Knowledge Management: thematic configuration and emerging issues

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ABSTRACT

Knowledge management has become a discipline of reference that supports the search for understanding organizational performance, innovation, and competitive advantage. This research aimed to map the production of knowledge management in the ISI Web of Science database with a seven-year temporal cut that highlights the emerging theme of research advancements on the topic. There was a comprehensive information survey through a bibliometric study using the HistCiteTM and the QSR NVivo® software. The main results confirm the perception of the knowledge management's gradual maturation process as an independent academic discipline. This study's theoretical contribution lies in the proposition of a framework that represents the theme configuration. This research also fills the gap in scientometric works over knowledge management in the period researched and codifies the emerging themes.

Keywords: Knowledge management. Bibliometric analysis. Processes. Innovation. Emerging themes.

Gestão do Conhecimento: configuração da temática e questões emergentes

RESUMO

A gestão do conhecimento vem se tornando uma disciplina de referência que propicia o suporte na busca pela compreensão do desempenho organizacional, da inovação e da vantagem competitiva. O objetivo dessa pesquisa foi mapear a produção sobre gestão do conhecimento na base de dados ISI Web of Science com o recorte temporal de sete anos evidenciando as temáticas emergentes no avanço das pesquisas sobre o tema. Conduzido por meio de um estudo bibliométrico, realizou-se amplo levantamento de informações com a utilização dos softwares HistCiteTM e QSR NVivo®. Os principais resultados corroboram com a percepção de amadurecimento gradual da gestão do conhecimento como uma disciplina acadêmica independente. A contribuição teórica do estudo reside na proposição de um framework representando a configuração da temática. Além disso, esta pesquisa supre o gap por trabalhos cientométricos sobre gestão do conhecimento no período pesquisado e sistematiza as temáticas emergentes sobre o assunto.

Palavras-chave: Gestão do conhecimento. Análise bibliométrica. Processos. Inovação. Temáticas emergentes.

Gestión del conocimiento: configuración de la temática y cuestiones emergentes

RESUMEN

La gestión del conocimiento se está convirtiendo en una disciplina de referencia que propicia el apoyo a la búsqueda por la comprensión del desempeño organizacional, de la innovación y de la ventaja competitiva. El objetivo de esta investigación fue mapear la producción sobre gestión del conocimiento en la base de datos ISI Web of Science con el recorte temporal de siete años evidenciando las temáticas emergentes en el avance de las investigaciones sobre el tema. Conducido por medio de un estudio bibliométrico, se realizó un amplio levantamiento de informaciones con la utilización de los softwares HistCiteTM y QSR NVivo®. Los principales resultados corroboran con la percepción de maduración gradual de la gestión del conocimiento como una disciplina académica independiente. La contribución teórica del estudio reside en la proposición de un marco que representa la configuración de la temática. Además, esta investigación suple el gap por trabajos cientométricos sobre gestión del conocimiento en el período investigado y sistematiza las temáticas emergentes sobre el asunto.

Palabras clave: Gestión del conocimiento. Análisis bibliométrico. Procesos. Innovación. Temáticas emergentes.



INTRODUCTION

Knowledge Management (KM) became part of the academic mainstream in the mid-1990s (SERENKO, 2013; SVEIBY, 1997; DAVENPORT; PRUSAK, 1998; STEWART, 1998; SENGE, 1990), motivated by the globalization process' rise and the spread of information and communication technologies (ICTs) during the temporal Knowledge Era delimitation (DRUCKER, 2012).

Knowledge from a variety of disciplines, such as the science of information, computer science, psychology, psychiatry, sociology, education, economics, and business, are included in the theoretical foundation of the knowledge management (KM) discipline. (SERENKO; BONTIS, 2013b; KOENIG; NEVEROSKI, 2008). Furthermore, the KM discipline already has its journals, renowned scholars, networks of research cooperation, academic courses, and conferences, to name a few (SERENKO; DUMAY, 2017).

Despite its early evolution, Knowledge Management (KM) is a gradual maturation process that has become a reference discipline with relevant theoretical and practical impacts (SERENKO; BONTIS, 2013b; KOENIG; JANK, 2012). As a result, KM attracts the attention of researchers, professionals, and political decision-makers, with some evidence of an autonomous and renowned scientific discipline (SERENKO; DUMAY, 2015b). Therefore, knowing the gaps for the development of future research on the topic that will contribute to the KM consolidation as a discipline of reference is vital.

Academically speaking, there are the KM associations to the innovation acceleration in the improvement of products and services, structural promptness, and improvement of processes (TORUGSA; O'DONOHUE, 2016; AL-HAKIM; HASSAN, 2016), and organizational behavior aspects. Besides, it is possible to note the KM connections to the client's relationship improvement (FIDEL; CERVERA; SCHLESINGER, 2016) and the organizational creativity (SUNG; CHOI, 2012). According to Serenko (2013), this scientific development can be summarized as four generations, each introducing new topics and methods while maintaining the established research lines – from the first generation, defined by knowledge processes' technocentric view, to the fourth generation, defined by complexity and knowledge economy.

Knowledge Management consists of knowledge processes, infrastructures (technologies), cultural factors, and management capabilities (dynamic capabilities) which support and improve the organizational performance in the search for innovation and competitive advantage. In this context, KM also involves operational systems, local and transcultural skills, and know-how that is necessary for the solution of problems and the Organization's maintenance in the future (ALEGRE; SENGUPTA; LAPIEDRA, 2013; CARDOSO; MEIRELES; FERREIRA PERALTA, 2012; BUKOWITZ; WILLIAMS, 2000).

In this sense, this research's issue is based on understanding the discussion status in the scientific academy and the emerging themes on KM in the more relevant bibliographic production. Therefore, this research's objective was to map the production over KM in the ISI Web of Science (WoS) database with a seven-year temporal cut, suggesting conceptions for advancing the research on the topic. Choosing the WoS as the database for the research is justified by the coverage in more than one hundred areas of scientific knowledge because it is one of the most extensive databases (MOURA *et al.*, 2017).

The research explains new themes on KM by avoiding a reductionist approach to the topic, for, instead of only one ephemeral and rhetoric management philosophy, KM is seen as a concrete and systematic domain that is related to the organizational culture change (WANG; NOE; WANG, 2014; ANDREEVA; KIANTO, 2012) and the innovation support (DONATE; SÁNCHEZ DE PABLO, 2015).



This research differs from the studies of Akhavan *et al.* (2016); Alajmi and Alhaji (2018); Gaviria-Marin, Merigo, and Popa (2018); Gaviria-Marin, Merigó, and Baier-Fuentes (2019), due to its objective of highlighting emerging themes to foster the advancement of knowledge management research, based on references obtained from the Web of Science database.

Besides this introduction section, the research also presents the methodological processes used. In the third section, the evidenced results are presented. The fourth section leans on these findings' discussion. The fifth section presents the conclusions and limitations with the opportunity for future research.

METHODOLOGICAL PROCEDURES

This bibliometric research presents the most productive and influential studies and existing linkages to analyze performance and map the research field (BAIER-FUENTES *et al.*, 2019).

According to Serenko (2013), the best approach to exploring the intellectual core and the impact of a reference discipline is to analyze citation patterns by using a set of essential articles from scientific journals in the field under investigation. For such, a period of seven years (2012-2019) was considered, in which 624 works about KM were identified. Due to this increase, it is necessary to know the interfaces and the emerging themes on the topic.

The descriptor concerning 'knowledge management' was used based on literature, and the concept coined by Bukowitz and Williams (2000) was used as the descriptor that best characterizes the KM process. The data collection was performed on the articles' titles from August to December 2019. The available filters in the WoS were used in the following sequence:

- 1) Refinement by type of document where the option "article" was selected.
- 2) Refinement by language where English, Portuguese and French were selected.

Refinement by areas of knowledge (management, public administration, business, and business finance) since they deal with contents that are associated with the descriptor used and the administration area.

The works' adequacy proofing for composing the bibliometric analysis corpus was performed through the articles' abstracts. The collected data were then processed through the bibliometric analysis HistCiteTM software. Intentionally speaking, the analyses concerned:

- 3) The ten keywords that were most used in articles from the Global Citation Score (GCS) and the Local Citation Score (LCS).
- 4) The survey about the distribution by year of publication.
- 5) The ten periodicals with most articles published on the theme.
- 6) The ten authors with the highest number of publications on the theme.
- 7) The ten countries with the highest number of publications on the theme.
- 8) The ten articles most cited in the GCS and the LCS.
- 9) The survey on the emerging themes.

The QSR NVivo[®] software was also used to identify clusters and word trees among the papers selected.

As markers, GCS and LCS were used because they give: i) the frequency of word citations or papers based on the complete WoS count, and ii) on the corpus selected (624 articles) to accomplish this bibliometric study, respectively. Therefore, these markers allow measuring size, growth, and scientific production distribution by identifying theoretical gaps. Besides the data generated by the HistCiteTM and the QSR NVivo[®] software, aspects of the most cited article texts were discussed globally and locally to identify their main trends and contribution to the KM theme.



Table 1 – The most used keywords in the Global Citation Score articles

Keywords (GCS)	Citations	Key words' context from the articles' abstracts
Performance	2,673	The KM practices and processes' integration in the organizations' strategy produce performance improvement (AL-HAKIM; HASSAN, 2016; ANDREVA; KIANTO, 2012) through creativity (SUNG; CHOI, 2012), innovation (AL-HAKIM; HASSAN, 2016; INKINEN; KIANTO; VANHALA, 2015; ALEGRE SENGUPTA; LAPIEDRA, 2013), organizational learning, leaderships (BIRASNAV, 2014), information and communication technologies (ICTs), and clients' knowledge (TAHERPARVAR; ESMAEILPOUR; DOSTAR, 2014; FIDEL; CERVERA; SCHLESINGER, 2015).
Innovation	1,975	The KM modeling through practices (INKINEN INKINEN; KIANTO; VANHALA, 2015), ICTs (GRESSGÅRD <i>et al.</i> , 2014), competencies' management, social networks, and knowledge-guided leaderships (DONATE; SÁNCHEZ DE PABLO, 2015) are determining factors for the innovation capacity efficacy and performance (LEE <i>et al.</i> , 2013; ALEGRE; SENGUPTA; LAPIEDRA, 2012), for the open innovation (MARTINEZ-CONESA; SOTO-ACOSTA; CARAYANNIS, 2017) and the building of communities with collaborative innovation in industrial clusters. Knowledge as a resource and technological innovation as a dynamic capacity can foster competitive advantage in high-technology markets (MARTÍN-DE CASTRO, 2015).
Practices	1,488	The collaborative practices (benchmarking and good practices, among others), the leadership practices, personnel management (JAIN; JEPPE JEPPESEN, 2013), and ICTs (INKINEN <i>et al.</i> , 2015) for KM are strongly correlated and influence the organizations' performance. The ICT practices will only improve the organizations' results when associated with personnel management practices (ANDREVA; KIANTO, 2012).
Position/Role	1,452	Organizational culture role (LIN, 2015), transformational leaderships' cognitive styles (DONATE; SÁNCHEZ DE PABLO, 2015; BIRASNAV, 2014; JAIN; JEPPE JEPPESEN, 2013), tacit and explicit knowledge, knowledge infrastructure, KM practices, dynamic capacity, and absorptive capacity (MARTÍN-DE CASTRO, 2015) in order to foster open innovation (MARTINEZ-CONESA; SOTO-ACOSTA; CARAYANNIS, 2017).
Organizational	1,133	Effectively, the organizational KM's success and performance are associated with culture (LIN, 2015), intellectual capital, innovation capacity, learning (WU; CHEN, 2014) and organizational unlearning (ZHAO; LU; WANG, 2013), social media (BHARATI <i>et al.</i> , 2015), values and leaderships' creativity and organizational teams (GONZALEZ; MARTINS, 2014; BIRASNAV, 2014; SUNG; CHOI, 2012).
Social	819	KM through social software is an open and cheap alternative to the traditional implementations (VON KROGH, 2012). The use of social media to support the clients' knowledge management impacts organizational knowledge quality (BHARATI; ZHANG; CHAUDHURY, 2015; CHUA; BANERJEE, 2013). The social influence, social representation (DULIPOVICI; ROBEY, 2013), and social-cognitive capacity impact the KM systems and the organizations' innovation capacity.
Research	669	Facilitators, knowledge sharing, and collaboration in research to develop an agenda on strategic management (VON KROGH, 2012). The universities need to be aware of the KM impact to become worldwide academic institutions (TAN; NOOR, 2013). According to Serenko (2013), for the completion of researches on KM, the researchers must use advanced empirical methods, analyze previous researches, rely on databases and keywords' classification charts, carry out a comprehensive study on the individual and institutional productivity, and investigate the interdisciplinary collaboration. Such steps will be made accessible through ICTs (SERENKO; DUMAY, 2015b).
Strategy	561	The alignment between the strategic guidance and the KM systems to boost innovation, the business' performance (LIN <i>et al.</i> , 2017), and the knowledge management capacity (GRIFFITH; KIESSLING; DABIC, 2012). The organizational strategy's influence on the technologies (LEONARDI; TREEM, 2012) over KM.
Perspective	449	KM through the perspective of relational networks (people), learning capacity (MCIVER <i>et al.</i> , 2013), complex projects' management view, and social representations (DULIPOVICI; ROBEY, 2013).
Change	295	KM is changing in the organizations, for the previous approaches that included the knowledge- holder repositories that were centrally managed evolved into KM through social software (VON KROGH, 2012). Therefore, the organizations need to be prompt to a change (IMRAN <i>et al.</i> , 2016) that involves psychological and structural aspects, strong leadership, and a program of technological innovation (CORFIELD; PATON, 2016).

Source: Elaborated by the authors from WoS data (2020).

RESULTS AND ANALYSIS

Throughout the seven years researched, 624 articles were identified. These articles were published in 178 periodicals and were written by 1,427 authors and co-authors linked to 755 teaching institutions in 74 countries. The articles published received 10,595 global citations (GCS) on WoS. From these, 796 were in the corpus selected for this research (LCS). According to table, the ten keywords most repeated in the GCS articles, excluding the search words (knowledge and management), were performance, practices, social, organizational, innovation, research, position/role, strategy, perspective, and change 1. In the corpus selected for the research (LCS), the most used keywords, except those previously mentioned (performance, practices, innovation, and organizational), were an interface, intellectual, importance, competitiveness, economics, and academic. In the most cited papers, these words were associated with the environment, economic classification, complexity, competitiveness, performance, and results, according to table 2.

The LCS keywords stand out because they represent citations from authors who approach the KM theme by mentioning other authors who also addressed the topic. An average of 94 papers on KM was published by year between 2012 and 2019. The year 2019 had its peak, with 106 papers. Table 3 below identifies the ten most representative international periodicals about KM. Upon collecting the works published in these ten periodicals, there were 311 entries, corresponding to 49.1% of the total quantity of works identified: the periodical with the highest number of publications in the Journal of Knowledge Management, with 139 publications (22%). This periodical is classified in the Journal Citation Reports (JCR) with an impact factor of 4.745, which shows the high quality, productivity, and impact of its productions and represents the gradual maturity the KM discipline has reached in the academic literature (SERENKO; BONTIS, 2013b; KOENIG; JANK, 2012). Coincidently, this was also the periodical with the highest number of citations in the GCS, with 4,273 entries.

Keywords (LCS)	Number of citations	Key words' context from the articles' abstracts
Linking/Interface	47	The interface between KM practices, competitiveness, and economic performance (ANDREEVA; KIANTO, 2012). The interface between KM guidance and the balanced scorecard results (LIN, 2014).
Matter/Importance	44	The importance of KM for performance and organizational competitiveness (O'CONNOR; KELLY, 2017; ANDREEVA; KIANTO, 2012).
Intellectual	43	KM's global classification, intellectual capital (SERENKO; BONTIS, 2017; WANG <i>et al.</i> , 2016; SERENKO; BONTIS, 2013a), absorptive capacity (MARIANO; WALTER, 2015), and its influence in the strategies and the organizational performance. It investigates the KM's discipline intellectual core (SERENKO; BONTIS, 2013b).
Economics	42	An environment of economic complexity (ROOS, 2017).
Competitiveness	41	
Academic	27	The impact of KM's academic discipline and its ranking in academic journals (SERENKO; BONTIS, 2017; SERENKO; BONTIS, 2013a; SERENKO; BONTIS, 2013b).

Table 2 - The most used keywords in the Local Citation Score articles.

Source: Elaborated by the authors from WoS data (2019).

After the periodicals' survey, the authors with the most KM publications in the corpus were identified, with particular emphasis on Aino Kianto (10 publications), from the Lappeenranta University of Technology, Finland; Nick Bontis (9 publications) from McMaster University, Canada; and Alexander Serenko (8 publications), from Lakehead University, Canada.

Then came the USA (70 works), UK (56), Australia (44), and Spain (44). (44). The research confirms Serenko's conclusions (2013).

Since American functionalism is built on instrumental rationality (SERVA, 2017), the KM discipline will remain pre-analytical in the administration sector, according to Ramos (1981).

Among the articles found in the WoS database as the corpus of this research, there was a search for the most representative works on the theme, highlighting important information such as title, authors, and objective. For such, two groups were observed: (i) (GCS) – the most cited articles in the entire database (table 4), and (ii) in the corpus selected for this bibliometric study, and there is the list of the most cited articles in LCS.

Periodicals	JCR	Number of Articles	%	Number of citations (GCS)
Journal of Knowledge Management	4,745	139	22.0	4,273
Knowledge Management Research & Practice	1,583	64	10.1	483
International Journal of Knowledge Management	1,548	28	4.4	70
Knowledge and Process Management	1,550	22	3.5	102
Journal of Business Research	4,874	18	2.8	785
Management Decision	2,723	10	1.6	183
Business Process Management Journal	2,121	8	1.3	110
International Journal of Project Management	6,615	8	1.3	282
International Journal of Innovation and Learning	0.810	7	1.1	28
Journal of Enterprise Information Management	2,659	7	1.1	158

Table 3 – The 10 periodicals with the highest number of articles published on the theme

Source: Elaborated by the authors from WoS data (2019).

Table 4 - The most cited works in the Web of Science (GCS)

GCS Citations	Titles	Authors	Objectives	Classification
213	The role of knowledge- oriented leadership in knowledge management practices and innovation	Donate and Sánchez de Pablo (2015)	To check the role of a specific type of organizational leadership – knowledge- guided leadership – in knowledge management (KM) initiatives that try to reach innovation.	Empirical with a quantitative method.
210	Doesknowledgemanagement really matter? Linking knowledge management practices, competitiveness and economic performance	Andreeva and Kianto (2012)	To analyze the relationship between the KM practices, entrepreneurial competitiveness and economic performance	Empirical with a quantitative method in a sample with 234 companies from Finland, Russia, and China.

(Continua)

GCS Citations	Titles	Authors	Objectives	Classification
201	How does social software change knowledge management? Toward a strategic research agenda	Von Krogh (2012)	To approach how the changes in KM at a company level can have strategic implications	Theoretical.
125	Knowledge management and innovation performance in a high-tech SMEs industry	Alegre <i>et al.</i> (2013)	To check how KM affects the innovation performance within the biotechnology companies.	Empirical with a quantitative method.
123	Motivating Knowledge Sharing in Knowledge Management Systems: A Quasi-Field Experiment	Wang, Noe e Wang (2014)	To analyze how the management practices of accountability induction and individual personality influence knowledge sharing	Empirical and quasi-experimental with 100 employees from a Chinese software company.
109	Customer knowledge management via social media: the case of Starbucks	Chua and Banerjee (2013)	To analyze how much the use of social media can support the client's KM in organizations that depend on a bricks- and-mortar business model	Empirical and qualitative with netnography applied to the Starbucks chain.
98	Knowledge management: a key determinant in advancing technological innovation?	Lee <i>et al.</i> (2013)	To analyze the relationship between KM and technological innovation in the Malaysian manufacturing sector. The inter- relationships among the KM dimensions were also investigated.	Empirical and quantitative in 162 Malaysian manufacturing companies.
92	An integrated view of knowledge management for performance	Lee, Kim and Kim (2012)	To analyze the relationship between KM infrastructures, knowledge processes, learning, and organizational performance.	Theoretical- empirical and quantitative in Korean companies.
92	Effects of team knowledge management on the creativity and financial performance of organizational teams	Sung and Choi (2012)	To investigate the KM effects on creativity and financial performance from organizational teams.	Empirical and quantitative with 65 sales teams in 35 branches from a Korean insurance company.
75	Global ranking of knowledge management and intellectual capital academic journals: 2013 update	Serenko and Bontis (2013a)	To update a global ranking of Knowledge Management and Intellectual Capital (KM/ IC) from academic periodicals.	Theoretical with a mixed approach: a survey with 379 active types of research about KM and Intellectual Capital, and the impact method of periodicals' citations.

Source: Elaborated by the authors from WoS data (2019).



LCS Citations	Paper Titles	Authors	Objective	Classification
12	The intellectual core and impact of the knowledge management academic discipline	Serenko and Bontis (2013b)	To explore the academic discipline's intellectual core of knowledge management (KM) to check whether it shows signs of a discipline of reference and analyze its theoretical and practical impact.	Theoretical
12	Meta-analysis of scientometric research of knowledge management: discovering the identity of the discipline	Serenko (2013)	To perform a meta-analysis of previous scientific researches (published) in the field of KM.	Theoretical
11	Improving knowledge management processes: a hybrid positive approach	Pinho, Rego, and Cunha (2012)	To identify and discuss the barriers and technological, social-organizational, and individual facilitators for four KM processes (acquisition, creation, sharing and transfer).	Theoretical with bibliographic research in the WoS, EBSCO, Emerald, and ProQuest databases.
10	Does knowledge management produce practical outcomes?	Massingham and Massingham (2014)	To examine ways through which KM can demonstrate a practical value to the organizations.	Empirical with a qualitative method. A total of 118 engineers and technical staff members from the Department of Government of Australia were interviewed.
8	Knowledge management and its critical factors in social economy organizations	Cardoso <i>et al.</i> (2012)	To empirically present and validate a conceptual model for organizations of the social economy, including organizational commitment, knowledge-centered culture, and training as critical variables for the success of formal and informal knowledge management practices.	Empirical with a quantitative method through a survey with 205 employees from Portuguese organizations in the social economy sector.
7	Factors affecting knowledge management success: the fit perspective	Chang, Hsu and Yen (2012)	To develop four ideal theoretical profiles of the KM processes (socialization, externalization, combination, and internalization) and the capacities of the knowledge management system (KMS) (the codification and network capacity) for organizational sub-units based on their tasks' features: process-focused and guided, content-focused and guided, vast and guided tasks to processes and vast and guided tasks to contents.	Theoretical-empirical. A qualitative and quantitative study in which the authors collected data from 12 sub-units and 212 valid questionnaires were analyzed.

Table 5 – The 10	0 most cited	works in the set	of articles	selected in	n this research	(LCS)
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Source: Elaborated by the authors from WoS data (2019).

For the identification of the primary information on the LCS papers, the data presented in the GCS analyses, which refer to works by Serenko and Bontis (2013a), Lee *et al.* (2013), Lee, Gon Kim and Kim (2012), and Andreeva and Kianto (2012), were not repeated, according to table 5, below.

DISCUSSION OF RESULTS

The results show that KM research focuses on economic performance (HUSSINKI *et al.*, 2017) that the model can provide organizations by bringing the perspective that performance improvement will provide higher competitiveness (ANDREEVA; KIANTO, 2012) and that this improvement can be possible if infrastructure, culture (IMRAN *et al.*, 2016; DONATE; SÁNCHEZ DE PABLO, 2015; JASIMUDDIN; ZHANG, 2014; JAIN; JEPPE JEPPESEN, 2013; INKINEN; KIANTO; VANHALA, 2015).

The studies also explore KM as an academic discipline to see if it exhibits the characteristics of a healthy academic domain with no apparent anomalies, intending to calculate the practical KM value (SERENKO; DUMAY, 2017; SERENKO; DUMAY, 2015a; SERENKO; DUMAY, 2015b; SERENKO, 2013; SERENKO; BONTIS, 2013b).

From a chronological sequence and surveyed through word clusters with QSR Nvivo® software support, the articles> themes in the year 2012 report on collaborative practices of knowledge sharing and its tendency to innovation (MANGIAROTTI, 2012), on the KM systems> effectiveness and performance, and the alignment between the strategic guidance and the market's circumstances (GRIFFITH; KIESSLING; DABIC, 2012). They also deal with critical success factors in KM projects, such as organizational culture, information and communication technologies, and personnel management (CARDOSO; MEIRELES; FERREIRA PERALTA, 2012; CHANG; HSU; YEN, 2012).

In 2013, the research focus was on the relationship between KM and the cognitive styles of organizational leadership (JAIN; JEPPE JEPPESEN, 2013), the alignment of business strategies and KM processes, ethical issues involving knowledge property conflicts (RECHBERG; SYED, 2013), KM as a determining factor for technological innovation advancement (LEE *et al.*, 2013), and organizational unlearning (ZHAO; LU; WANG, 2013).

In 2014, the themes from the leading international periodicals dealt with the antecedents and the consequences of the knowledge management evolution (LIN, 2014), with the KM practical the organizational performance results on (MASSINGHAM; MASSINGHAM, 2014),the client's innovation on KM, capacity (TAHERPARVAR; ESMAEILPOUR; DOSTAR, 2014), organizational culture change and entrepreneurial performance (JASIMUDDIN; ZHANG, 2014), on the use of ICTs in order to help innovation and KM in teams with high performance (GRESSGÅRD et al., 2014). They also dealt with KM managerial practices and operational directions in networks of inter-organizational partnerships (DEL GIUDICE; MAGGIONI, 2014).

The focus of the publications in 2015 was on the client's KM as a catalyst of marketing innovation (GARRIDO-MORENO; LOCKETT; GARCIA-MORALES, 2015), the interface between absorptive capacity and KM (MARIANO; WALTER, 2015), the role of organizational culture in the KM process (LIN, 2015), KM in social media (BHARATI; ZHANG; CHAUDHURY, 2015), and the role of leadership and personnel management guided to the KM practices (DONATE; SÁNCHEZ DE PABLO, 2015).

As suggested by Serenko (2013), 2016 article themes (present in the fourth generation) include the increase of knowledge domain complexity, knowledge as the focus of value multiplication, synergy, and collective intelligence (CHEVALLIER *et al.*, 2015), the expansion of the development role based on knowledge, the transition from firm's theory to the context of network companies (ESPOSITO; EVANGELISTA, 2016), and initial studies (ARGYRIS; RANSBOTHAM, 2016).

In 2017, the articles' themes dealt with the interface between the internet of things and KM (UDEN; HE, 2017), the inter-relationship between big data and KM (TIAN, 2017), and KM as a formulation factor and implementation of the organizational strategy (DAYAN; HEISIG; MATOS, 2017).

In 2018, publications continued and deepened the discussion on the relationship between KM and the internet of things, including new elements such as innovation and the ability of KM (SANTORO *et al.*, 2018; GOPE; ELIA; PASSIANTE, 2018); the relationship between KM and corporate social media was discussed (ARCHER-BROWN; KIETZMANN, 2018); and the relationship between KM and constructs of organizational sustainability (TORRES; FERRAZ; SANTOS-RODRIGUES, 2018) and environmental management (BISCOTTI; D'AMICO; MONGE, 2018) was introduced.

In 2019, research on KM began to address the impact of the relationship between big data and KM (FERRARIS *et al.*, 2019), between KM and innovative city projects (ARDITO *et al.*, 2019), the impact of KM on the performance of the public sector (AL AHBABI *et al.*, 2019), in agile organizations (OLIVA *et al.*, 2019) and startups (OLIVA; KOTABE, 2019). In addition, there was a confluence of studies for the university educational field (AL AHBABI *et al.*, 2019). Analyzing the 2019 publications made it possible to understand that KM is maturing since the relationship between basic and applied research in studies is already registered.

Simultaneously, the analyzed papers also raise concerns about the danger of sharing the knowledge that is linked to the organizations' essential competency since the previous approaches that included the knowledgecentralized management do not survive anymore due to the Information and Communication Technologies (ICTs) that bring quick and cheap solutions for traditional implementations, such as software and social media (CHUA; BANERJEE, 2013; VON KROGH, 2012).

Knowledge acquisition, creation, storage, learning, and sharing dominate 2012-2019 KM studies. The spiral from epistemological to ontological (NONAKA; TAKEUCHI, 1995) is seen in table 6.

Table 6 – KM Processes described through word clusters

Process	Description	Authors
Acquisition/ capture/ retention	This process aims to give a new meaning to the existing tacit knowledge, generate new capacities and opportunities, and has practical implications on the management models and product prototypes to keep the organizations' competitive advantage. This process is made easy by the ICTs and by specialists who can see new market opportunities.	Donate and Sánchez de Pablo (2015); Gonzalez and Martins (2014); Lee <i>et al.</i> (2013); Von Krogh (2012); Lee <i>et al.</i> (2012); Pinho, Rego and Cunha (2012); Leonardi and Treem (2012).
Creation	Knowledge creation takes place through wikis, specialists, and social software, and the organizations' objective in this process is to feed discoveries and transfer them so that everyone in the company can benefit. Knowledge creation occurs between the combination of the existing knowledge with the organization's external knowledge.	Donate and Sánchez de Pablo (2015); Lee <i>et al.</i> (2012); Von Krogh (2012); Pinho, Rego and Cunha (2012).

(Continua)



Table 6 – KM Processes	described	through	word	clusters
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Process	Description	Authors
Storage	The codification, organization, and retrieval of explicit knowledge to enable knowledge exploration (creation) and exploitation focused on innovation. Knowledge storage is done through ICTs that create an organizational memory, create histories, generate feedback, and use data sampling procedures to select helpful content. The knowledge stored is shared and disseminated through the leaders, employees, clients, suppliers, and organizational communities.	Donate and Sánchez de Pablo (2015); Gonzalez and Martins (2014); Lee <i>et al.</i> (2013); Alegre <i>et al.</i> (2013); Serenko (2013); Pinho, Rego and Cunha (2012); Lee <i>et al.</i> (2012).
Learning	The learning process assumes the presence of social relationships and engagement between personnel, infrastructure (ICTs and network structure) and collaboration practices, learning organizational culture, transformational leaders, innovative performance strategies (dynamic and absorptive capacities), decentralized knowledge processes, and intra- and inter-organizational partnerships. The learning process can also take place through social media and social networks (formal or informal) and aims and enabling the dissemination of knowledge, the development of capacities, sustainability and innovation performance, aligning strategies, adapting behaviors, developing the employees' creativity, building an organizational memory, creating value and evaluating the decisions' efficiency.	Serenko and Bontis (2017); Donate and Sánchez de Pablo (2015); Massingham and Massingham (2014); Serenko (2013); Alegre <i>et al.</i> (2013); Serenko (2013); Lee <i>et al.</i> (2013); Lee <i>et al.</i> (2012); Sung and Choi (2012); Pinho, Rego and Cunha (2012).
Sharing/ transfer/ dissemination	This process occurs when there is a favorable culture, accountability, networks involving the employees, and a reward for the shared knowledge. Knowledge sharing can occur through interpersonal interaction or databases; leadership encourages it and aims to improve knowledge process capacities and promote learning.	Wang <i>et al.</i> (2016); Lee <i>et al.</i> (2013); Lee <i>et al.</i> (2013); Lee <i>et al.</i> (2012); Von Krogh (2012); Leonardi and Treem (2012); Pinho, Rego and Cunha 2012).

Source: Elaborated by the authors from QSR NVivo[®] data (2019).

Figure 1 - A description of this research's findings on Knowledge Management



Source: Elaborated by the authors (2019).

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Therefore, through the academic content of relevance over KM from 2012 to 2019, it was possible to identify social-organizational, technological, individual, and cultural aspects, KM processes, and strategies, among other elements, which can be allocated as antecedent and consequent. Figure 1 tries to represent this research's findings.

The emerging themes or suggested gaps in the primary papers for the development of future research still lie in the functionalist paradigm around the impact of KM on finances and organizational and economic performance, over the influence of KM on the technological competitiveness in the current market, over the impact of social software in the KM processes and infrastructure, and the impact of client's KM on the organizations' strategic positioning.

There is also a gap in the studies on the interface between KM and the dynamic and absorptive capacities to foster technological innovation in services; explore the concept of organizational unlearning; and study the KM's negative consequences in organizations (SERENKO, 2013).

Additionally, the papers published and most cited from 2012 to 2019 still add the following emerging themes: study of how the social capital can influence the organizational KM quality (BHARATI; ZHANG; CHAUDHURY, 2015); research on the application of abductive reasoning and the practicebased view as something logical to foster creativity and innovation (TORUGSA; O'DONOHUE, 2016); understand the relationships based on the agency theory from integrated KM systems in order to overcome the imbalance between the head and the agent (DEL GIUDICE; DELLA PERUTA, 2016); investigate the effective knowledge generation and codification from text analysis in big data in order to check trends, consider more sources to develop the results' solidity, and investigate how the companies apply the KM innovations and their impact (NOWACKI; BACHNIK, 2016).

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Other vital gaps are in the relationship between KM and the internet of things, including new elements such as open innovation and KM ability (SANTORO *et al.*, 2018; GOPE; ELIA; PASSIANTE, 2018), the relationship between KM and constructs of organizational sustainability competitive advantage (TORRES; FERRAZ; SANTOS-RODRIGUES, 2018), the relationship between KM, theoretical content and smart city projects (ARDITO *et al.*, 2019), and the interface between KM and dynamic capabilities in agile organizations (OLIVA *et al.*, 2019) and in startups (OLIVA; KOTABE, 2019).

CONCLUSIONS

The results of the bibliometric analysis confirm the KM maturation process as an independent academic discipline, as they point to periodicals and reference authors in the theme area and strengthen the use of KM as a strategy to favor economic-financial performance and organizational innovation, despite its pre-analytical nature in administration.

Propositions for advancing research on the subject pointed to conceptions about the impact of KM on economic performance, innovation, business strategy, competitiveness, and technological change, besides the impact of software and social media on KM and the impact of the customer's KM on organizations. In addition, there is the impact of KM on the constructs of human and organizational behavior to be developed through studies with a frame of reference in understanding and rigorous empirical studies.

The theoretical contribution of the study lies in the proposition of a framework representing the configuration of the KM research. In addition, this research fills the gap for scientometric works to raise emerging issues about KM in the period 2012-2019. Then, the fact that the ISI Web of Science was solely used can be presented in these conclusions both as a reach limitation and as a sign for a possible study expansion to validate the findings' propositions and contribute to the usefulness and maturation of KM as an academic discipline.

As suggestions for future research, besides the ones previously mentioned as this study's objective, there is also the possibility to check the most recent works in the area in other reference databases, such as the Scopus database, in order to identify possible changes in theoretical or methodological paths in a comparative study.

Based on emergent themes, here is a recommendation for using critical epistemologies to understand KM's detrimental effects on organizations: longitudinal and meta-analysis studies and structured data triangulation to ensure future KM research's internal and external validity and reliability; rigorous multiplecase studies; Develop future studies that bring KM closer to contemporary society has to clarify the theme's social relevance in scientific Administration study (WOOD JR; SOUZA, 2019); What do we know about KM in a pandemic?

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