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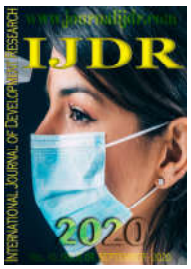

RESEARCH ARTICLE OPEN ACCESS

THE ORIGIN OF DISCUSSIONS AROUND KNOWLEDGE MANAGEMENT IN THE ORGANIZATIONAL CONTEXT

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ABSTRACT

This study aims at identifying the main periods during which Knowledge Management (KM) is approached in literature in order to access the publications which provide the theoretical basis for this discussion. Therefore, an exploratory bibliographical research was carried out that identified publications prior to the 1980s; that is, the main period mentioned in literature on KM.It was also verified that in the mid-1970s there were already publications on KM, originated from the public sector, which had used studies produced during the 1960s. Based on these findings, it was possible to introduce three main periods and their respective approaches to KM.

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INTRODUCTION

The interest in the use of knowledge in the organizational environment became greater after World War II, assuming a prominent role especially in the 1970s (Drucker, 1976; Izerrougene et al. 2010). During this period, a theoretical biasabout the quantity and quality of knowledge in industry is highlighted. The industry, which was once focused on the production of goods and services, made room for knowledge production, which contributed to a change in the current economic model (Pérez-Montoro, 2016; Caruso, 2016). Caruso (2016) shows that there are distinct theoretical lines on these changes. The economic theories based on knowledge discuss the economic and technological changes that result from capitalism which, from this point of view, have significantly changed society through the use of knowledge. On the other hand, there are other interpretations, mainly based on Marxist bias, which deny the idea of using knowledge also for the benefit of individuals, proposing relations of labor exploitation. It should be emphasized that this paper is not intended to discuss such views; however, it is aligned with the idea that best meets knowledge-based theories, in which knowledge is considered an asset for improving products, processes and the individuals in the organizational environment. Although the industry interest in knowledge began only around 1970s, the philosophy field hadalready been searching to understand its dimension since the periods of Plato, Socrates, Aristotle, and others. Based on the understanding that knowledge in the organizational or business environment can increase productivity and innovate products, processes, and human resources management, there has been the creation of means for organizations to manage their knowledge. KM is able to systematize knowledge and make it available to a greater number of individuals (Mohammed, 2015). Still, KM is not able to determine the moment and the type of knowledge to be created but, instead, to offer means for storing, sharing and using it (Yang, 2010; Dalkir, 2011).

This is a developing theme, which receives contributions from different fields of study, such as philosophy, education, administration, economics, and others. According to Wiig (1997), studies on KM have evolved from these contributions and are mainly developed towards the use of knowledge to improve the efficiency of work processes. The first and main studies on KM were produced in the 1990s (Strauhs et al. 2012). However, according to Pérez-Montoro (2016), the

theoretical basis of this subject dates back to the 1960s when investigations were published by the Economics field. Dalkir (2011) and Davila et al. (2015), who showed a general background on KM elements, used essential references for the studies on this theme, which had mainly been produced between the late 1990s and the early 2000s. Literature on KM mentions distinct periods for the KM theoretical roots. Drucker (1976) indicates the need to create means to manage knowledge, something around the early and mid-1970s. Wiig (1997; 1999a) points out that KM studies evolved from efforts in different areas, which is prior to the 1990s. Firestone and McElroy (2002) suggest three phases for KM, and the chronological order of these phases is found in the 1980s and 1990s. Finally, Tzortzaki and Mihiotis (2014) state that the first studies on KM were published before the 1980s. Therefore, the presentstudy aims atidentifying the main periods during which KM is approached in literature in order to access the publications that support the theoretical basis of this discussion.

MATERIALS AND METHODS

This is an empirical exploratory qualitative research. The study aimed at identifying theoretical basis in the literature that support KM approaches. In order to reach such a purpose, Drucker (1976), Wiig (1997; 1999a), Firestone and McElroy (2002), Tzortzaki and Mihiotis (2014), and Pérez-Montoro (2016) were consulted, considering that the reference to initial studies on KM was intensified after the mid-1980s, in addition to the existence of prior studies. Based on the analysis of the bibliographic references of the aforementioned authors, *Capes* journal entry and Google Scholar were used to search for references prior the 1980s as pointed out by the authors. Publications containing the term 'KM' or the word 'knowledge' in the title were privileged in the search. Then, the selected papers were read in order to establish the three main time periods that divided the publications on the matter.

RESULTS AND DISCUSSION

Knowledge as a Valuable Asset: After World War II, in 1955, a quarter of the United States Gross National Product (GNP) was obtained by knowledge industries. These industries are known for producing and distributing ideas and information, having in their structure not only the production of goods and services. The proportion of the knowledge industries increased gradually and, by the 1970s, they already corresponded to half of the total national product (Drucker, 1976). Drucker (1999) explains that one of the most important contributions of the twentieth century, under the management point of view, was the increase in the productivity of a manual worker to about fifty times. In the 21st century, such a contribution is obtained. However, productivity in this period was achieved through knowledge workers - a term coined by Drucker to characterize workers whose actions are focused on knowledge rather than manual activities (Caruso, 2016). This fact is related to the changes on the thought basis from the twentieth century with regard to the twenty-first century. In the twentieth century, a company would have its equipment as its most valuable assets, whereas in the twenty-first century, the assets are intangible, in this case, knowledge (Drucker, 1999). According to Wiig (1997), the search for better understanding knowledge is remote, and this is perceived from records of ancient western philosophers who already sought to understand the aspects of knowledge. However, these studies came across theoretical and abstract answers. According to Wiig (1999a), until the twentieth century, different areas – religion, philosophy, psychology, economics and social sciences, and business theory - showed these answers, in a theoretical sense. From the twentieth century on, these studies have evolved and shown a more practical bias towards improving work processes. Table 1 presents the discussions regarding different fields of study before and after the twentieth century.

Table 1. Theoretical efforts to understand knowledge before and after the twentieth century

Theoretical efforts tounderstand knowledge before the twentieth century.	Efforts after the twentieth century towards the improvement of efficiency of work processes
Religion and Philosophy (e.g., epistemology) to understand the role and nature of knowledge and the permission of individuals 'to think for themselves.'	Rationalization of Work (Taylorism), Total Quality Management, and Management Sciences to improve effectiveness.
Psychology to understand the role of knowledge in human behavior.	Psychology, Cognitive Sciences, Artificial Intelligence (AI), and Learning Organization to learn faster than competition and provide foundation for making people more effective
Economics and social sciences to understand the role of knowledge in society.	
Business Theory to understand work, and its organization.	

Source: Adapted from Wiig (1999a)

The transition in the economy structure model, from goods and services to knowledge, triggered a series of events that caused changes in the world economy. Therefore, information began to play a new and strategic role in the means of production, contributing to the use of information and communication technology (Izerrougene et al. 2010; Caruso, 2016). In this sense, organizations have not only benefited from knowledge, but have adopted methods for managing it. Therefore, KM emerged as a new discipline, from the academic point-of-view (Ortegón et al. 2016; Pérez-Montoro, 2016). Since the twentieth century, and especially with the dissemination of the Fordist model of production of goods and services, information and communication technologies became essential for valuing human capital, and thus, the use of knowledge in organizations (Izerrougene et al. 2010). In this context, it is common to use the terms 'data', 'information' and 'knowledge'. However, according to Davenport and Prusak (2005), knowledge is neither data nor information; terms that are commonly confused with each other. Data is understood as the record of something, such as the transactions in an organizational environment. Information is the data within a context; it is a message, and as such it has a sender and a receiver, its interpretation and understanding, thus, making it possible to judge and make decisions on a subject. Knowledge is something broader than data or information. It changes the behavior of a system, being the result of complex evaluation and validation of information, which becomes part of a context (Davenport andPrusak, 2005).

The use of knowledge in the workplace is due to the fact that it is an asset that is present in different types of organizations, whether they are knowledge-intensive or not (Silva andMenegassi, 2018). Knowledge is considered an intangible asset and its use is generally encouraged in such environments, enabling employees to better expose their skills (Caruso, 2016). In this context, the interest given to the shared use of knowledge in the organizational environment meets the tangible and intangible gains provided by the creation of more

knowledge. For Takeuchi and Nonaka (2008), knowledge is created, in the organizational environment, through the relationships between individual and systematized knowledge. Individual knowledge is tacit and correlated to individual skills; systematized knowledge is explicit, that is, when such individual skills are shared with other individuals and are likely to be stored. According to Sousa (2014), the terms 'tacit' and 'explicit' were epistemologically defined by Michael Polanyi, being recovered and dealt with under the business perspective by Ikujiro Nonaka and Hirotaka Takeuchi, who propose that, in the business environment, individual knowledge (tacit) and systematized (explicit) knowledge converge with each other through interactions among individuals. For Takeuchi and Nonaka (2008), in this sense, knowledge moves from people's minds to manuals and databases and, when consulted, it becomes new knowledge, with the conversion from tacit to explicit. From the understanding that knowledge is present in most organizations, leaders and managers have been stimulating and promoting it with focus on competitiveness and value creation (Caruso, 2016). Therefore, knowledge becomes not only an asset that offers value to organizations, but which is also subject to systematization and management.

From A Valuable Asset to an Asset to be Managed: Knowledge Management: The management process analyzes the individual competencies or skills of a group within an organization. Individual knowledge, which is created through acquired experiences, can be made available to a larger number of people through a systematization method, generating more knowledge. This process is directly correlated to the basis of knowledge economy (Wiig, 1997; Dalkir, 2011; Barãoet al. 2017). Communication plays an essential role in this process, since individuals may not know the true extent of their ability to know or of what is known, or they even may not have the means or appropriate language to inform what they know (Strauhs, et al. 2012). Therefore, knowledge transfer occurs through information that will be differently interpreted by other individuals, and thus, transformed into new knowledge (Krogh andRoos, 1995; Barãoet al. 2017). The possibility of managing and systematizing knowledge allows us to assess the existing relationships between the environment and the individuals who are part of it. Therefore, it stimulates the creation, sharing, storage and use of the generated knowledge. Based on this fact, the interest of scholars arose and the term KM gained notoriety in the 1980s (Ortegón et al. 2016; Pérez-Montoro, 2016). According to Wiig (1997), either the creation or definition of the term was not by chance. Factors such as the changes in the production model and the evolution of studies on the theme contributed to this.

In practical terms, KM provides possibilities for knowledge to be effectively and systematically managed, supporting companies in their organizational goals. It is an activity which aims at creating value and generating innovation from knowledge assets, which are obtained from the interactions among people, technology and processes that are part of an organization (Wiig, 1997; Dalkir, 2011). Ortegón, Lasso and Steil (2016) suggest that KM assists the organization in identifying its potentialities, growing, besides promoting innovation. According to Firestone and McElroy (2002), KM is divided into three phases: the first was originally addressed under the information technology point-of-view (the onset of the internet, lessons learned and knowledge sharing); the second relates to human factors (knowledge creation and organizational learning); and the third deals with the ways of using knowledge (the creation of taxonomies), having a strong correlation with the first phase, since it intensively uses information technology. The literature on KM has different definitions for this term. However, it is clear that a definition of KM is still under development and even if there are similarities, there is not a single one that defines it. Wiig (1997, 1999a) has an approach according to which KM is a process designed to meet business purpose through the management of knowledge processes (creation, sharing, storage). Yang (2010) defines KM as a developing field able to provide returns on intellectual assets. Evans, Dalkir and Bidian (2014) consider that KM is capable of organizing knowledge processes by improving and adding value to organizational knowledge. Mohammed (2015) shows that KM can change behavior, skills and abilities of the individuals in an organization. North and Babakhanlou (2016) state that KM is an activity used by groups and teams as a whole or in parts, which allows the use of knowledge to achieve strategic and operational goals. And finally, Barão et al. (2017) attribute to KM the ability to identify and improve knowledge, especially in the workplace.

In general, what is found with regard to the definitions of KM is the idea that the use of knowledge is a competitive strategy and promotes the strengthening of the relations between the environment and individuals. For knowledge to be understoodunder the management perspective it must be viewed systemically, that is, measures should be taken so that it is acquired and used for organizational purposes. KM proposes a systematic process that occurs through the development of interrelated and interdependent stages in which the available information becomes valuable knowledge through processes of knowledge evolution - KM Cycles - (Ortegón; Lasso andSteil, 2016). KM has been considered an important tool to help different types of organizations to be more competitive, in face of the fierce competition imposed by the market (Silva and Menegassi, 2018). Implementing a KM system in an organization should contribute to the fact that, when important knowledge is created, it can be shared, stored and used by as many people as possible. A systematic KM process includes the presence of cycles, tools, practices, models and other elements. Some of them are shown below.

The Elements of KM Systematization: An efficient KM process will be the one in which the organization identifies, acquires, disseminates and captures the existing knowledge of a certain environment. For such, it is necessary that the processes of knowledge evolution are defined. The KM processes known as creation, sharing, storage and using are part of a structure called KM Cycle. These processes emerged from the organizations needs to organize the knowledge evolution, as well as to renew their knowledge assets (Evans; Dalkir and Bidian, 2014; Gonzalez and Martins, 2017). According to Dalkir (2011) and Davila et al. (2015), the main KM cycles found in the literature are those mentioned by Wiig (From 1993), Meyer and Zack (From 1997); Bukowitz and Williams (From 1999) and McElroy (From 2003). These cycles have different numbers of processes directed to different organizational structures. Performing processes in a cyclic manner provides feedback that will serve for knowledge organization, so that a certain process has greater attention (Stary, 2014). However, for the cycles to exist, a more complex structure is necessary in order to provide the existence of the processes. Such a structure is called KM

models. A KM model mighthave a more or less robust structure; however, some characteristics are essential for its existence. It generally considers the relationships that exist between the environment and the people who work there, which is the main factor for the creation and use of knowledge (Strauhs et al., 2012; Toszewska-Czerniej, 2015). A KM model should involve three categories: knowledge, intellectual capital, and social constructs, besides being an abstract representation of reality that should be useful for practical application (Martín-Castilla and Rodríguez-Ruiz, 2008; Mcadam andMccreedy, 1999; Sensuse et al., 2014). KM models can be presented either through graphic or structure schemes that indicate which other elements are needed for the implementation of a KM system, having the function of meeting both, the intrinsic KM purposes and the organizational ones. A KM model can predict, for example, which other elements will be used, and for what purposes. KM toolsare the other elements intensively seen in the literature. Such tools have the role of checking several elements (e.g. technological capital and equipment), making sure that KM activities are directed to the continuous improvement of processes (Dalkir, 2011; Martín-Castilla and Rodríguez-Ruiz, 2008). KM tools are usually developed to solve tasks. They can be adaptable and, if the expected results are not achieved, they can be eliminated, replaced or revised (Krogh andRoos, 1995).

The literature shows that the use of tools is directly related to individuals, since knowledge is considered to be internalized in people. Therefore, for people to share what they know, they shall need means to perform such a task (Martín-Castilla and Rodríguez Ruiz, 2008; Krogh and Roos, 1995; Wiig, 1997). North and Babakhanlou (2016) identified 16 types of KM tools. According to the authors, these tools differ by the number and types of instruments, number of individuals involved, focus of action, and others. Moreover, some of these tools have a brief explanation of their use, whereas others are presented with more content, which may even include illustrations. What can be seen is that Km tools are correlated to instrumental actions and strongly correlated to information technology and the use of databases. KM Practices are also mentioned in the literature as an important element which is part of the set of actions that enable the sustainability of KM systematization. This element, according to North and Babakhanlou (2016), is linked to knowledge management. Therefore, it is understood that, whereas the tools are related to something instrumental, practices refer to actions, which might even be the use of tools. It was seen that there are similarities in the definitions of KM tools and practices, which may be due to the fact that these are the elements whose functions are to create, share, store and enable the use of knowledge (North and Babakhanlou, 2016). Following the contextualization of the interest in the use of knowledge, the need to systematically manage it in a process referred to as KM, and the elements belonging to this process, the methodology, results and the final considerations will be shown.

The origin of the term Knowledge Management in the Organizational Context: Concerning the origin of the term KM, there are references in the literature dating back to the mid-1980s. The first scientific publications occurred in the 1990s, mainly by Nonaka and Takeuchi in 1995, and by Davenport and Prusak in 1998. Such publications provided the first and foremost theoretical principals on the subject emerging after an intensive use of knowledge in organizations (Pérez-Montoro, 2016). Also, Dalkir (2011) emphasizes the fact that scientific publications on the matter intensified in the mid-1990s. The first issue to be elucidated is that some reference authors in KM field, according to Dalkir (2011) and Davila et al., (2015), do have publications in the 1990s and early 2000s, such as: Krogh and Roos (1995); Wiig (1997); Wiig (1999a); Wiig (1999b); Choo (2001); McElroy (2003). It was also seen that the main KM Cycles described by Dalkir (2011) and Davila et al., (2015) are those by Wiig (1993), Meyer and Zack (1997), Bukowitz and Williams (1999), and McElroy (2003), which enabled to establish a timeline of publications between 1993 and 2003. Still seeking to meet the purpose of this research, it is noticed in Drucker (1976, p. 323) that there is evidence of the need to create a process to manage knowledge considering that "we could hardly hope to know how to define, let alone measure, the production of knowledge-based work. For that we need definitions – not to mention measurements", recommending the creation or existence of means to validate those measures so as to use knowledge in the workplace. This corroborates the idea that before the 1980s there was some interest on the prospect of knowledge management.

Firestone and McElroy (2002), by proposing a study on the KM generations and identifying its three phases, approach the evolution of the subject by showing the mid-1990s as a corresponding period for certain events. Based on the analysis of the bibliographic references used by the authors, most papers date between 1991 and 2001, although there are studies from 1966 and 1970, whose titles, however, do not include KM-related terms. Between the 1980s and 1990s, a number of concepts emerged towards the management of technology, information and knowledge. According to Tzortzaki and Mihiotis (2014), the idea of sharing knowledge in an organization had beenshown by Max Boisot in 1987. Tzortzaki and Mihiotis (2014) also mention that the first indications of the term KM appeared in 1975 with Goerl, Henry, and McCaffery. Therefore, the search for these publications was carried out with the purpose of analyzing their content. The first study found was 'Bureaucracy, Technology, and Knowledge Management' by Henry (1975). This paper was obtained in full and the term KM is used in relation to public governance, pointing out that both administration and public education are the major beneficiaries from KM. According to the author, KM 'provides a useful intellectual perspective in analyzing the public's problems as they relate to bureaucracy and technology' (p. 576). At this point KM's initial correlation with public management can be seen; not different from what is currently dealt with in technology. The study 'Cybernetics, Professionalization, and Knowledge Management: An Exercise in AssumptiveTheory' by Goerl (1975) was found in full. This paper presents an approach to a regulatory society where knowledge is a power factor; thus, it claims that KM is a task that should be performed by specialists. The term appears strongly associated with the idea of sharing information and the ability to use it. The third investigation found in full and mentioned by Tzortzaki and Mihiotis (2014) was 'Knowledge Management in Fiscal Policy Formation' by McCaffery (1975), which examines policies in tax management, studying the connection between tax management, knowledge, budgeting, taxation, and management. There is no clear definition of KM. However, there is intense reference to individual skills and information sharing; topics that seem familiar with attempts to clarify the concept of KM found in the literature after the 1980s.

Based on the studies by Henry (1975), Goerl (1975) and McCaffery (1975), an analysis of the references used by these authors was performed and a publication, which already included the term KM in its title, was found prior to 1975. 'Knowledge Management: A New Concern for Public Administration', by Henry (1974), was the earliest study found to address the term KM in its title and approach. According to the author, "by knowledge management, I mean public policy for the production, dissemination, accessibility, and use of information as it applies to public policy formulation" (p. 189). It is clearly seen that studies on KM in the 1970s were correlated to both, the public context and use of information. In Henry's study (1974), there is a note indicating that the subject was new at the time, which might cause interest in better understandings. Therefore, the author suggests a reading list, which does not clearly deal with KM, but that is similar to a list of guidelines aiming at clarifying the subject. Such list suggests publications dated between 1967 and 1971, whose tittles might relate to information, communication, data use, information systems, and public management. Among the studies suggested, the oldest one accessed was Mindlin's (1968) entitled 'Confidentiality and Local Information Systems', which concerns information management and the processing of municipal data. In this context, the author discusses the use and sharing of individual information in given situations, which is very similar to that approaching tacit knowledge. After assessing such studies shown as part of the origin of KM investigations, consistency is observed in Drucker's (1976) approach, which already indicated the need for means to manage knowledge. However, the author mentions that in the form of a report or from what he perceived while in academic environment at the time. According to Wiig (1997, 1999a), the subject developed from different study areas. According to Pérez-Montoro (2016), the theoretical bases for KM date back to the 1960s, although the main publications on this subject are from the 1990s. As it can be seen, KM origin has a strong correlation with information technology and information sharing, in addition to have gained greater prominence from the mid-1980s. Table 2 summarizes the main periods and occurrences of studies on KM.

Table 2. Main periods and occurrence of studies on KM

1960 and 1970	1980 and 1990	After 2000
Use of Information. Sharing of Information. Research in the Public Sector.	Use of Knowledge. Appreciation of Human Capital. Knowledge Management. Work-based Research.	Knowledge Management. Innovation and Value. Interactions in the organizational environment. Research focusing on different fields.

Source: Drawn and proposed by the authors (2020).

Conclusion

Although KM has been shown as a competitive differentiator for organizations, it is a field in broad development. Several studies have been carried out in the last decades showing its advantages, exploring the application of its elements, and/or presenting epistemological issues that permeate the matter. Nevertheless, there are investigations seeking to show evolutionary lines of this field and also, in certain way, to give credit to whom could have been the precursor of studies on KM and even of the creation of the term.

This study aimed at identifyingthe main periods during which KM is approached in literature in order to access the publications which provide the theoretical basis of this discussion. It was seen that such publications were concentrated mainly between the early 1990s and the early 2000s. In that period there were fundamental investigations on the subject by Ikujiro Nonaka and Hirotaka Takeuchi, Karl M. Wiig, Max Boisot, Wendi Bukowitz and Ruth Williams, Mark W. McElroy and, Marc H. Meyer and Michael H. Zack. After that, other studies have been gaining prominence, although always referencing the aforementioned authors. Considering the assumption that these publications are concentrated in the early 1990s, in addition to mentioning that KM studies became well-known in the mid-1980s, the present research prioritized the search for references on this matter before 1980s. Therefore, Tzortzaki and Mihiotis (2014) were considered, since the authors point out that early publications on the subject are found in 1975. It is possible to observe that in the 1970s there was some discussion about the topic, including publications that clearly had the term KM in their titles and subjects. These studies even showed definitions of KM. Based on the investigations found, it is noticed that, initially, KM was attributed to the idea of public policies, public governance and the use and sharing of data and information. Moreover, in the 1960s and 1970s the focus of what was meant by KM was the use of information, its sharing, and research focused on the public sector. In the 1980s and 1990s, studies were related to the use of knowledge, valuing human capital, knowledge management systematization, and research focused on work. Finally, after the 2000s, KM is seen as something that proposes innovation and value, interactions in the organizational environment, and research is conducted in different fields.

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