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Understanding Intellectual Capital in MSMEs Knowledge Management: Bibliometric Analysis and Systematic Literature Review

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ABSTRACT

Effective and efficient use of resources is the main strategy for the success or resilience of MSMEs. The management of internal resources is believed to be the main factor that supports the existence of MSMEs. Intangible knowledge resources are the most difficult to manage. Several previous studies have tried to reveal the importance of knowledge management. However, there has been no comprehensive discussion regarding the management of MSMEs. The main aim of this research is to comprehensively examine how knowledge management, from an intellectual capital perspective, provides real benefits for MSMEs. To provide a detailed description, we use several analysis methods. Bibliometric analysis, the PRISMA method, and systematic literature observation were used. Our source documents are based on the Scopus database. We found that there are at least 108 documents relevant to this research topic. In general, we see that the number of publications on this topic increases every year. The results of this research provide evidence of the contribution of intellectual capital to various sectors in various countries. The earliest literature we find on this topic comes from Italy and Brazil. We also found that China has contributed the most to the literature related to knowledge management. Apart from that, it is known that Indonesia contributes the most authors to the literature on this topic. Based on cluster analysis in the use of keywords, we can determine the scientific and systematic relationships in each previous literature. In this context, the findings of this research also provide predictions for further research, especially regarding intellectual capital management in MSMEs.

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1. INTRODUCTION

The existence of MSMEs is a dominant factor in the economic transformation of a country. MSMEs are believed to be able to produce high productivity even though they are in the midst of large businesses such as industries and factories [1]. In fact, previous literature also proves that MSMEs have managed to survive even in extreme conditions [2], for example during the COVID-19 pandemic several years ago. One of the successes of MSMEs in realizing competitiveness lies in the internal factors of MSMEs themselves. Human resources (where they are direct managers of MSMEs) are required to have certain levels of ability and knowledge. Previous literature has formulated knowledge elements that MSMEs must have, for example, market sensing capability [3]; technological competency [4]; or financial literacy [5]. This is proof that for MSMEs, knowledge is an important aspect and must be managed optimally [6].

The contribution of knowledge management (KM) to MSMEs has been found in the literature for a long time. For example, a study discusses the application of KM to MSMEs in Italy by adopting information and communication technologies (ICT) to remove traditional barriers to innovation capabilities [7]. In the same year, the application of KM to MSMEs in Brazil focused on the product development process [8]. Other empirical evidence is shown from the literature, which also reveals the importance of the contribution of KM to MSMEs, such as on the Australian continent [9]. KM is described as the creation of a knowledge repository along with access to use it [10]. KM cannot be done from just one side but requires communication, collaboration, and integration in certain fields [11]. KM is a broad-scale principle that has three main elements, namely people, processes, and technology. Previous studies have discussed the application of KM elements, namely processes and technology [7][8], but they have little to do with humans.

In every company, including MSMEs, humans are an intangible asset that is no less important than the others. Previous literature highlights the fact that humans are the only thing that cannot be fully owned by a company [12]. Even though the company has the right for employees to do work, employee knowledge belongs to the employees themselves. If employees change jobs, company knowledge will also be lost [13]. This finding creates a strong urgency for managing intellectual capital (IC) to become a priority strategy for MSMEs from a KM perspective.

This study aims to comprehensively explore the KM perspective in MSMEs, especially with regard to IC. A review of relevant literature and systematic cluster analysis were used to answer all question formulations. A comprehensive literature review includes identifying questions, defining methodology, and describing theories and keywords from scientific publications [14]. The results of this study form the basic foundation for future research developments. Based on this paradigm, this research is proposed to answer the question formulation, namely:

RQ1: What are the publication trends regarding KM implementation from an IC perspective in MSMEs?
RQ2: Who are the most relevant authors and sources related to the research topic?
RQ3: To what extent is IC related to other terms found?
RQ4: What are future studies to understand MSME strategies?

2. METHODS

Bibliometric analysis is used as the basic method in this research. Bibliometric exploration is based on a summary of quantitative data including publication units, authors, domains, citations, intellectual structure, or socio-intellectuals from a collection of literature [15]. The results of the bibliometric analysis present the evolution of studies regarding the application of KM with an IC perspective in MSMEs. A systematic approach to literature review is required to minimize bias and maximize the contribution of research findings. For verification of information and research steps, the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) method was also used [16]. The need to synthesize knowledge regularly and consistently can be solved with the PRISMA method [17].

Literature is collected from the Scopus database according to the topics described previously. The Scopus database was chosen as the main source of scientific literature and publications [18]. The main strategy in this process is related to the choice of keywords and their synonyms used [19]. completion of the entire article using the PRISMA method of inclusion and exclusion criteria as in Table 1. In general, the methodological design of this research can be seen in figure 1.

Table 1. Literature search from the Scopus database

Step	Filtering	Query used	Documents
1	Identification (search terms and keywords)	TITLE-ABS-KEY ("knowledge management" OR "KM" OR knowledge) AND TITLE-ABS-KEY ("intellectual capital") AND TITLE-ABS-KEY ("small and medium enterprises" OR "small enterprises" OR "micro enterprises" OR "small and medium firm" OR "small firm" OR "micro firm" OR "small and medium company" OR "small company" OR "micro company")	708
2	Screening (search limitations)	Language (English); Publication Stage (Final); Open Access	160
3	Included (manual data cleaning)	Used metadata	108

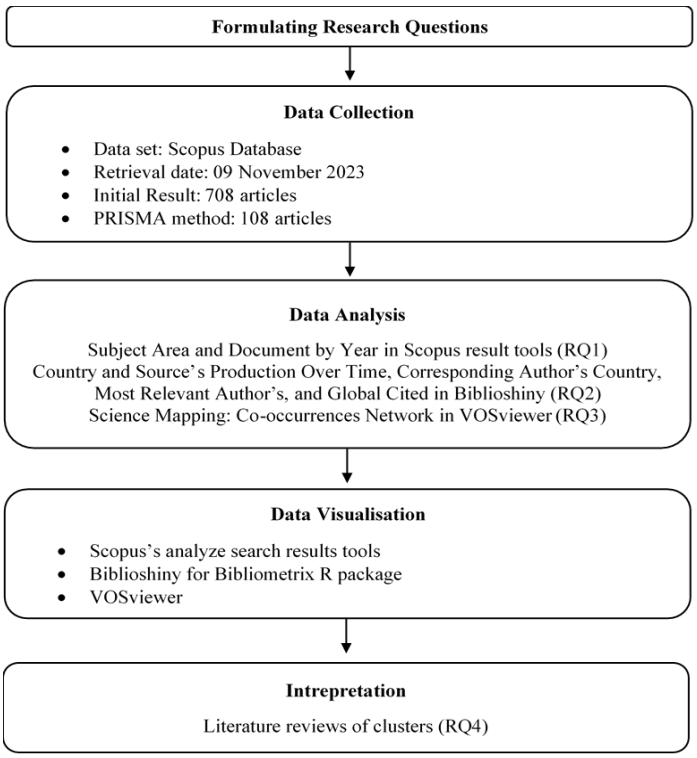

Fig. 1. Methodological Design

3. RESULTS AND DISCUSSION

3.1. Result

Data collection and presentation are important factors in bibliometric analysis [15]. This research uses the PRISMA method to filter or select publication data according to needs [16]. We filtered a total of 108 documents for further analysis. From an IC perspective, this research provides some initial information on the topic of KM in MSMEs. Complete information is presented in Table 2 below.

Table 2. Main Information

Total numbers of documents	108
Timespan	1998:2023
Type of Sources (Journals, Books, etc)	75
Annual Growth Rate %	8,09
Document Average Age	6,69
Average citations per documents	28,48
DOCUMENT CONTENTS	
Keywords Plus (ID)	290
Author's Keywords (DE)	286
AUTHORS	
Authors	258
Authors of single-authored documents	16
AUTHORS COLLABORATION	
Single-authored documents	19
Co-Authors per Documents	2,69
International co-authorships %	22,22
DOCUMENT TYPES	
Article	74
Book Chapter	8
Conference Paper	21
Note	1
Review	4

Based on RQ1, this research analyzes the trends and growth of publications on predetermined topics. Publications were found in a variety of domains (Figure 2). The largest publications are in the subject area of business, management, and accounting, namely 36.4% of the total documents, followed by the social sciences domain at 17.8%. The first publication was found in 1998 [20] and has experienced general growth per year until now (Figure 3). These findings provide evidence that research related to the implementation of KM concepts from an IC perspective is still growing and can be accepted in various fields of science.

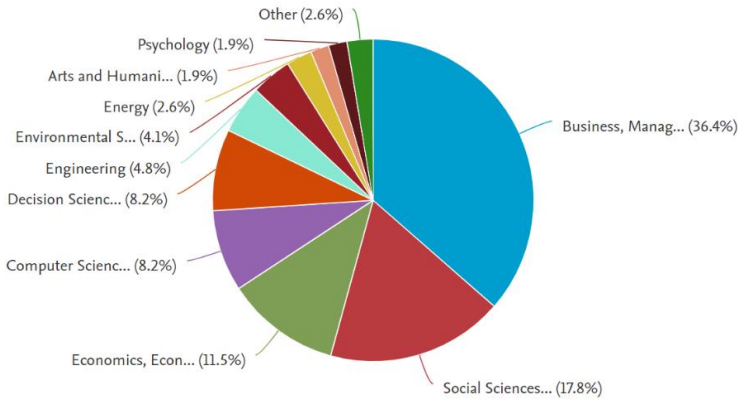

Fig. 2. Domain dan Subject Area

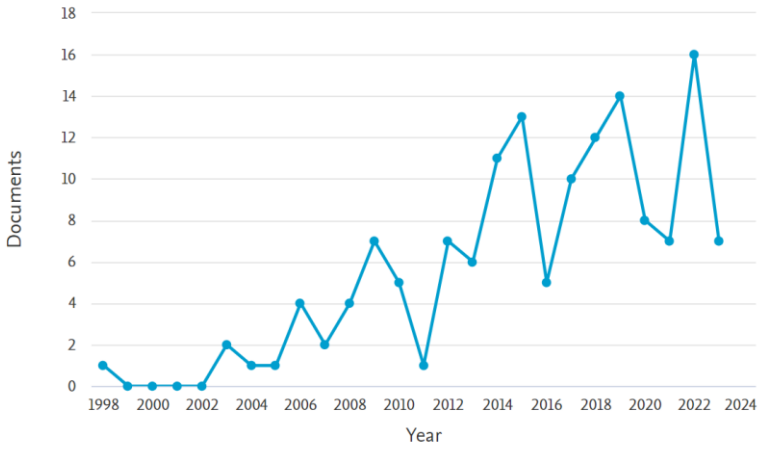

Fig. 3. Number of documents over time

Subsequent bibliometric analysis is needed to find out the authors, sources, and countries that have contributed most to research on this topic. To answer RQ2, this study also described the number of citations in publications. Research findings show that there are five countries that dominate publications on this topic, the majority from the Asian continent. These countries are, in order, China, Italy, Indonesia, Malaysia, and Pakistan. Apart from the number of publications, China also ranks first in the number of citations, namely 1212 times, followed by Pakistan with 241 times.

Figure 4 reveals an interesting fact: Indonesia has the highest number of corresponding authors, despite not leading in the number of documents or citations. Research on topics related to IC perspective KM in Indonesian MSMEs was first known in 2016 [21], then experienced a significant increase in the number of authors and publications until now. This provides evidence that research on this topic is still relevant. Other findings provide information that Italy (the country with the second highest number of publications) apparently has never collaborated with other countries. Certainly, future research could consider this opportunity.

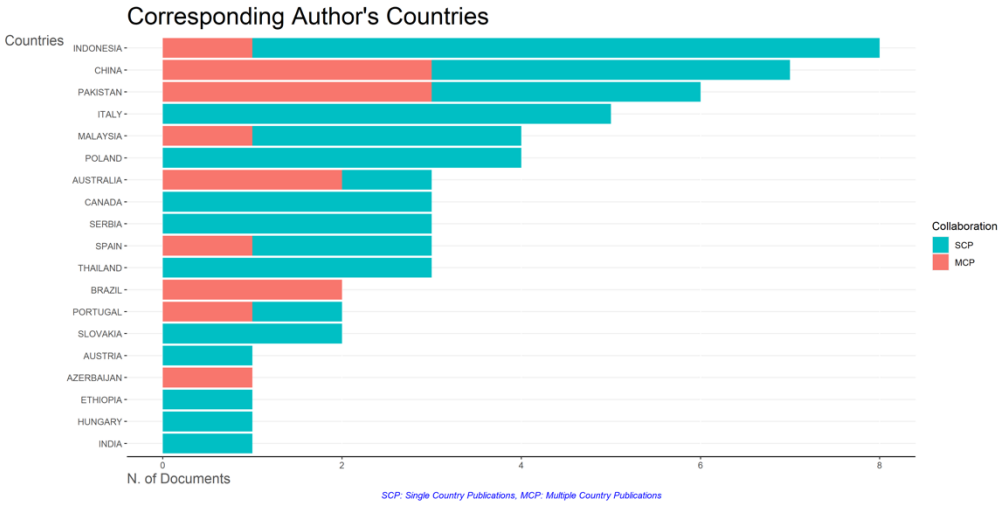

Fig. 4. Most relevant by author's

One of the factors that determine the relevance of a publication is citation [19]. As explained previously, China, followed by Pakistan, is the country with the highest number of citations. However, we need to know who and which documents have the highest number of citations to measure the impact of a publication. Table 3 shows the top 5 documents and authors based on the number of citations.

Table 3. Top 5 Most relevant author's

Article and Authors	DOI	TC	TC per Year
The positive effect of green intellectual capital on competitive advantages of firms [22]	10.1007/s10551-006-9349-1	403	25,19
Intellectual capital and new product development performance: The mediating role of organizational learning capability [23]	10.1016/j.techfore.2008.03.012	380	25,33
Intellectual capital in small and medium enterprises in Pakistan [24]	10.1108/JIC-01-2014-0014	159	17,67
Entrepreneurial orientation, intellectual capital, IT capability, and performance [25]	10.3233/HSM-180393	156	31,20
Balancing innovation and exploitation in the fourth industrial revolution: Role of intellectual capital and technology absorptive capacity [26]	10.1016/j.techfore.2020.120248	133	33,25

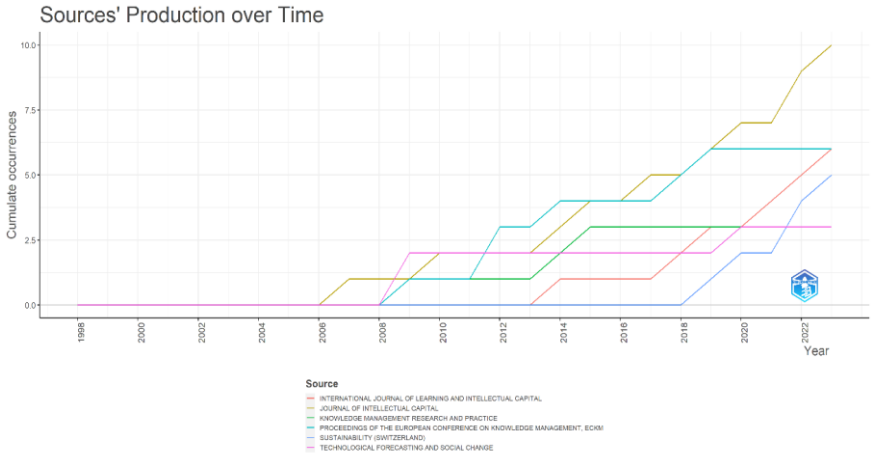

Fig. 5. Most relevant by sources'

This research also analyzes the most relevant sources based on the specified topics. Figure 5 shows that the "Intellectual Capital Journal" contributes the most to producing publications. In addition, it is known that the first publication was found in the resource "Technological Forecasting and Social Change." Figure 5 also presents the increasing trend of publications from other sources, especially since 2014. This is an assumption that research topics will continue to develop in the future.

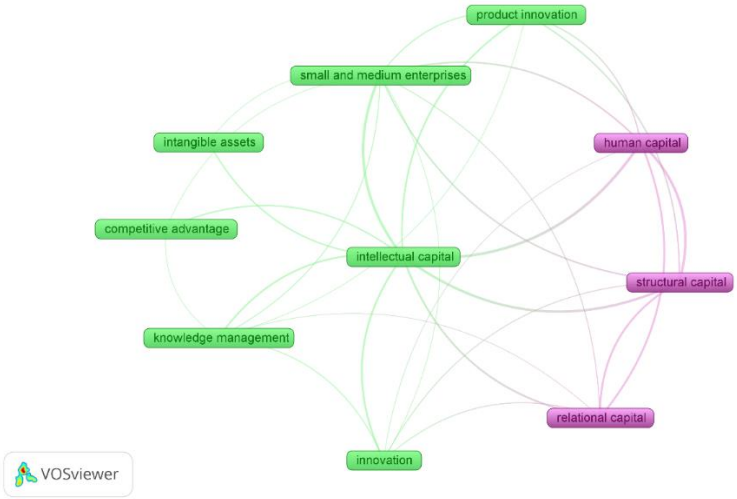

Fig. 6. Occurences Network

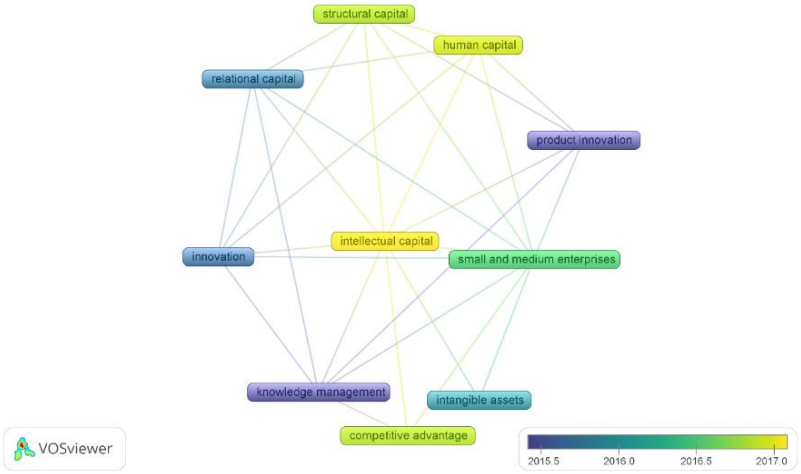

Fig. 7. Overlay Network

3.2. Discussion

The analysis of the keywords used is the basis for determining scientific relationships between publications. For answering RQ3, this research examines keywords by considering the formed clusters. This research uses a combination of "author keywords," "abstract keywords," and "plus keywords." Several previous studies revealed that "plus keywords" are very effective in bibliometric analysis [27].

Figure 6 presents two clusters related to research on this topic. The green cluster is defined as the cluster with the highest number of publications. This cluster includes keyword relationships such as “knowledge management,” “intellectual capital,” “innovation,” “competitive advantage,” “intangible assets,” and “product innovation.” The second cluster in purple includes “human capital,” “structural capital,” and “relational capital.” The correlation of KM and IC is the main topic of discussion in this research. Recent studies on several continents, including Asia [28][29], Africa [30], and Europe [31], have widely established this relationship. However, there are differences in the focus of research between them. Previous studies measured the contribution of IC in MSMEs to produce product innovation [32], while other studies discussed innovation in a general sense [33][34]. The next study considers IC as a major need for MSMEs. IC’s contribution is believed to be a force that determines the resilience of MSMEs in business competition [35][36]. Furthermore, another

study considers that IC can create a competitive advantage for MSMEs [37]. Nearly all previous studies agree that IC is an important intangible asset that is needed [38][39].

Figure 6 illustrates the relationship lines between keywords, with the thickness of the line representing the correlation between them. The thickness of the line depicts the correlation between related keywords. The highest correlation is observed between "intellectual capital" and "small and medium enterprises". Apart from that, the keyword "intellectual capital" also has a high correlation with "human capital," "relational capital," and "structural capital." Several previous studies have considered that the IC concept cannot be separated from these three things [24][40][41][42].

Furthermore, the cluster analysis method enables the prediction of future research possibilities (RQ4). Figure 7 shows the relationship between related keywords based on publication year. The term "intellectual capital" emerged most recently in 2017, distinguishing it from other keywords. Cluster analysis is proof that publications on the topic of IC application in MSMEs are still novel in a certain sense. A recent study found a close relationship between IC in MSMEs and strategies for achieving sustainability [36]. IC management is closely related to the benefits of developing innovation [43] and maximizing the performance of MSMEs [29]. Some other studies link IC to leadership [44] or in terms of financial management in MSMEs [28].

4. CONCLUSION

This research succeeded in exploring the function of implementing KM in MSMEs. This research includes bibliometric analysis and a systematic literature review on the part of KM, namely the IC perspective. A bibliometric analysis of research shows the past, present, and future possibilities related to the proposed topic. The main results of this research conclude that IC management in MSMEs can provide benefits on a wide scale. However, further empirical testing is still necessary to substantiate these findings. Although this research is based on detailed and thorough methods, it still has several limitations. First, some documents cannot appear, even though the publication topic is actually very relevant. Second, we only use the Scopus database for document collection. Future research should consider these shortcomings.

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