pucik (2005) | Strategic Management Journal | 519 | 26,0 |

Source: Authors.

**Figure 4 -** Global scientific production and average citation impact per article.



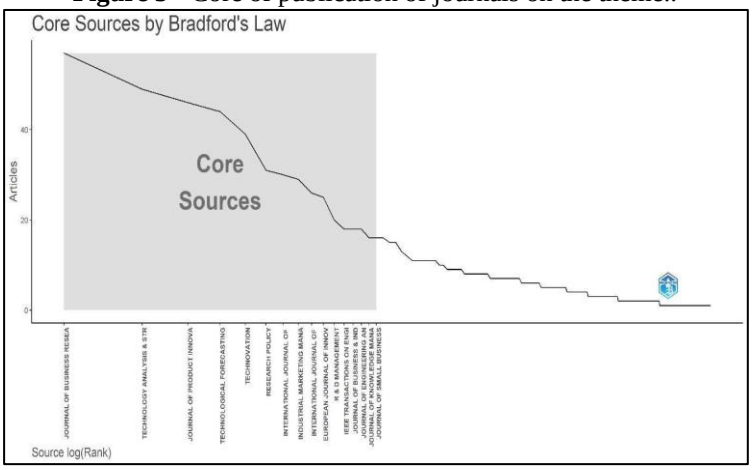

Source: VOSviewer.

In the international panorama of scientific production, Figure 4 represents the countries with a minimum of five published articles. To do so, we applied the VOSviewer software, which displays the area of each circle according to the number of publications in each country. In turn, the proximity between the nodes reflects the level of collaboration existing between the countries. Finally, the colors of the circles indicate the impact of the scientific production of each region according to the number of citations. Thus, it is possible to note that the United States and China dominate the volume of publications, concentrating 36% and 32% of them respectively.

Next are the United Kingdom, Germany, and Spain, which account for 12%, 11%, and 11% of the published studies, respectively.

To establish the journals with the greatest impact, we applied Bradford's Law (Bradford, 1934) using the Bibliometrix package. According to this bibliometric law, the core of scientific production is concentrated in a small number of journals. Thus, Figure 5 lists the most important journals for the CAPIN theme in the business area. Among the 311 journals that published studies, only 16 represent the impact literature on the subject.

**Figure 5** - Core of publication of journals on the theme..




Source: Bibliometrix.

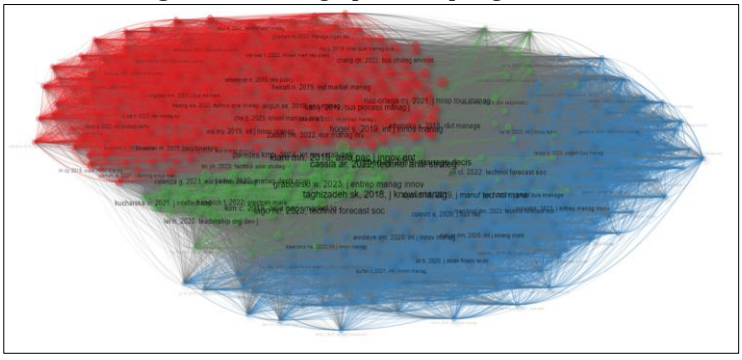
**Table 2 -** Descriptive analysis of the selected sample of articles.

| | |
|---|---|
| Articles | 823 |
| Journals | 311 |
| Keywords | 2.464 |
| Period | 2018 - 2024 |
| Average citations per document | 15,4 |
| Authors | 2.202 |
| Articles - single authors | 77 |

Source: Authors.

Following, aiming at aligning with our research objectives, we reduced the sample size according to the temporal criterion mentioned in the methodology section. Table 2 presents the main descriptive data regarding publications from the last five years on CAPIN. Using the Blibliometrix package, we constructed the bibliographic coupling network, as illustrated in Figure 6. To measure the linkage intensity between articles, we chose the document unit of analysis and adjusted the measurement parameters for global citations, keyword clustering, and a minimum frequency of 10 occurrences per cluster, while maintaining the software's default clustering algorithm (walktrap). As a result, three different research fronts on CAPIN were identified. In the following sections, we outline the content of each of these clusters and discuss a research agenda for the field.

**Figure 6 -** Bibliographic Coupling Network.



Source:Bibliometrix.

***Identified Clusters***

The red cluster is designated as "Knowledge." It is the largest of the identified groups and represents 46% of the article sample. Generally, this research front focuses on investigating the relationships between knowledge management and CAPIN. Consequently, what unites the discussions within the cluster are topics related to knowledge theory in the context of innovation. In this sense, the literature reinforces the importance of knowledge management in the innovation process, especially in knowledge-intensive sectors (Rajapathirana & Hui, 2018), and in organizational value creation (Ganguly et al., 2011). The main topics addressed in the cluster are (1) absorptive capacity, (2) social capital, (3) individual-level approach, and (4) green orientation regarding CAPIN.

Absorptive capacity (AC) can be defined as an organization's ability to recognize, assimilate, and apply new and external information for commercial purposes (Cohen & Levinthal, 1990). Thus, it is linked to CAPIN as it enables innovation outcomes from the absorption process of knowledge. Additionally, it can operate as a pathway for knowledge transfer in inter-organizational innovation activities (Kostopoulos et al., 2011). For instance, Zou et al. (2018) concluded that AC directly contributes to organizational innovation and knowledge transfer. Furthermore, there is an investigation into how AC contributes to meeting new customer needs. This is because innovation occurs when knowledge of unmet customer needs intersects with knowledge of technological solutions. In this context, analyzing employees in an appliance company, Schweisfurth & Raasch (2018) concluded that prior knowledge of the solution is positively related to the absorption capacity of the need, while prior knowledge of the need is negatively related to the absorption capacity of the solution.

Another topic addressed in the cluster is social capital (SC), which can be defined as the set of social resources embedded in relationships and interactions among different social actors (Nahapiet & Ghoshal, 1998). For example, Blaique et al. (2024) investigated the impact of social capital on CAPIN in services during the COVID-19 pandemic in the United Arab Emirates. As a result, they found that strategic environmental analysis has a mediating effect on SC and CAPIN. Furthermore, SC theory considers that relationship networks are a valuable resource for the individual or social group since assets can be mobilized through these ties (Nahapiet & Ghoshal, 1998). In this sense, Corrêa et al. (2021) argue that social interaction networks should be dense enough to stimulate individual entrepreneurial orientation while simultaneously not so dense as to impair innovation, proactivity, and risk-taking. Moreover, trust, identification, reciprocity, and shared language drive the funding of new products (Eiteneyer et al., 2019). At the same time, the importance of inter-organizational cooperation is emphasized for accessing new organizational knowledge and increasing the capabilities of generating and introducing successful market innovations. For example, Weber & Heidenreich (2018) found that cooperation in the development of concepts and new products positively impacts CAPIN. Additionally, within the SC context, the capacity for social innovation (CSI) is investigated. CSI establishes organizational, process, production, and relationship changes between organizations and society, aiming at the social benefits of innovations (Howaldt & Schwarz, 2021; Weerawardena et al., 2021). As a result, it reduces social costs and increases social value through innovation in business models.

Regarding the individual-level approach, we identified a focus on discussing knowledge theory and CAPIN from a micro perspective. For example, Oo et al. (2019) used the user theory to understand product innovation. As considerations, they pointed out how perceived passion, product innovation, and the need for similarity with potential sponsors mediate the relationship between user entrepreneurship and performance in open innovation contests (crowdfunding). Furthermore, Le & Lei (2019) investigated the relationship between transformational leadership, knowledge sharing, and perceived organizational support on CAPIN. As a result, they found a mediating effect of transformational leadership of leaders in strategic positions. At the same time, the literature highlights that knowledge and human resource management are fundamental to entrepreneurial ecosystems (Chaudhuri et al., 2023), especially in a knowledge-oriented approach (Donate et al., 2022).

In this cluster, another topic discussed is a green orientation for CAPIN, considering the success of new products through knowledge and sustainability-related actions. For example, Borah et al. (2023) investigated the effect of a green market orientation on the success of new products in industrial companies. And Flores & Jansson (2021) highlighted the importance of consumer innovation and green perceptions in the adoption of green innovations. Furthermore, Alzubaidi et al. (2021) investigated the factors affecting pro-environmental behaviors of consumers in Saudi Arabia. As considerations, they indicated that consumer intentions to adopt an environmental orientation are affected by innovation, materialism, perceived efficacy, and environmental concern. Table 3 indicates the main articles in this cluster, ordered according to their global citation numbers in the WOS.

**Table 3 -** Articles representing the "Knowledge" cluster.

| N.º | Title | Author | Total Citations |
|---|---|---|---|
| 1 | Determinants of innovation capability: the roles of transformational leadership, knowledge sharing and perceived organizational support | Le & Her (2019) | 248 |
| 2 | Environmental Strategy, Institutional Force, and Innovation Capability: A Managerial Cognition Perspective | Yang, Wang, et al., (2019) | 196 |
| 3 | The capacity to innovate: a meta-analysis of absorptive capacity | Zou et al. (2018) | 113 |
| 4 | Absorptive capacity for need knowledge: Antecedents and effects for employee innovativeness | Schweisfurth & Raasch (2018) | 93 |
| 5 | When and with whom to cooperate? Investigating effects of cooperation stage and type on innovation capabilities and success | Weber & Heidenreich (2018) | 71 |

Source: Authors.

*Performance*

We designate the blue cluster as "Performance." This is the second largest group identified and represents 33% of the article sample. In this grouping, discussions are centered on companies' performance, considering CAPIN in terms of its impact on organizational outcomes. In this sense, the literature links positive influences between CAPIN and market position (sales growth and market share), financial position (return on investment and profitability), and organizational value (performance in the stock market) (Rubera & Kirca, 2012). The main topics addressed in this cluster include (1) customer centrality, (2) pursuit of competitive advantage, (3) different types of organizations, (4) entrepreneurial orientation, (5) strategic bias and environment, and (6) product and process innovation.

Regarding customer centrality, customer knowledge management is considered a tool for competitiveness in the market. This is because customers possess a large volume of information about the products and services they consume, and they can participate in the innovation process. In this context, Migdadi (2021) proposes a unified framework to integrate customer knowledge management, customer relationship, and CAPIN. Additionally, studies investigate the marketing outcomes in small and medium-sized enterprises (Fidel et al., 2018), and customers' perception of innovation in the context of restaurants (Khashan et al., 2024).

Another topic addressed is organizations' pursuit of competitive advantage. For example, through the development of an investigative framework, Rajapathirana & Hui (2018) explored the relationship between CAPIN and various aspects of performance in insurance companies in Sri Lanka. Furthermore, Thakur et al. (2022) found evidence that product, process, and marketing innovation positively and significantly impact organizational performance. Data-driven CAPIN, formed by market orientation capability, infrastructure capability, and innovative talent capability, is another discussed topic. For instance, Alghamdi & Agag (2024) conclude through a longitudinal study that there is an impact of data-driven CAPIN on marketing agility and organizations' competitive advantage. The relationship between CAPIN and dynamic capabilities in the pursuit of competitive advantage is another investigated aspect. Ferreira et al. (2020) conclude that dynamic capabilities have an indirect effect on organizational performance and competitiveness through creativity and CAPIN.

Moreover, this cluster addresses different types of organizations. Firstly, there are studies focused on large companies. For example, Ganguly et al. (2019) investigated companies in the Indian industrial sector to verify the role of tacit knowledge sharing in promoting CAPIN. As a result, they found that both tacit knowledge sharing and the quality of shared knowledge are positively associated with CAPIN. Other studies have focused on the context of small and medium-sized enterprises (SMEs). For example, Yao et al. (2020) investigated how knowledge sharing influences technological CAPIN in Chinese software SMEs. Meanwhile, Maldonado-Guzmán et al. (2019) researched the effects of CAPIN on the business performance of Mexican SMEs. As a result, they found that innovation in products, processes, marketing, and management significantly and positively impacts the business returns of these companies. Singh et al. (2022) discussed the role of top management teams in the context of innovation in SMEs. And Hanaysha et al. (2022) found that CAPIN helps entrepreneurs improve the competitive strength of their businesses, especially with innovations in products and services. Lastly, startups are investigated. For example, Caseiro & Coelho (2019) researched the influence of business intelligence, network learning, and CAPIN on the performance of these companies.

Entrepreneurial orientation, which is an organization's propensity to present proactive innovations to surpass its market competitors (Miller, 2011), is another topic of interest in this cluster. For example, McCarthy et al. (2018) evaluated the dimensions of entrepreneurial propensity in the context of hostile and turbulent environments, identifying that CAPIN manifests in strategic growth decisions, specifically in vertical integration and horizontal diversification strategies. Furthermore, this cluster addresses strategic bias regarding CAPIN. For example, Criscuolo et al. (2018) investigated innovation search strategies in the UK, concluding that exploring different combinations of knowledge sources positively impacts organizations' innovative performance. And

Khan & Naeem (2018) analyzed whether quality strategic orientation increases CAPIN in terms of exploratory and exploitative innovation, resulting in sustainable business growth.

The environment in which organizations operate is another topic discussed in this cluster. For example, Ramanathan et al. (2018) investigated the relationship between CAPIN and financial performance, depending on how flexible or inflexible environmental regulations are. Okatan et al. (2019) discussed the internal innovation system (SII) as an important factor for organizations' performance, analyzing the impact of the external environment and necessary conditions to enhance companies' innovation competencies. Additionally, through the triple helix model, the relationship between universities and organizations in technological industry development is examined (Arvanitis et al., 2008).

Finally, this cluster highlights innovation in products and processes. In this context, Yousefi et al. (2021) demonstrated how CAPIN influences the relationship between intellectual resources and the performance of new products in the pharmaceutical sector. Najafi-Tavani et al. (2018) investigated the impact of collaborative innovation networks on the outcome of new products. Meanwhile, Koschate-Fischer et al. (2018) reflected on the importance of consumer innovation for the adoption of new products and brands. Table 4 indicates the main articles of this cluster, ordered according to their numbers of global citations in WOS.

**Table 4 -** Representative Articles of the "Performance" Cluster.

| N.º | Title | Author | Total Citations |
|---|---|---|---|
| 1 | How collaborative innovation networks affect new product performance: Product innovation capability, process innovation capability, and absorptive capacity | Najafi-Tavani et al. (2018) | 291 |
| 2 | Dynamic capabilities, creativity and innovation capability and their impact on competitive advantage and firm performance: The moderating role of entrepreneurial orientation | Ferreira et al. (2020) | 283 |
| 3 | Evaluating the role of social capital, tacit knowledge sharing, knowledge quality and reciprocity in determining innovation capability of an organization | Ganguly et al. (2019) | 255 |
| 4 | The influence of Business Intelligence capacity, network learning and innovativeness on startups performance | Homemade & Rabbit (2019) | 85 |
| 5 | Knowledge sharing and technological innovation capabilities of Chinese software SMEs | Yao et al. (2020) | 72 |

Source: Authors.

*Management*

We denominate the green cluster as "Management." This is the smallest of the identified groups and represents 21% of the article sample. In this grouping, discussions are interconnected by behavioral, perceptional, and management aspects. The main topics addressed in the cluster are (1) leaders' behavior, (2) consumers' relationship with CAPIN, (3) organizational culture, (4) management in family business, and (5) technological aspect.

The first topic identified in this cluster is an investigation into managers' behavior concerning CAPIN. For example, Yang et al. (2019) investigated how managerial cognition in environmental strategies influences CAPIN development. Other authors explored the impact of leadership on CAPIN culture and learning structure (Gil et al., 2018), or how different facets of top executives' positive self-esteem enhance or hinder innovative behavior (Stock et al., 2019). Furthermore, the effects of transformational leadership on organizational CAPIN were analyzed from a perspective of employees' positive psychological capital. In this context, Lei et al. (2020) discovered that the relationship between transformational leadership and CAPIN is mediated by self-efficacy and optimism.

Another topic in this cluster addresses consumers' relationship with CAPIN. For instance, analyzing consumers' conversations/perceptions on social media. Patroni et al. (2022) investigated how this consumer interaction can influence organizations' decisions and actions, impacting innovation outcomes. Additionally, discussions revolve around the new service market (Ingenbleek et al., 2013) and how customer knowledge management influences CAPIN and organizational performance (Taghizadeh et al., 2018). In this context, Hollebeek & Rather (2019) developed a model to assess the effect of service innovation on customer co-creation, satisfaction, advocacy, and behavioral loyalty intention in travel agencies. As a result, they indicated that service innovation is a key driver in customers' behavioral loyalty intention. Furthermore, we highlight Hwang et al.'s (2021) study investigating consumer motivation for CAPIN, and Jürgensen & Guesalaga's (2018) research concluding that organizations can leverage consumer innovation by taking steps to increase their self-confidence.

Organizational culture is another topic of interest in this cluster. For example, Andersson et al. (2020) discussed organizational climate and CAPIN, indicating that psychological safety in the organization is positively associated with the ability to innovate in new products, processes, services, and business models. Furthermore,

there was a comprehensive discussion on culture at the national level. For instance, Tehseen et al. (2023) researched entrepreneurial CAPIN among three ethnic groups in Malaysia. As a result, they highlighted the importance of considering cultural diversity when analyzing the influence of cultural values on the innovation process. This is because values such as collectivism and a horizontal structure, with greater distribution of access and power, positively impact entrepreneurial CAPIN. Moreover, Yang et al. (2018) investigated the relationship between collaborative culture, knowledge sharing, and CAPIN in Chinese companies.

Another topic in this cluster deals with management in family businesses. Hernandez-Perlines et al. (2021) discussed the impact of generational influences on CAPIN and the performance of family businesses. In turn, Filser et al. (2018) investigated how family functionality and emotional wealth impact CAPIN, particularly in small and medium-sized enterprises. The authors argued that binding social ties, emotional attachment of family members to the business, and renewal of family ties through family succession have a positive effect on CAPIN. Additionally, Vollero et al. (2019) used systems theory to identify the main sustainability drivers in family businesses.

Finally, this cluster addresses the technological aspect. For example, Adamides & Karacapilidis (2020) discussed the importance of information technology for the development and maintenance of open CAPIN. Zawislak et al. (2018) investigated the association between technological intensity and CAPIN in different industrial sectors. As a result, they pointed out that differences in CAPIN levels can be explained by the balance and development of organizations' technological, operational, managerial, and transactional capabilities. Additionally, the context of digital transformation in Human Resources (HR) is addressed. As considerations, Bansal et al. (2023) highlighted the importance of top management support, climate, and communication with employees for the development of a digital infrastructure conducive to CAPIN in organizations. Table 5 indicates the main articles in this cluster, ordered according to their global citation numbers in WOS.

**Table 5 -** Representative Articles of the "Management" Cluster.

| Nº | Title | Author | Total Citations |
|---|---|---|---|
| 1 | Knowledge sharing serves as a mediator between collaborative culture and innovation capability: an empirical research | Yang et al. (2018) | 122 |
| 2 | Developing a model for supply chain agility and innovativeness to enhance firms' competitive advantage | Chen (2019) | 118 |
| 3 | Tracing the Roots of Innovativeness in Family SMEs: The Effect of Family Functionality and Socioemotional Wealth | Filser et al. (2018) | 117 |
| 4 | Information technology for supporting the development and maintenance of open innovation capabilities | Adamides & Karacapilidis (2020) | 90 |
| 5 | How transformational leadership facilitates innovation capability: the mediating role of employees' psychological capital | Lei et al. (2020) | 85 |

Source: Authors.

## IV. Discussion About The Identified Research Fronts

The bibliographic coupling analysis revealed three main research fronts on CAPIN in the business area. Furthermore, only 16 out of the 311 journals in the sample concentrate 38% of the total publications on the topic. Overall, the results confirm the importance of CAPIN for companies' competitive advantage. Competitive advantage is defined as the condition of a company having a product or service perceived by customers as better than that of its competitors (Barney, 1991). In this sense, the three identified clusters - knowledge, management, and performance - contribute to organizations' ability to generate value through innovation. Bibliographic coupling allowed identifying the three main research fronts on CAPIN, fulfilling our first objective. Additionally, a brief content analysis of the main articles in each cluster allowed us to consolidate the themes and provide suitable labels for each of them. Thus, we addressed our second objective of identifying the convergence of themes and topics for each specific cluster.

The first identified cluster focuses on knowledge as the main theme, emphasizing the importance of knowledge management in the process of innovation and organizational value creation. In this sense, the literature points out that CAPIN depends on an organization's ability to discover and acquire new sources of knowledge that can contribute to the creation of innovative products and services (Ferreras-Méndez et al., 2015). Additionally, knowledge is embedded in people (Davenport & Prusak, 1998), with a connection between learning and CS in its structural, cognitive, and affective dimensions. CS differs from other forms of capital based on assets, as it resides in the relationships between individuals and enables social exchanges (Putnam, 1995). For example, knowledge creation requires the process of socialization, particularly regarding tacit knowledge that depends on sharing experiences (Nonaka & Toyama, 2003). In this context, the third cluster with the management theme connects with CS by addressing CAPIN in family businesses. For example, Filser et al. (2018) concluded that the connection of social ties and the desire to renew family ties positively affect the CAPIN of these

organizations. Additionally, there is a connection with the second performance cluster because knowledge, besides being a fundamental resource for organizational performance, is also considered the main way to improve a company's competitiveness (Del Giudice & Maggioni, 2014).

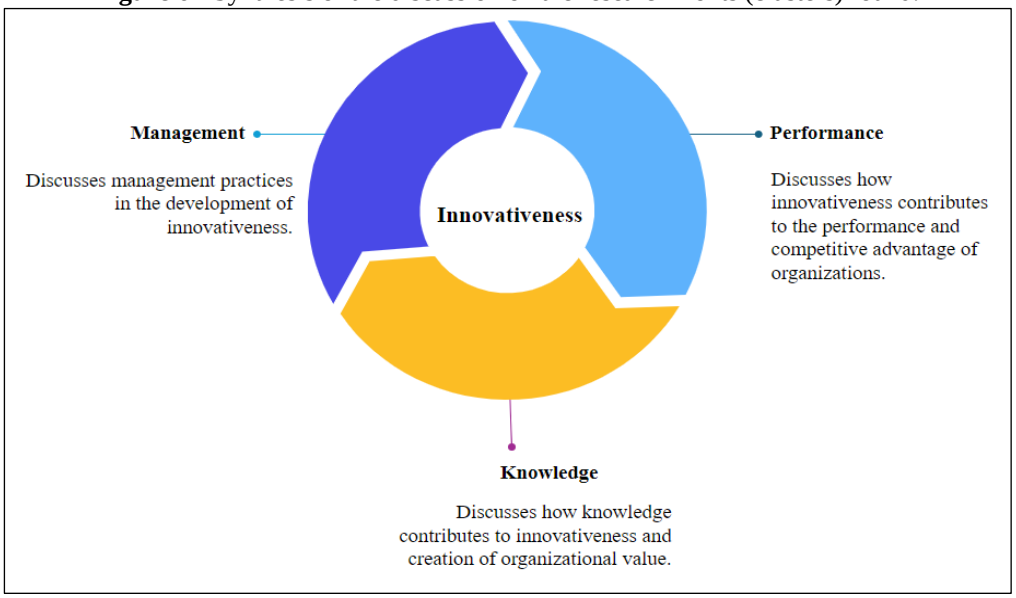
Another topic addressed in the first cluster is knowledge sharing. In this context, there is a connection with the performance cluster because knowledge sharing is one of the main antecedents of CAPIN (Yeşil et al., 2013), allowing organizations to leverage their innovation potential (Ganguly et al., 2019). For example, through knowledge exchange among organization employees (Jantunen, 2005). At the same time, individual motivation and engagement contribute to knowledge flows, and consequently to greater organizational performance (Mazzucchelli et al., 2019). Additionally, absorptive capacity moderates the relationship between collaborative innovation networks and the CAPIN of products and processes (Najafi-Tavani et al., 2018). Therefore, CS, particularly in terms of collaboration, is significant for innovation outcomes. For example, organizations have different business partners such as customers, competitors, and universities, where knowledge and learning flows exist. Thus, understanding how knowledge is created, shared, and applied contributes to managers developing effective strategies to drive innovation.

The second identified cluster focuses on performance as the main theme of discussions, investigating the relationship between CAPIN and organizational performance. In this context, the entrepreneurial orientation (EO) topic stands out, which is a strategic inclination for entrepreneurship development (Gupta & Gupta, 2015). This is because EO contributes to organizations supporting new ideas and experiments that can result in new products, services, or processes (Rodrigues & Raposo, 2011). Additionally, entrepreneurial intention promotes capabilities such as management and leadership (Al-Mamary & Alshallaqi, 2022; Covin & Wales, 2019), connecting with the theme of the third cluster. Another topic addressed is the environment in which organizations operate and how entrepreneurship involves taking risks and making proactive decisions in response to market conditions. In this sense, the literature indicates that operating in a turbulent environment can promote creativity and CAPIN, allowing entrepreneurs to adopt different approaches in their businesses (Baron & Tang, 2011; McCarthy et al., 2018). Additionally, market orientation means having the customer as centrality (Tajeddini et al., 2006).

At the same time, an organization's strategic orientation relates to a culture that enables CAPIN. In this sense, there is a connection with the third management cluster that addresses aspects such as organizational climate and the impact of national culture on CAPIN (Andersson et al., 2020; Tehseen et al., 2023). Additionally, Singh et al. (2022) identified that the organization's CAPIN mediates a market-oriented culture and organizational performance. Another point of connection is with the first cluster because innovation can be enhanced by combining knowledge and experience from different sources through collaboration (Yeniyurt et al., 2019). For example, Criscuolo et al. (2018) reinforced the importance of a combination between internal and external sources of knowledge for increasing organizational innovative success. In this sense, entrepreneurs consider collaboration between companies fundamental to the innovation process (Massa & Testa, 2008). At the same time, other dimensions of CS such as structure and cognition relate to the development of CAPIN (Ganguly et al., 2019). Even from an individual perspective, for example, considering innovation, creativity, and risk-taking by entrepreneurs (McCarthy et al., 2018).

Finally, the third cluster discusses management practices regarding CAPIN. For example, with the use of technology in the innovation process (Patroni et al., 2022). In this sense, Adamides & Karacapilidis (2020) found that in open innovation processes and ICT-based systems, collaboration is a predominant factor for success. Therefore, managerial implications in the development of norms and cultural values reflect on stimulating innovation activities in organizations (Tehseen et al., 2023). This connects with the second performance cluster because CAPIN is necessary for sustaining the business's competitive advantage (Hwang et al., 2021). Therefore, as discussed, the three identified clusters present points of interaction and connection between them. Additionally, an integrated view of them can contribute to advancing research on CAPIN. This is because an integrated approach allows continuous and cyclical improvement of the challenges of establishing and developing innovation in organizations. Therefore, even though there are different research fronts on the topic, in a broader context, it is important to consider that CAPIN development involves: (1) identifying and evaluating existing organizational knowledge, as well as the knowledge that needs to be acquired, (2) developing and implementing appropriate management to enable innovation, and (3) monitoring organizational performance. Figure 6 illustrates this discussion graphically, highlighting an integrated view of the three identified clusters.

**Figure 6** - Synthesis of the discussion on the research fronts (clusters) found.




Source: Authors.

**The Research Agenda**

Table 6 summarizes the main research opportunities identified in each cluster. These issues may shape the future paths for research on CAPIN across a variety of business study fields.

**Table 6** - Research opportunities in each identified research front (clusters).

| Research Fronts | Identified Opportunity | Bibliographic Reference |
|---|---|---|
| (1) Knowledge | Absorption capacity and CAPIN | (Chichkanov, 2021; Lau & Lo, 2019; Schweisfurth & Raasch, 2018; Zou et al., 2018) |
| | Social capital and CAPIN | (Blaique et al., 2024; Corrêa et al., 2021; Eiteneyer et al., 2019; Howaldt & Schwarz, 2021; Migdadi, 2022; ul zia et al., 2023; Weber & Heidenreich, 2018; Yeşil & Doğan, 2019) |
| | Green orientation and CAPIN | (Alzubaidi et al., 2021; Borah et al., 2023; Flores & Jansson, 2021; J. Lin & Zhou, 2022; Tang et al., 2024; Zameer et al., 2024) |
| | Knowledge sharing and CAPIN | (Ganguly et al., 2019) |
| (2) *Performance* | Customer knowledge management and CAPIN | (Khashan et al., 2024; Migdadi, 2021b; Taghizadeh et al., 2018) |
| | Competitive advantage and CAPIN | (Alghamdi & Agag, 2024; Rajapathirana & Hui, 2018; Thakur et al., 2022) |
| | Small/medium-sized companies and CAPIN | (Hanaysha et al., 2022; Yao et al., 2020) |
| | *Startups* and to CAPIN | (Caseiro & Coelho, 2019; Linton, 2019) |
| | Entrepreneurial guidance and CAPIN | (Khan & Naeem, 2018; McCarthy et al., 2018) |
| | External/internal environments and CAPIN | (Arvanitis et al., 2008; Okatan et al., 2019; Ramanathan et al., 2018) |
| | Innovation (products and processes) and CAPIN | (Koschate-Fischer et al., 2018; Najafi-Tavani et al., 2018; Yousefi et al., 2021) |
| (3) Management | Leadership and CAPIN | (Gil et al., 2018; González-Ramos et al., 2023; Khalil et al., 2022; Lei et al., 2020b; Sahban, 2019; Stock et al., 2019) |
| | Consumer behavior and CAPIN | (Chauhan et al., 2019b; Hwang et al., 2021; Hwang et al., 2019; Jürgensen & Guesalaga, 2018; Patroni et al., 2022; Taghizadeh et al., 2018) |

| | | |
|---|---|---|
| | Organizational culture and CAPIN | (Botelho, 2020; Gil et al., 2018; Iranmanesh et al., 2021; SUIFAN, 2021; Tehseen et al., 2023b; Z. Yang et al., 2018) |
| | Management in the family business and CAPIN | (Ahmad et al., 2020; Hernandez-Perlines et al., 2021b; Toska et al., 2022; Vollero et al., 2019) |
| | Technology and CAPIN | (Adamides & Karacapilidis, 2020b; Zawislak et al., 2018) |

Source: Authors.

Besides the questions directly elaborated from the set of articles, as shown in Table 6, we highlight that another relevant research avenue for future studies is the systematic reviews of the identified clusters. As CAPIN is used in association with various fields of knowledge and is a topic of relevance in investigating competitive advantage for organizations, these reviews would bring greater clarity to each research front. Another research opportunity would be to employ meta-analysis techniques to evaluate the studies, contributing to the advancement of theory construction and testing regarding CAPIN (Schmidt, 2008).

We identified that research gaps on CAPIN are distributed among theoretical and methodological aspects. Regarding theory, we encourage research to delve into the concept of CAPIN itself. This is because the capacity to innovate is a metacapacity formed by a set of competencies, which are often dispersed throughout the company's structure (Zawislak et al., 2018), being approached as a set of assets (Christensen, 1995), processes (Chiesa, 1996), skills (Guan & Ma, 2003) or as complementary capabilities between technological and business drivers (Wonglimpiyarat, 2010). In this context, we suggest that microfoundational thinking can be a valuable approach for advances in future research. This is because this approach seeks to explain collective phenomena through the understanding of lower-level components and their interactions (Barney & Felin, 2013; Felin et al., 2012). In this sense, we highlight the work of Ryan et al. (2018) who studied partnerships between companies and universities, analyzing the microfoundations of processes, interactions, and structures involved in exploratory CAPIN.

As for methodological aspects, the quantitative approach is predominant in studies on CAPIN (Ferreira et al., 2020; Rajapathirana & Hui, 2018; Weber & Heidenreich, 2018; Yao et al., 2020). Therefore, qualitative or mixed methods research is encouraged. For example, Castela et al. (2018) used cognitive mapping in a constructivist stance. We hope that future researchers can dedicate themselves to overcoming current challenges, refining their methodological procedures and theoretical elaborations.

## V. Final Considerations

In this study, we identified the main research fronts on CAPIN through a bibliographic analysis of scientific production over the last five years. The results revealed three major areas of relevance for the topic in the business field: (1) knowledge, (2) performance, and (3) management. For each of these groupings, we discussed content linkages among articles as well as paths for future research. Despite addressing our research questions, this study has limitations. Firstly, due to the study period focusing on the last five years of publications, some relevant articles may not be included in the analysis, even though this choice is justified as described earlier. Although limited by inherent issues in the bibliographic coupling technique, longer periods may yield additional relevant information. Secondly, despite the main collection of WOS being recognized as a reliable database with broad scientific coverage, articles from other databases such as Scopus or Google Scholar may be added to the research universe. Another limitation is inherent to the technique itself, which to some extent may compromise the evaluation of results from recent articles. This is because new articles may not yet exhibit strong coupling strength and, therefore, may not stand out in the clusters formed by bibliographic coupling. With this study, we contribute to academics and professionals in the business field interested in CAPIN. By consolidating the current scientific literature, academics will benefit from a roadmap to guide research topics and assess future opportunities for the field. At the same time, managers may find important insights in each cluster, especially regarding strategic management initiatives. By gaining a comprehensive understanding of the main research areas on CAPIN and identifying improvement opportunities in their organizations, managers can develop practical actions that drive innovation and competitiveness.