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Knowledge Management in Small and Medium Enterprises: Literature Review and Research Agenda

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Abstract

Knowledge management is essential for analysing organizational innovation. It impacts the ability to meet objectives and engage in decision-making, which can be improved using information and communication technologies (ICTs). However, its use has limitations in small and medium-sized enterprises (SMEs) due to resource and knowledge barriers, which is why the scientific literature must be kept up to date to provide solutions. Thus, the objective of the study is to explore research trends in knowledge management in SMEs. For this purpose, a bibliometric analysis is carried out with the Scopus database, following the parameters of the preferred reporting items for systematic review and meta-analyses (PRISMA) statement for literature re-views. Among the main findings is the accelerated pace of publication in countries such as the United Kingdom, Italy, Taiwan, and Malaysia that addresses this theme from innovation, performance, learning and sustainability, with research referents as Kuan Yew Kong or Roberto Cerchione. Among the main conclusions, mention is made of the importance of future research addressing consolidated topics in the field, as well as others considered emerging and in current trends such as absorptive capacity, entrepreneurial orientation, and intellectual capital, as the main emerging issues.

Keywords

Knowledge management, bibliometric analysis, innovation, sustainable development, small and medium enterprises (SMEs), open innovation, PRISMA, organizational learning

JEL Classification

O32, L25, M15

Introduction

In the current global situation influenced by the constant advancement of information and communication technologies (ICTs), knowledge management (KM) is be-coming an important source for the emergence of business innovation (Hock-Doepgen et al. 2021); such innovation, as indicated by Abbas et al. (2020), is an integral input in the advancement and sustainability of modern institutions. Thus, for organizations, knowledge management has become a determining factor in their development and performance (Hassan and Raziq 2019, Martínez-Costa and Jiménez-Jiménez 2009) and an instrument for generating different strategies for meeting objectives, institutional well-being and information-guided decision-making (Saratchandra and Shrestha 2022).

Importantly, ICTs contribute to creating value and optimizing performance by facilitating the development of various organizational capacities, for example, knowledge management and flexibility in the innovation processes of new products in small and medium-sized enterprises (SMEs) (Gaviria-Marin et al. 2021). Similarly, according to Liu et

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al. (2021), digital advances are significantly related to the promotion of the innovative progress of these companies, and their structuring and implementation should be considered a critical element during data processing and knowledge derived from the activities of SMEs (Liu et al. 2021). In this framework, KM positively influences radical innovation processes in SMEs, which supports the generation of competitive ad-vantages for these business units (Hassan and Raziq 2019, Maguire et al. 2007).

Similarly to how innovation and ICTs emerge as determining axes of effective knowledge management in SMEs, progress in innovation processes can also encourage the integration of ICTs, which in turn can promote internationalization; at the same time, innovation can be promoted by incorporating, for example, ERP (enterprise re-source planning) and e-CRM (electronic customer relationship management) systems to strengthen the export capacity of SMEs (Lecerf and Omrani 2020). Additionally, information systems contribute appreciably to the effectiveness of knowledge management in SMEs, affecting the capture, generation, collection and exchange and use of knowledge and enabling its accessibility, adaptability, security, reliability and cost re-duction so that these entities can use knowledge effectively for stability and differential performance (Saratchandra and Shrestha 2022).

Indeed, the implementation of knowledge management systems in SMEs has be-come a key issue, which is influenced by the organization's abilities to manage and share knowledge and institutional learning skills and competencies in IT implementa-tion (Shrafat 2018). Additionally, obtaining external knowledge is essential for SMEs (Zhou et al. 2021), as it is necessary for improving learning opportunities and achieving a competitive edge (Al-Jabri and Al-Busaidi 2018). Likewise, the successful implementation of knowledge management is conditioned by the balanced integration of infra-structure and institutional skills, including the technology, organizational model, organizational culture (Lee and Lan 2011) and reuse of knowledge arising from business activities (Suroso et al. 2018).

Additionally, the study by Harrington et al. (2019) highlights the importance of KM as a determining factor in the internationalization of SMEs. Skills, technological re-sources, knowledge and business processes stand out as key factors in configuring co-operation networks and assessing capacity development. Similarly, Scuotto et al. (2017a) confirm the importance of knowledge-intensive network management and social networks as drivers of productive performance in SMEs. In addition, researchers have identified the use of big data as an essential instrument for making strategic business decisions by managers, taking as a reference managed knowledge, particularly in small and medium-sized companies in developing countries (Shabbir and Gardezi 2020).

Notably, at present, SMEs constitute an important basis for the economic development of countries (Yao et al. 2019); however, they are limited in their ability to use resources associated with ICTs and pose barriers to the advancement of these business units (Inayatulloh 2020). In addition, there are various budgetary difficulties (Sartori et al. 2020), uncertainty and confusion related to adequately implementing knowledge management processes, which biases the perception and understanding of the benefits of KM, thus limiting its acceptance in this sector (Lee and Lan 2011). There are also technical drawbacks (lack of knowledge) and resource investments concerning the adoption of appropriate technological solutions (Raj et al. 2019).

There are numerous contributions in the literature concerning knowledge management and its implementation in SMEs around the world (Al-Jabri and Al-Busaidi 2018, Oliveira et al. 2014, Palacios-Marqués et al. 2015). However, it is recommended to increase and continue updating the theoretical base. Thus, this bibliometric analysis enriches understanding of the theme and its progress through the general recognition of the publications up to the period of the search (2022); similarly, this research can be translated into input for future studies.

It is worth highlighting the importance of bibliometric analyses in the academic context, given the emphasis on tracking progress in the exploration of specific issues in various areas of knowledge based on statistical assessments (Ratten et al. 2020). In addition, such analysis allows for characterizing the validity and emergence of issues (Merediz-Solà and Bariviera 2019). It facilitates the recognition of the collaborative work of countries, institutions and authors (Yu et al. 2018). Plus, there is an opportunity to examine the possible impact of production (Durán-Sánchez et al. 2020). For these rea-sons, this study makes its main objective to explore the research trends in knowledge management in SMEs by tracking the documents registered in the Scopus database. Taking as reference publications recorded and compiled from this valuable source of information (Scopus), this article seeks to share the best advances in scientific production, the impact generated and the structure of cooperation (cocitation and co-occurrence) of the authors, institutions, and countries (Djeki et al. 2022), as well as the growing and emerging aspects that allow for deepening and updating knowledge. In addition, as a guide, this bibliometric analysis aims to answer the following research questions:

RQ1: What are the years where there has been the greatest interest in knowledge management in SMEs?

RQ2: What are the main research references in the scientific literature?

RQ3: How has the literature on knowledge management in SMEs conceptually evolved?

RQ4: What are the main growing and emerging themes derived from the scientific production on knowledge management in SMEs?

RQ5: What elements should the main research agenda include for future work on knowledge management in SMEs?

The study consists of an introductory section with elements related to the advancement of knowledge management in SMEs. Then, conceptual aspects associated with this element, relevance and adoption and implementation are highlighted; later, the most important results are highlighted, and the central objective of the investigation is integrated. Next, the method and materials used to carry out the review are included (sources of information, coding and selection of the data obtained, along with a de-scription of the instruments used for data analysis). Subsequently, the most significant results are shared and linked to the productivity level, networks, impact, status and emergence of the issues. In addition, the discussion considers the study findings and scientific references that add value to the inquiry based on its premises. Finally, conclusions and possible limitations observed during the structuring process of the investigation are presented.

Methods

In accordance with the research objective, a methodological design oriented to-wards the search for scientific literature on knowledge management for SMEs is pro-posed to identify, on the one hand, the structure of the literature, and on the other hand, the main research trends so that future research routes can be established. To develop this quantitative methodology, the parameters of the preferred reporting items for systematic review and meta-analyses (PRISMA) statement are followed for literature reviews, as demonstrated in Page et al. (2022). Accordingly, the following subsections are included.

Eligibility Criteria

To present the eligibility criteria, on the one hand, the inclusion criteria must be detailed, and on the other hand, the exclusion criteria must be followed to achieve the research objectives. The inclusion criteria include articles that reference knowledge management in the metadata of the title and keywords, along with small and mediumsized companies, including its abbreviation (SMEs).

On the other hand, two consecutive phases are used to apply exclusion criteria. The first, called screening, consists of applying an initial filter to all documents. Namely, once the search is carried out, it is evident that the documents contain not only conference proceedings but also all articles that, at the time of the search, were not definitively published. Likewise, all records that report incomplete metadata are excluded, which prevents the materialization of the bibliometric analysis.

Source of Information

Once the initial eligibility parameters of the methodological design have been determined, it is necessary to specify secondary sources of information that should be used, understanding that a literature review will be carried out. In this sense, the main source of information is the Scopus database, which is a database that, according to Herrera-Franco et al. (2020), is one of the current main databases in terms of scientific quality standards, as well as a wide coverage of information.

Search Strategy

To search for documents within the database selected as the main source of in-formation, a strategy must be carried out that responds, on the one hand, to the inclusion criteria detailed previously and, on the other hand, to the interface characteristics of the database, which, being international, also requires a search for information in English. In this sense, the following specialized search string was designed as a search strategy:

(TITLE ("knowledge management" AND (sme OR "small and medium enterpris-es")) OR KEY ("knowledge management" AND (sme OR "small and medium enter-prises")))

Data Management

After applying the equation designed in the Scopus database, a total of 535 documents are obtained for the period ranging from 1996 to 2022. These documents were hosted, organized, refined and analyzed with the MS Excel office tool, with the help of the free access software VOSviewer; by using this software, quantity and quality indicators were established that would allow us to understand the productivity and impact presented within the scientific literature (Durieux and Gevenois 2010), which, for this case, concerns knowledge management in SMEs.

Selection Process

Finally, in accordance with the parameters established by the PRISMA statement, in Fig 1, the suggested flow diagram is presented to summarize the explained methodological design and detail the selection process of all the articles that will be analyzed and incorporated into the results and the discussion.

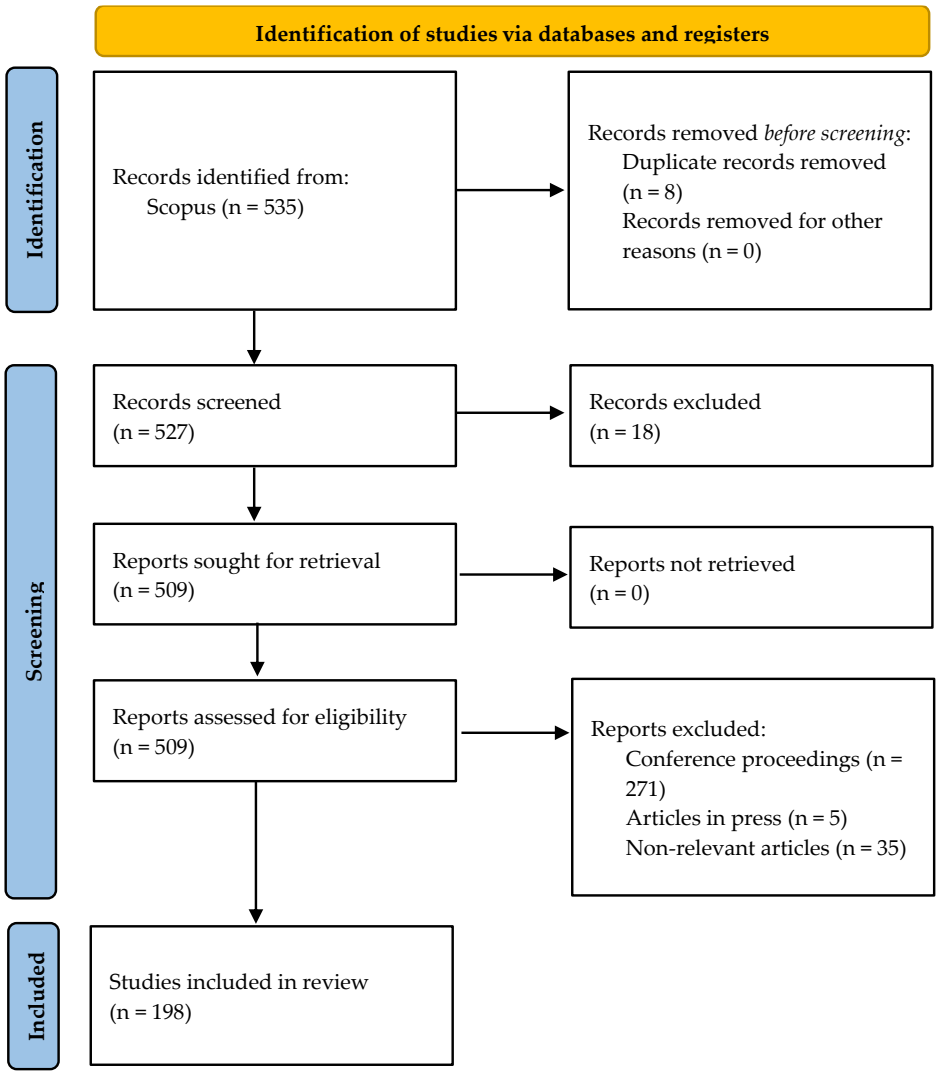

Fig. 1. PRISMA flow diagram.
Source: Authors' elaboration from Scopus.

Results

The following section presents the outcomes of the bibliometric analysis within the field of knowledge management applied to SMEs. Through the systematic compilation and study of the database of scholarly articles published in specialized journals, significant patterns have been discerned that shed light on the evolution of this research domain. The attained results encompass a range of insights, spanning from the analysis of yearly productivity to visualize temporal trends, to differentiated quality and quantity indicators by countries, journals, and authors. Additionally, the shifts in thematic focus over time are explored, unveiling thematic clusters and emerging trends. Amidst this panorama, current, burgeoning, and emergent themes are accentuated, delineating the future trajectory of research in this discipline.

With the intention of enriching academic discourse and furnishing valuable guidelines for forthcoming inquiries, the article concludes by introducing a research agenda that addresses identified gaps and promising areas of exploration. These findings not only contribute to a profound comprehension of knowledge management within the business context but also provide tangible insights for devising effective strategies that foster competitiveness and innovation within SMEs, situated within an ever evolving and challenging economic milieu.

Productivity per year

Fig. 2 demonstrates this information. It represents the scientific productivity in the period applied to select articles from the database, which is between 1996 and 2022. To date, 2019 accounts for the largest number of publications, with 21 in total. Among the publications that have contributed the most to the theme of knowledge management in SMEs is an article by Martins et al. (2019) that delves into both the investigative and operational opportunities of knowledge management to achieve greater organizational sustainability.

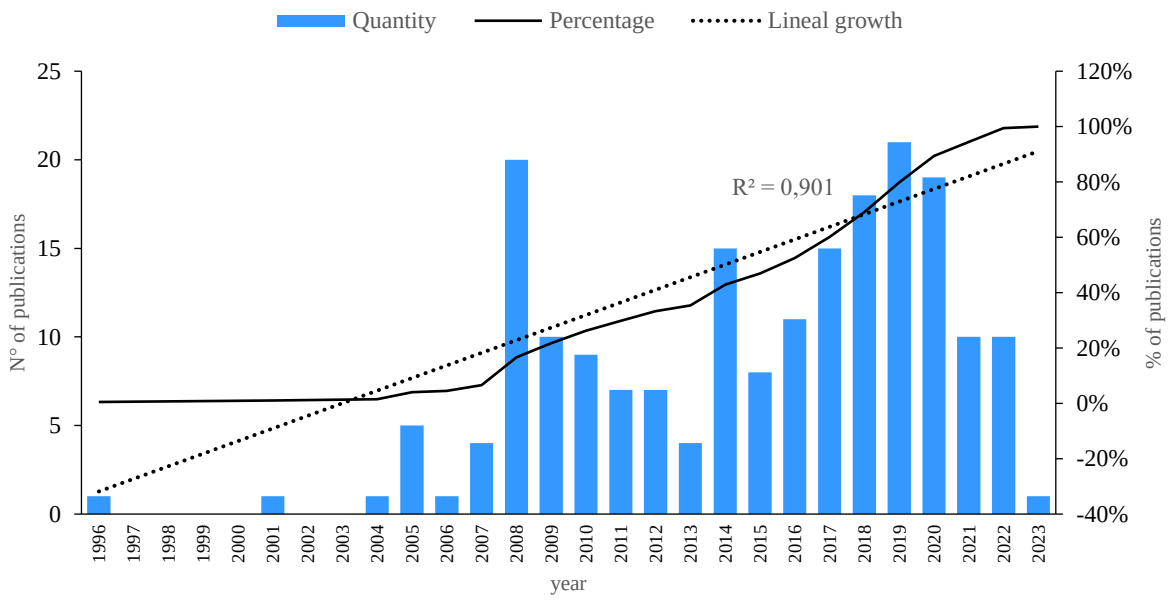

Fig. 2. Publications by year.
Source: Authors' elaboration from Scopus.

Another important year in terms of scientific production concerning knowledge management in SMEs is 2008, when a total of 20 records were presented that broadened the horizons of the discussion, research contributions, for example, the importance of knowledge management for the internationalization of companies in the ICT sector by presenting analyses of specific cases in developed countries, such as Finland (Saarenketo et al. 2008).

Likewise, the figure shows that 2020, with a total of 19 related articles, is another peak scientific production year, revealing the importance of this theme for the academic community in recent years. In this year, the analysis was extended to contexts that had been little explored by the previous literature, while it deepened the degree of diffusion and intensity of the use of knowledge management systems in SMEs in Brazil, as evidence in (Marques-Júnior et al. 2020).

Productivity and impact indicators

In this subsection of the article, an examination is conducted into the quality and quantity indicators of scientific production, segmented by countries, journals, and authors. This assessment not only provides an impression of the geographical distribution of research and its relative impact but also highlights the primary sources of knowledge and noteworthy researchers in the field. By pinpointing leading countries in terms of scientific output, influential journals within the discipline, and authors whose contributions have made a significant impact, this subsection contributes to understanding how knowledge has developed and evolved within this specific domain. These findings not only enrich the academic landscape but also provide valuable information for future collaborations, the identification of research networks, and emerging focus areas at the intersection of knowledge management and SMEs.

Main Authors

The Fig. 3 shows the main authors with the greatest cumulative number of publications and who therefore account for a greater proportion of academic and scientific productivity in the field. In addition, it compares the number of publications, with the total number of citations, as one of the main indicators of scientific impact.

The main author is Kuan Yew Wong, with 7 publications and more than 1050 citations, who, in a previous context, pointed out the lack of specific literature on the measurement of the performance of knowledge management, for which he proposes his own model based on reliability and validity parameters to measure the performance of knowledge management in SMEs (Wong 2005). Other important scientific contribution of the main the author was to close, at the time, the existing gap in the literature, which had analyzed critical success factors in the adoption of knowledge management of large companies, while omitting or relegating aspects associated with SMEs, in collaboration with another of the main authors of the scientific field such as Elaine Aspinwall (Wong and Aspinwall 2005).

This group of the main authors in the research field, includes Roberto Cerchione who, with a total of 6 publications and more than 260 cumulative citations, who has contributed valuable elements of analysis for SMEs, such as a taxonomy that allows for identifying both the tools and practices that researchers could apply to improve different phases of the knowledge management process (Cerchione and Esposito 2017). This contribution also allowed the author Emilio Esposito to be positioned among the most productive authors in the scientific literature on knowledge

management in SMEs.

Then, there are Centobelli with 5 publications and 143 citations, who have contributed essential elements of analysis associated with the dynamics of the ideal, strategic, and pertinent selection of the most suitable knowledge management systems so that SMEs can, one the one hand, reduce misalignment and, on the other hand, increase operational performance in terms of efficiency and effectiveness (Centobelli et al. 2018).

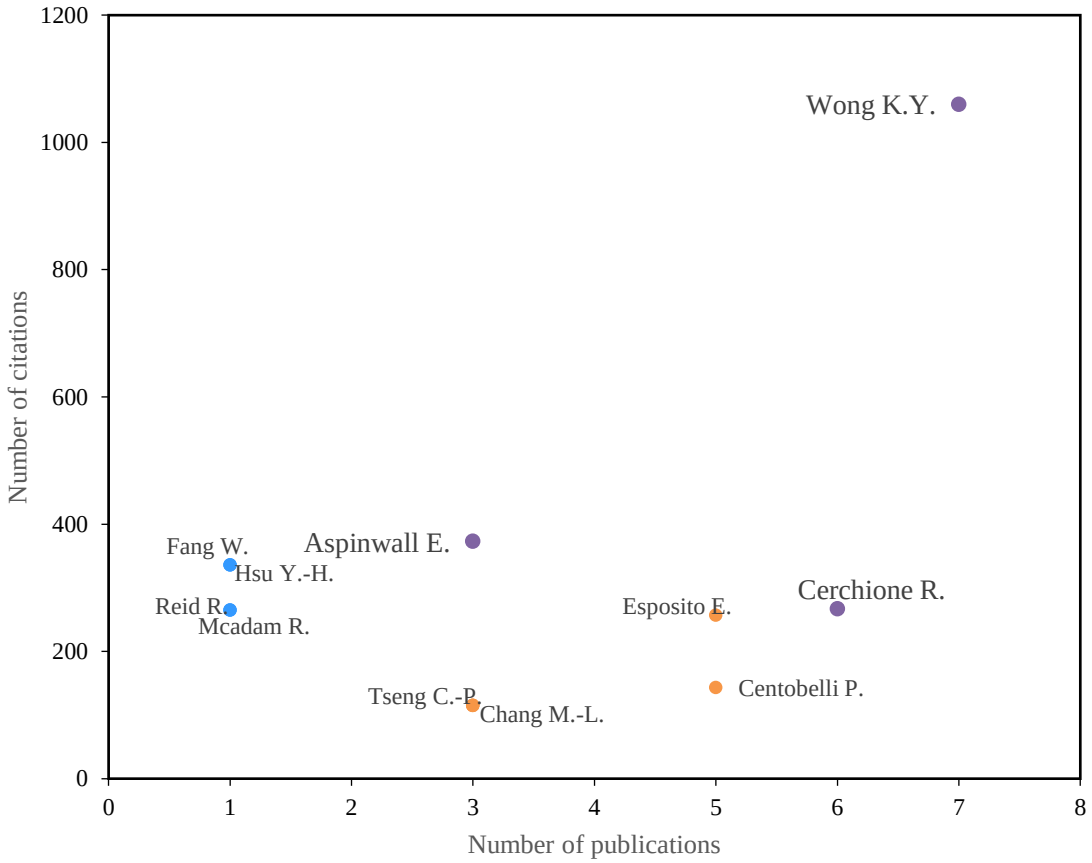

Fig. 3. Main authors.
Source: Authors' elaboration from Scopus.

Main Journals

From another main perspective abstracted from the bibliometric study, we have the analysis of the main scientific journals in terms of scientific productivity and academic impact, as evidenced in Fig. 4. In this sense, the main journal in the literature is the Journal of Knowledge Management, with a total of 9 publications and 966 citations, that address the dynamics of knowledge management in SMEs from multidisciplinary perspectives, as evidenced in Zia (2020), who explores the association between knowledge-oriented leadership, knowledge management behavior and innovation performance in project-based SMEs. Among the most prominent publications are those mentioned by Wong (2005) and Wong and Aspinwall (2005) (see Fig. 3), in which critical success factors in the adoption of knowledge management for SMEs are detailed. However, there are other investigations that, by way of literature review, have made it possible to understand the state of scientific progress at a certain time, thus envisioning potential future research opportunities, as described in Durst and Edvardsson (2012).

In the second position of importance, relevance or investigative impact is the journal Technological Forecasting and Social Change, with a total of 650 citations associated with 4 publications on the subject in publications on knowledge management in SMEs; approximately 336 of these citations come from a study entitled "Intellectual capital and new product development performance: The mediating role of organizational learning capability" in which the relationships that govern intellectual capital, organizational learning capacity and performance in the development of new products are analyzed, based on the typical characteristics of SMEs (Hsu and Fang 2009).

From another perspective, the journal that most disseminates knowledge on the subject is Production Planning and Control, with a total of 11 publications and 199 citations in total, currently accounts for the highest academic productivity on knowledge management in SMEs, including articles that analyze the dynamics of technology companies that use knowledge to innovate in the areas of game software development and intensive entertainment (Tassabehji et al. 2019). Other investigations published by the journal reveal other perspectives, such as the analysis of the relationship between multiple buyers and suppliers, from the context of the digitized management

of the supply chain by SMEs, as detailed in Scuotto et al. (2017a).

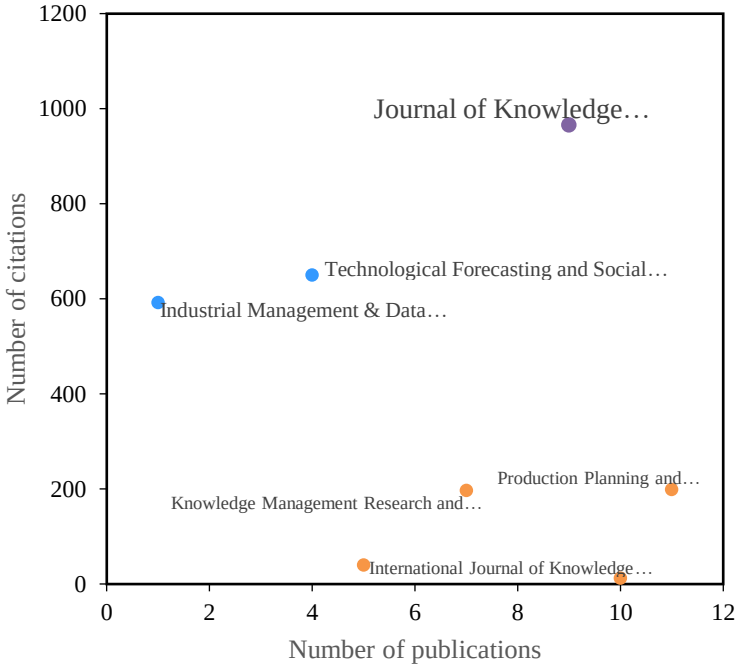

Fig. 4. Main journals.
Source: Authors' elaboration from Scopus.

Main Countries

In terms of the analysis of the countries where the issue has been most important, we have Fig. 5 that compares the number of articles and citations, on knowledge management in SMEs. The figure shows a greater research interest in the United Kingdom, which has 23 publications and more than 800 citations, and has contributed, among other elements, not only information about knowledge for technological innovation in SMEs in the manufacturing cluster (Woods et al. 2019) but also tools for implementing information modelling in construction by SMEs in the architecture, engineering, and construction sectors of the United Kingdom (Vidalakis et al. 2019). There are other interesting studies such as McAdam and Reid (2001) that shed light on differences in the perception of knowledge management between large companies and SMEs. Through comparison and contrast, it is possible to recognize the characteristics of each organizational sector.

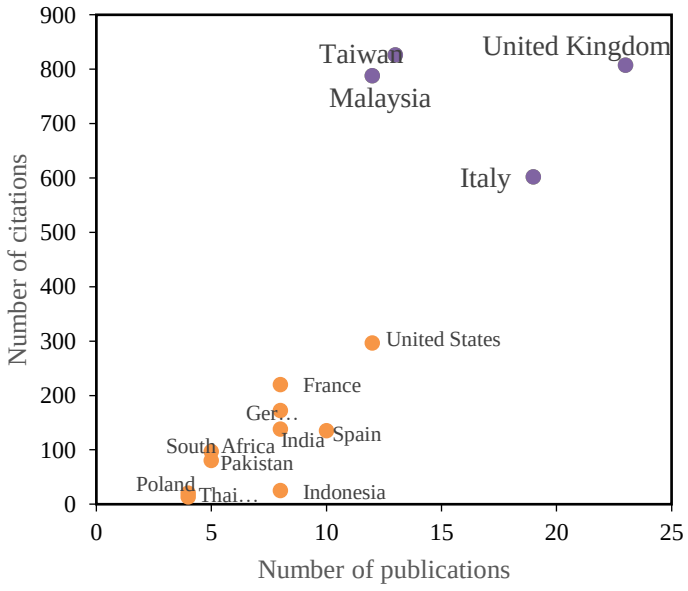

Fig. 5. Main countries.
Source: Authors' elaboration from Scopus.

In this order of ideas, it is evident that countries such as Malaysia and Taiwan stand out among the countries with the greatest academic impact, with 788 and 826 citations, respectively. This last country has an important study carried out by Hsu and Fang (2009) mentioned previously (see Fig. 4). Likewise, there are other important studies that have reflected on the role of incubation as a critical interface between micro innovation systems and microenterprises (Tsai et al. 2009).

Another important country is Italy, which is positioned as one of the most scientifically productive countries, with a total of 19 publications and more than 600 citations. In this context, issues oriented towards understanding the internationalization strategies of SMEs have been deepened based on the study of variables such as the interaction between network ties and "soft" internal resources at the base of knowledge management, as detailed in Thrassou et al. (2020).

Thematic Evolution

The research findings highlight how knowledge management is a key means by which to achieve business objectives by identifying, from the analysis of key terms, where aspects and variables associated with its development and implementation over time are revealed, especially in SMEs, in which the structure, institutional dynamics, resources, organizational culture, and contexts, among other factors, are dissimilar.

Each year, authors use more repetition of specific terms related to knowledge management in SMEs in the period investigated. Fig. 6 shows that for the year 1996, technology was referred to as knowledge (technology as knowledge) when the issue was still classified as emerging, and it was considered to have potential in the introduction of new products in the market (Taylor and Oates 1996). For 2005, the most prominent term was linked to critical success factors in knowledge management for SMEs (Wong 2005). On the other hand, for the year 2006, the management strategy appears as key instrument in improving productivity and innovation levels (Nunes et al. 2006) and in 2007, the transfer of knowledge (knowledge transfer) was widely used in trying to understand the factors that affect SMEs' ability to implement information technologies (in e-commerce activities), specifically, the capabilities required to use information systems according to the context of each business unit (Eikebrokk and Olsen 2007).

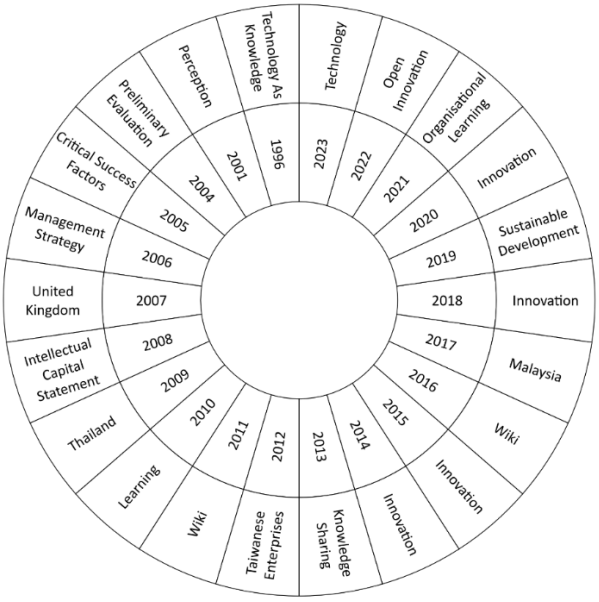

Fig. 6. Most used keywords by year.
Source: Authors' elaboration from Scopus.

Note that innovation appears in 2014, 2015, 2018 and 2020 as a reference for inquiry. Studies emphasize the value of the possibility of accessing different sources of knowledge (internal and external) in the various stages of innovation (Arfi et al. 2018) and the positive implications for SMEs if innovation and value generation are stimulated from the integration of knowledge into a system that allows the transfer of knowledge, information, and technological assets (Rajapakse 2020).

For 2010, learning is highlighted as an object of discussion among researchers, where the greatest source for the absorption of knowledge in SMEs is related to systematic and industrial experiences of entrepreneurs, the extraction of specialized knowledge from staff and the importance of the multiplicity of information sources since they contribute to innovative performance (Wang et al. 2010). Additionally, in 2013, knowledge sharing was linked in this analysis as a decisive factor in the management and absorption of knowledge (Gholami et al. 2013, Yang et al. 2013) and in promoting a culture of business innovation and organizational performance and obtaining a sustainable competitive advantage (Arsawan et al. 2022).

Sustainable development is evident in 2019, where among other aspects, the potential role of universities as promoters of emerging knowledge and the implementation of KM as a determinant of conditions to build sustainable productive systems is investigated (Martins et al. 2019). In 2021, studies highlight the use of the term organizational learning as a definitive element in knowledge acquisition processes to influence the application of methods to favour the circular economy in pursuit of improved sustainability and business performance (Agyabeng-Mensah et al. 2021); finally, in 2022, the term associated with open innovation stands out as a theme of great relevance for authors. Researchers relate possible apprehensions among SMEs concerning the adoption of IO, thereby restricting opportunities for the exchange of diverse knowledge and resources with other organizations and reducing possibilities for innovative performance (Woods et al. 2019).

Thematic Cluster Analysis

In the study of keywords favours the identification of the themes that have the greatest impact on the scientific context in relation to the analysed theme. Fig. 7 shows the clusters that originated, linked to the theme of knowledge management in SMEs, using the VOSviewer application. One of the main clusters that stands out is linked to innovation. In this regard, there is a need to maintain a balance between innovation and the possibility of taking advantage of it in the context of the Fourth Industrial Revolution, contemplating intellectual capital and the ability to absorb technology as central axes (Mahmood and Mubarik 2020). Likewise, the value of knowledge exchange in the process of improving the performance of innovation and its contribution to SMEs' performance is highlighted (Tassabehji et al. 2019).

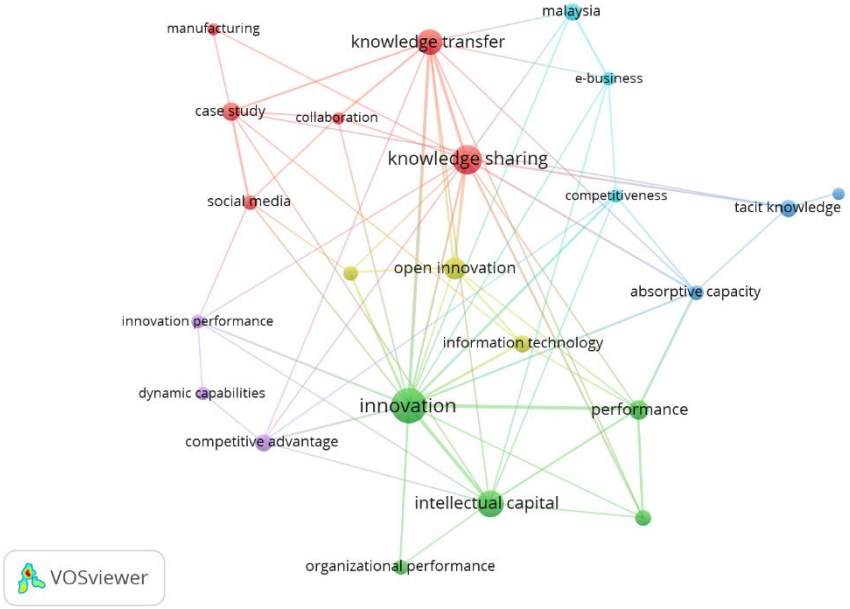

Fig. 7. Networks of investigated themes.
Source: Authors' elaboration from VOSviewer.

Additionally, the cluster regarding open innovation appears and is conceived as a key instrument in obtaining differentiation in the market and increasing organizational benefits (Jasimuddin and Naqshbandi 2019). In addition, Lecerf and Omrani (2020) point out the importance of innovation and ICT as essential tools for effective KM management in SMEs. In addition, Wang and Wang (2020) reveal a close relationship between elements such as big data and knowledge management, highlighting that strategic data management, the integration of big data projects guided by knowledge and information technologies, and new knowledge-based developments become means for the structuring and consolidation of knowledge management in SMEs.

In addition, the cluster on knowledge sharing shows the importance of exchanging knowledge in the innovative process, particularly in SMEs with limited resources (Tassabehji et al. 2019). This cluster is also related to knowledge transfer and the importance of generating a culture for exchange, which is determined by aspects such as the ability to absorb knowledge (Cahyadi 2019). In addition, collaboration occurs by different applications, according to work requirements, which offer benefits and, at the same time, present challenges in their use, especially in the SME sector, which requires transformations in work systems and organizational culture (Hardwig et al. 2020).

On the other hand, there is a cluster with themes related to absorptive capacity, highlighting that organizations with better conditions for adopting and transforming assimilation skills are better able to optimize and reconfigure their knowledge management activities, thereby increasing their innovation rates (Dabic et al. 2019) and

competitiveness (Ramadhan and Sofiyanurriyanti 2020). Also listed is tacit knowledge and the need to structure it to achieve greater benefits from their business activity (Upadhyay and Kundu 2020) and e-business, as SMEs' proper implementation of digital technologies opens the possibility of promoting their products and services and experiencing greater economic benefits from their commercial activities (Nasution et al. 2021, Riera and Iijima 2017).

Along these lines, social networks (social media) are translated into economic drivers, determinants in the adoption of technological innovations and dynamizers of economic development by promoting the joint generation of knowledge and the use and acquisition of electronic devices among users (Dey et al. 2019). In addition, their use in SMEs can facilitate the best collection and management of customer information to provide meaningful experiences when selling and marketing their products (Zeng et al. 2021).

Similarly, one can see a cluster of themes related to competitive advantage, supported by the internal strengths of SMEs (business emphasis, technological capacity and intellectual capital (Khan et al. 2019)), in addition to boosting dynamic capabilities through the continuous preparation of knowledge sources and technological tools (Scuotto et al. 2020b) These themes form a pillar in which knowledge management becomes a mediator of the increase in SMEs' innovation performance (Ferraris et al. 2021).

Current, Growing and Emerging Themes

Adding to the previous section, this section presents information on the key terms contained in the reviewed literature associated with knowledge management in SMEs, from which the graph based on the Cartesian plane is structured to identify the most meaningful concepts. In fact, the X-axis shows the frequency of appearance of terms in the articles reviewed. The Y-axis shows the average year in which each term was studied. Thus, Fig. 8 identifies four quadrants, with quadrant IV capturing the most frequently appearing thematic elements in the investigations and similarly those elements that have become less relevant in the most recent explorations of the theme. This figure contributes to the characterization of terminologies in decline, which curiously in this investigation does not include any terms, denoting the continued importance of the various concepts related to the theme.

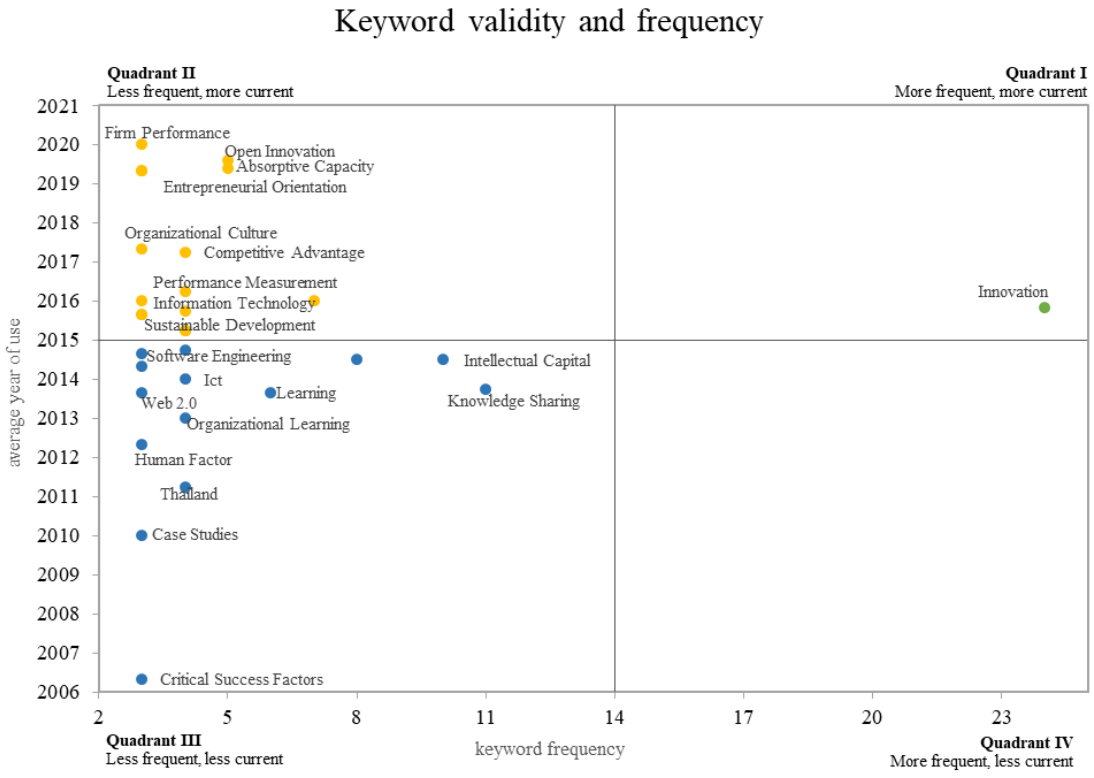

Fig. 8. Validity and frequency of keywords.
Source: Authors' elaboration from Scopus.

Quadrant III shows words with the least frequency of inclusion in the documents examined. These documents have on average a lower use per year; therefore, they include concepts with low impact on the understanding of the present and future behaviour of the analysed phenomenon; thus, this typification contributes to distinguishing their value in terms of whether to use them in future inquiries. Specifically, concepts such as ICT, organizational learning, human factor, critical success factors, and knowledge sharing, among others, indicate generic aspects of the theme and do not establish a detailed approach linked to the singularities concerning the theme.

Quadrant II contains the least frequently appearing terms in the revised texts on knowledge management in SMEs. However, they constitute concepts that have emerged with the greatest influence in recent years, which is why they are considered among the academic community as emerging terms. In this case, the most important are firm performance, absorptive capacity, entrepreneurial orientation, organizational culture, performance measurement, performance, business performance, knowledge transfer and intellectual capital. Finally, quadrant I presents the terms most used (higher frequency) by researchers in their publications and that maintain a high average of use; thus, they are increasing terms and thus aligned with innovation.

Research Agenda

With the purpose of providing inputs for future work, we have Fig. 9, with the main concepts identified in the study, and which of these are emerging as the most prominent soon of the literature on knowledge management in SMEs.

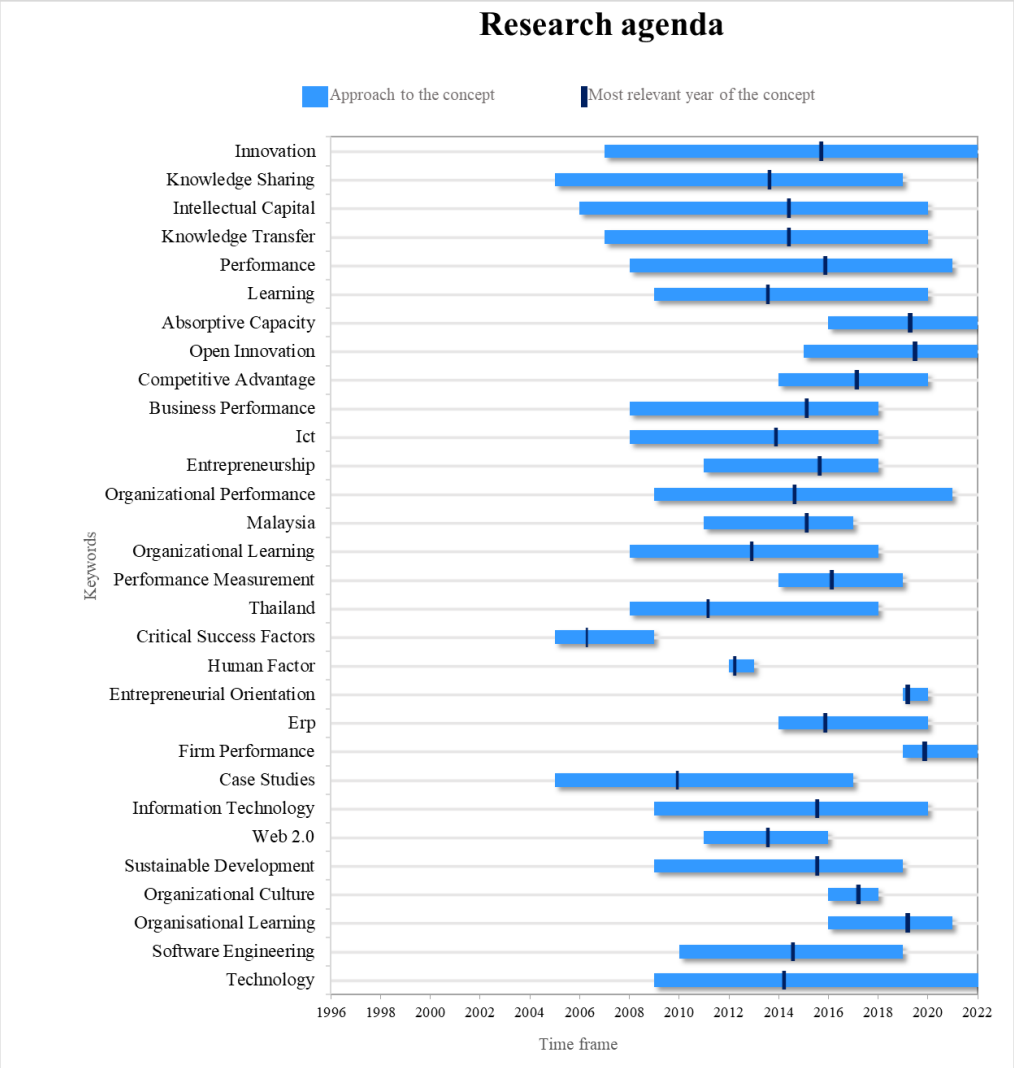

Fig. 9. Research agenda.
Source: Authors' elaboration from Scopus.

Another aspect that stands out involves the absorptive capacity of knowledge in this type of organization since, as evidenced by different researchers' contributions to this area, strengthening access to knowledge sources and improving the infrastructure of knowledge and consolidation of processes and networks to transfer such knowledge are decisive for the innovative and financial performance of SMEs. Therefore, future studies should continue to expand the study of the impact of collaborative structures (knowledge networks) on knowledge exchange, learning and transformation in innovative cultures.

As shown, organizational culture is a strongly trending component in research, and it will not cease to be so over time due to its integration of various business elements (human talent, knowledge, experiences, purposes, technology, among others) and its ability to influence performance and productivity. This finding suggests the need for future inquiries to address in greater depth the effects of incorporating different technologies associated with the Fourth Industrial Revolution, and the level of training and relationship of human talent with these resources for

improving SMEs' competitive advantage and sustainability, particularly in the context of so-called emerging countries.

Given the results of this study, it is possible to establish the dynamics of behaviour in the analysis around knowledge management in SMEs over time and to propose a research agenda based on the study of the different documents and authors linked to this inquiry. One of the lines that emerges is associated with firm performance, which implies that these issues have a strong influence in achieving competitive advantage and economic development. Therefore, future explorations related to knowledge management in SMEs should delve into the link between these variables, specifically in the context of developing countries, considering productivity indices by country and the limited existence of research in this area.

Business orientation emerges as another important aspect, especially due to the advancement of ICTs, which will continue to transform business structures and business models with an orientation increasingly towards digitization. Therefore, future studies in this field will require specifying how new developments in technology improve knowledge management systems and intellectual capital and, thus, the generation of economic value for SMEs.

Finally, innovation is currently a highly relevant line of study due to its role as a mediating agent in the development, competitiveness, and survival of companies in global and changing environments. Thus, future explorations should delve into the impact of promoting collaboration networks for open innovation activities involving different entities (private and public), how these connections can be consolidated and their possible contribution to economic growth, social development, and environmental sustainability in various regions.

Discussion

Practical Implications

The evolution of the field of knowledge management has led to a significant shift in the areas of focus from a simple perception of technology as knowledge to more complex and vital dimensions. The topics of Sustainable Development, Innovation, Organizational Learning and Open Innovation now occupy a central place in the discussion. This conceptual transformation has fundamental practical implications for academia, business, and governments, offering unique opportunities for development and prosperity in today's business environment. From this perspective, the progress of science, technology, and human capital plays a substantial role in shaping the economic and technological advancements within our contemporary knowledge-based society. Thus, making effective investments in knowledge becomes the essential driver of sustained growth over the medium and extended periods (Urbancová & Vnoučková, 2014).

In academia, this thematic evolution calls for a re-evaluation of research approaches. Academics can benefit from exploring theoretical models that integrate the interrelated aspects of sustainable development, innovation, and organizational learning. Approaching these issues from a multidisciplinary perspective would allow for a more complete and holistic understanding of how small and medium-sized enterprises can thrive in an ever-changing environment with support for research and development seen as the cause of labor productivity growth over the long-term period (Krkošková, 2019).

In the business arena, the relationship between knowledge management and organizational performance becomes even more critical. The emerging trend toward "innovation" as a central term suggests that SMEs should consider open innovation strategies and foster an entrepreneurial orientation to make the most of their external knowledge absorption capabilities. SMEs serve as crucial foundations on the innovation ladder because of their proximity to end consumers and their adaptability. They are recognized for generating innovations in both product and process domains, both locally and on a global scale. Consequently, the assimilation of innovations is substantially bolstered by factors such as the business environment, globalization patterns, rapid technological shifts, and other influential determinants (Prokop & Stejskal, 2018; Horbach et al, 2022). The fact that concepts such as "intellectual capital" and "organizational performance" are conceptually linked reinforces the importance of addressing these areas in tandem to achieve sustainable success.

Governments also find important implications in these findings. The "sustainable development" orientation highlights the need for policies that promote both socially and environmentally responsible business practices. The impact of government support plays a significant role in enhancing the promotion of sustainable innovation practices in companies by encouraging investment in training programs that strengthen organizational learning and facilitate the adoption of more efficient and effective knowledge management practices (Makhloufi et al., 2023).

For the future research agenda, several areas of focus are suggested. Exploration of interdisciplinary approaches that address current challenges from multiple and complementary perspectives should be encouraged. Research on how SMEs can improve their capacity to absorb and apply external knowledge through open innovation is essential for their growth. In addition, further study is needed on how organizational learning practices impact the innovation capacity and long-term performance of SMEs. Finally, a thorough evaluation of how government policies can be effectively designed to foster knowledge management and innovation in this vital sector of the economy is required.

Contributions

The present research stands out for its approach in examining the thematic evolution within the domain of knowledge management applied to small and medium-sized enterprises (SMEs). Unlike previous studies that have focused on specific aspects within this domain, the proposed methodology establishes a panoramic perspective by performing a bibliometric analysis of the associated scientific literature, guided by PRISMA guidelines, and employing tools such as the VOS viewer, ensuring the robustness of the methodological framework employed and the reliability of the results obtained.

The selection and screening of documents were conducted through a precise search strategy and the application of rigorous eligibility criteria. The choice of the Scopus database as the primary source of information was based on its wide scope and recognized quality in scientific content selection. In this inquiry, a set of 535 documents published between 1996 and 2022 were analyzed, encompassing a broad time span, and capturing the evolution and trends over the years.

In comparison with other studies such as, Ramos et al., (2023) who conducted a systematic literature review using the steps of data collection, bibliometric analysis and content analysis from a sample used of 45 articles. For which the authors used bibliometrix (in RStudio) contributing to both practitioners and academics by providing a list of barriers, factors, and research questions.

Likewise, previously Massaro et al. (2016) who analyze 89 articles published in ten journals specializing in the field of QA employing a structured literature review methodology, concluding that the results show a failure to address the implications of the findings for practitioners and policy makers, which risks relegating the research to irrelevance.

And Saratchandra and Shrestha (2022) conduct a systematic review of the literature on knowledge management in SMEs addressing, from the particular focus on the role of cloud computing and its impact on the five knowledge management processes: knowledge acquisition, creation, storage, sharing, and use, revealing that there are numerous empirical analyses on knowledge management processes and tools in SMEs; however, only a few studies demonstrate how the full range of knowledge management processes can adopt cloud computing in SMEs.

Finally, the perspective of the present study delves into the thematic evolution over time, discerning both areas of continued development and emerging trends. In addition, the visualization of keyword networks, which serves to identify underlying conceptual connections, provides substantial insight into core concepts and their interrelationships. Likewise, examination of the frequency and persistence of concepts adds a temporal dimension that allows assessment of the durability and long-term impact of contributions in an ever-changing field.

Conclusions

This research helps illuminate the value acquired by knowledge and its management in organizations, specifically regarding SMEs in the contemporary context. This contribution shows how knowledge management has become a research trend due to its contribution to improving business activities and the connotation of SMEs in the development and growth of different world economies.

Additionally, it is possible to identify the main thematic trends, which include the following: innovation as a driver of performance and progress in organizations; open innovation as a basis for the exchange and transfer of knowledge and the strengthening of organizational learning; the capacity to absorb knowledge for the development and consolidation of intellectual capital; the importance of the development of dynamic capacities necessary for consolidating resources, technological tools and transformation of business models; and collaboration and the use of social networks to improve SMEs' performance and competitive advantage.

The current exploration paves new research directions for future work. For example, considering the importance of knowledge absorptive capacity for SMEs, it is useful to review how the formation of networks affects the process of knowledge transfer and exchange, organizational learning, and intellectual capital and strengthens the corporate culture and open innovation processes. Then, the requirement to strengthen the participation of different sectors (government, universities, businessmen and entrepreneurs) to stimulate innovation can be derived from the generation, integration, and implementation of different resources (human, technical, and technological, among others), thereby expanding possibilities for strategic decision-making and developing SMEs and continuing to support countries' economic development.

Furthermore, the significance of knowledge absorption capacity within these organizations is underscored, emphasizing the imperative to fortify access to knowledge sources and enhance dissemination infrastructures to propel innovation and financial performance. Collaborative structures, such as knowledge networks, also emerge as a pivotal research focal point for comprehending their influence on knowledge exchange and transformative practices within innovative organizational cultures.

The interplay between emerging technologies and the development of human talent stands as a vital research domain for enhancing the competitive advantage of SMEs. The study unveils evolutionary patterns in knowledge

management, propelling the need for deeper investigations into the nexus between this management paradigm and business performance, particularly in developing nations with limited research in this domain.

Lastly, it is imperative to acknowledge certain inherent limitations in this study. Primarily, the selection of databases was confined to Scopus, potentially excluding alternate sources that could have contributed additional perspectives to the subject matter. Additionally, it is crucial to consider that bibliometrics relies on information available in publications and, as such, does not comprehensively capture the entirety of knowledge management initiatives within the realm of small and medium enterprises, potentially leading to some limitation in the representativeness of the overall landscape. Despite these limitations, this bibliometric analysis furnishes a valuable panoramic overview of prevailing trends and patterns at the intersection of knowledge management and smaller-sized enterprises, thereby providing a robust foundation for future research endeavors and strategic decision-making in this dynamic field.

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