

A Gestão do Conhecimento holística: análise de aderência do modelo de Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns model

The Holistic Knowledge Management: adherence analysis of the Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns model

Fábio Corrêa <https://orcid.org/0000-0002-2346-0187> Doutor em Sistemas de Informação e Gestão do Conhecimento. Professor Universidade FUMEC – Brasil. fabiocontact@gmail.com
Dárlinton Barbosa Feres Carvalho <https://orcid.org/0000-0003-3844-0178> Doutor em Informática. Professor Universidade Federal de São João del-Rei (UFSJ) – Brasil. darlinton@gmail.com
Renata de Souza França <https://orcid.org/0000-0002-3809-0975> Doutora em Sistemas de Informação e Gestão do Conhecimento. Professora Universidade do Estado de Minas Gerais (UEMG) – Brasil. profrenatafranca@gmail.com
Jurema Suely de Araújo Nery Ribeiro <https://orcid.org/0000-0002-6465-6020> Doutora em Sistemas de Informação e Gestão do Conhecimento. Professora Universidade FUMEC – Brasil. jurema.nery@gmail.com

ABSTRACT

The holistic paradigm has been pointed out for many years as an approach to be considered in the development of Knowledge Management (KM) frameworks. The Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns model is a recently developed KM framework, which cited studies that preach Holistic Knowledge Management (HKM). The purpose of this research is to analyze the adherence of the framework to the HKM in order to discern if the management proposed by this framework has been considered following the holistic paradigm. The analysis is developed employing mixed methodological procedures, which makes use of qualitative content analysis and the quantitative approach. The results show that the analyzed framework only partially adheres to HKM, revealing the need to develop new frameworks that consider all dimensions together, such as are presented here. This research contributes by weaving a view that adjusts KM to the holistic paradigm and by proposing a method to enable the analysis of KM frameworks using a holistic approach. The analysis of other frameworks, considering the procedures adopted in this study, is a suggestion for future research. Thus, other studies may consider the findings of this research for the development of structures that encompass KM in its entirety within the organizational scope.

Keywords: Knowledge management; Holistic paradigm; Holistic knowledge management; Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns; Content analysis.

RESUMO

O paradigma holístico tem sido apontado há anos como uma abordagem a ser considerada no desenvolvimento de *frameworks* de Gestão do Conhecimento (GC). O modelo Moscoso-Zea, Luján-Mora, Cáceres e Schweimanns é uma estrutura de GC desenvolvida recentemente, que citou estudos que demarcam a Gestão do Conhecimento Holística (HKM). O objetivo desta pesquisa é analisar a aderência desse *framework* ao HKM a fim de discernir se a gestão proposta por esse foi considerada mediante ao paradigma holístico. A análise é desenvolvida por meio de procedimentos metodológicos mistos, que se valem da Análise de Conteúdo qualitativa e da abordagem quantitativa. Os resultados mostram que o *framework* analisado adere parcialmente ao HKM, revelando a necessidade de desenvolver novos modelos que considerem todas as dimensões dessa gestão em conjunto. Esta pesquisa contribui ao tecer uma visão que ajusta a GC ao paradigma holístico e ao propor um método que permite a análise de *frameworks* mediante a essa perspectiva. A análise de outros modelos, considerando os procedimentos adotados neste estudo, é uma sugestão para pesquisas futuras. Assim, outros estudos podem considerar os achados desta pesquisa para o desenvolvimento de estruturas que englobem a GC em sua totalidade no âmbito organizacional.

Palavras-chave: Gestão do conhecimento; Paradigma holístico; Gestão do conhecimento holística; Moscoso-Zea, Luján-Mora, Cáceres e Schweimanns; Análise de conteúdo.

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1 INTRODUCTION

Knowledge Management (KM) is an emerging field grounded in research and practice (Bolisani & Handzic, 2015; Scholl, König, Meyer & Heisig, 2004). The research evolves upon scientific studies considering several perspectives, e.g. (Al-Rasheed & Berri, 2017; O'Brien, 2017; Serna, Bachiller & Serna, 2017), which are therefore put into practice in different contexts, such as enterprise information systems (Oztemel & Arslankaya, 2012), government (Tuamsuk, Phabu & Vongprasert, 2013), health (Mutuwa & Maiga, 2014; Rojas, Bermudez & Morales, 2013; Sánchez & Dante, 2016) and education (Bem, Coelho & Dandolini, 2016; Farías, Mercado & González, 2016).

The bond between theoretical research and organizational practice is established through the development of KM frameworks. A framework is a schematic representation of reality that aims to demonstrate the main elements of KM and its interfaces (Heisig, 2009; Wai, Hong & Din, 2011). Some of these elements are people, processes, and technology (Farías, Mercado & González, 2016; Sánchez & Dante, 2016). Nevertheless, the rising number of created KM frameworks is already expressive, thus, fostering the need for research aimed at understanding the features regarding the plurality of these proposals.

The studies conducted by Holsapple and Joshi (1999), Rubenstein-Montano, Liebowitz, Buchwalter, McCawa, Newman and Rebeck (2001), Heisig (2009) and Fteimi (2015) analyzed together a total of 270 KM frameworks. The results highlight that KM demands a broad and unifying framework (Holsapple & Joshi, 1999; Rubenstein-Montano, Liebowitz, Buchwalter, McCawa, Newman & Rebeck, 2001) since KM's goal is to implement a holistic approach (Heisig, 2009) that comprehends the elements of this joint management (Fteimi, 2015). Thus, these studies point out the need to promote the development of KM frameworks from the perspective of the holistic paradigm.

The KM research background presented by Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) cite the research presented by Heisig (2009). As mentioned before, Heisig (2009) points out the need to develop holistic KM frameworks. It is also worth mentioning that this framework is a recent proposal, published in 2016, which leads to the likelihood of making an incremental development within the state-of-art field of KM. Thus, both theoretical orientation and temporality instigate the analysis of this framework based on the holistic KM.

In this context, this research is guided by the objective of analyzing the adherence of the Moscoso-Zea framework, Luján-Mora, Cáceres and Schweimanns (2016) to holistic KM. This analysis contributes by a) investigating whether the authors have fully minded the upshots presented by Holsapple and Joshi (1999), Rubenstein-Montano, Liebowitz, Buchwalter, McCawa, Newman and Rebeck (2001), Heisig (2009) and Fteimi (2015); b) reveal how much - in percentile - a recent framework adheres to the holistic KM paradigm; and c) present a method to enable the analysis of frameworks before the standings of holistic KM.

Since Holsapple and Joshi (1999), Rubenstein-Montano, Liebowitz, Buchwalter, McCawa, Newman and Rebeck (2001), Heisig (2009) and Fteimi (2015) did not outline what frames holistic KM, the following section of this paper describes a theoretical view that fits these perspectives. Therefore, the methodology is presented to be used for the analysis of the Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) to KM framework. In sequence, the framework is analyzed, and the results are presented. Finally, the conclusion of this analysis is presented, followed by the bibliographical references used in this paper.

2 THE HOLISTIC KNOWLEDGE MANAGEMENT AND ITS DIMENSIONS

According to Thomas Kuhn (2012), a paradigm consists of a standard of instruments at the disposal of science to address its problems. The Newtonian-Cartesian paradigm, also called the reductionist paradigm, was proposed by René Descartes (1596-1650) and Isaac Newton (1642-1727) and is still the predominant paradigm used in the sciences (Weil, 1991; Capra, 1996; Crema, 2015). This paradigm requires that a phenomenon, or object of study, must be segmented into parts. Therefore, the parts must be analyzed and understood in isolation, leading to an understanding of the phenomenon in its totality (Vergara, 1993; Ferreira,

Cardoso, Corrêa & França, 2009). This allows the research to divide the entire phenomenon into its separate parts in search of an understanding of the event's whole (Crema, 1991).

The reductionist approach to science is applied in several fields. For instance, modularization, as proposed by structured programming in Computer Science, consists of attacking the problem and dividing it into parts (tasks) to better develop a solution (Wirth, 1986). The MergeSort ordering algorithm employs the divide-to-conquer approach and inherently promotes the division of a problem into sub-problems, for subsequent resolution of these sub-problems in order to combine their results to achieve the whole goal: the solution of the original problem (Cormen, Leiserson, Rivest & Stein, 1990; Ziviani, 2014).

In Administration, organizations are segmented into parts, such as organizational charts, roles, and specific profiles. People develop activities, related to their positions and the organizational sector (i.e. parts) to which they belong, guiding the company (i.e. whole) to the accomplishment of their objectives (Ferreira, Cardoso, Corrêa, & França, 2009). KM, which contemplates knowledge in the organizational context and presents several aspects, among them information technology (Skyrme & Amidon, 1997; Wong & Aspinwall, 2005; Sedighi & Zand, 2012; Kumar, Singh & Haleem, 2015), operates in a fragmented business context and also assumes the traits of this paradigm. The KM adjusts hard aspects (coding, interface mediated by information technology) and soft (personalization, personal interface) and splits them into dimensions such as organizational culture (Al-Mabrouk, 2006; Lin & Lin, 2006; Gai & Xu, 2009; Valmohammadi, 2010), strategy (Skyrme & Amidon, 1997; Al-Mabrouk, 2006; Lin & Lin, 2006; Gai & Xu, 2009) and processes (Skyrme & Amidon, 1997; Serna, Bachiller & Serna, 2017; Wong & Aspinwall, 2005; Zieba & Zieba, 2014), to name a few.

However, researchers (Weil, 1991; Capra, 1996; Flach & Behrens, 2008; Maciel & Silva, 2008; Crema, 2015; Pereira, 2018) point out that the reductionist paradigm is insufficient to deal with contemporary and future problems, since these are more intricate than in the past, such as during the time of Descartes and Newton. The reason is that understanding the isolated parts allows one to understand the full object of study, but not the object in its entirety because the connections between the parts also constitute part of the whole. Thus, the holistic paradigm appears as a better approach for current science inquiries.

The holistic paradigm states that the parts - fragmentation is admitted - must be analyzed together for the next connections to be well-preserved (Vergara, 1993; Capra, 1996). Thus, it becomes possible to understand the phenomenon in its completeness, since the connections between the parts also constitute the whole and form the integral, the total, the holos of the phenomenon (Pereira, 2018). While reductionism allows us to understand the full object of study, holism promotes the comprehension of the whole object of study in its absolute completeness, since the connections between the parts are considered within this paradigm (Crema, 2015).

In the scope of KM, the holistic paradigm announces that this management must consider its dimensions (parts) together. Emphatically, Heisig (2009, p. 16) pointed out: "Isolated efforts [...] which only address one KM activity [...] and only one critical success factor like 'information technology' are considered insufficient. Moreover, the goal of KM is to implement a holistic approach towards the management of organisational knowledge". In other terms, it consists of KM frameworks that address "[...] different elements of KM, which should be considered together" (Fteimi, 2015, p. 5).

Establishing the dimensions of holistic KM is a problem that has been tackled by many researchers since the 1970s. The Critical Success Factors perspective is handy to delineate these dimensions, being employed by most of the studies found in the literature. According to Rockart (1979), Critical Success Factors are areas of the organization that drive it toward successful organizational performance. These are the dimensions (i.e. areas) critical to KM's success.

Accordingly, if a dimension is critical to the success of organizational KM, then it is a part of the whole of its management. All critical dimensions to KM's success together make up the whole of holistic KM (Fteimi, 2015). To identify such dimensions, we carried out a systematic review of the literature on the SCOPUS database, using the terms "knowledge management" and "critical success factors". Of the 48 studies returned, 8 were publications unavailable for download, 1 was a duplicate study, and 24 do not theoretically support the presented Critical Success Factors. Another 3 publications were added to the corpus of analysis because the remaining 15 studies frequently cite them. The 18 publications, dating from 1997 to 2015, were investigated

resulting in 13 critical dimensions to the success of KM, which according to Fteimi (2015) should be considered together, namely:

Strategy: consists of the organization's current vision for its long-term goals and objectives (Davenport, De Long & Beers, 1998). Regarding this, the KM should be aligned with the organizational strategy and clarified to members of the organization. As for alignment, the KM strategy should support the strategic objectives of the company through a value proposition (Al-Mabrouk, 2006), even though the value cannot be directly calculated (Skyrme & Amidon, 1997). Furthermore, the KM strategy should be clarified so that the members of the company understand their purpose and support KM towards achieving their organization's strategy (Wong, 2005; Lin & Lin, 2006; Gai & Xu, 2009);

Leadership and support of senior management leaders and top management act as a mainstay which supports KM's proposal (Wong, 2005). Thus, they should support KM by words, acts, and examples of the organization's intention to its members (Gai & Xu, 2009; Valmohammadi, 2010; Wai, Hong & Din, 2011). They should understand the concept of KM, homogenize its message and encourage its activities (Zieba & Zieba, 2014), as well as provide financial, moral, time and targeting of necessary knowledge to be managed (Davenport, De Long & Beers, 1998; Al-Mabrouk, 2006; Arif & Shalhoub, 2014; Kumar, Singh & Haleem, 2015);

KM team: results in a team of professionals to promote KM in the organization (Davenport, De Long & Beers, 1998). These have specific roles (Wong & Aspinwall, 2005; Valmohammadi, 2010), as Chief Knowledge Officer (Davenport, De Long & Beers, 1998), and responsibilities (Arif & Shalhoub, 2014) like establishing knowledge processes (Lin & Lin, 2006), coordinating, managing (Gai & Xu, 2009) and defining the direction to be reached by the KM proposal (Wong, 2005);

Resources (financial, human, material and time): any business initiative needs resources (Lin & Lin, 2006). Within KM, financial resources are needed to obtain specific technological systems (Abbaszadeh, Ebrahimi & Fotouhi, 2010; Al-Mabrouk, 2006) and to maintain the KM team (Wong, 2005). Also, a site for installation (Kumar, Singh & Haleem, 2015), materials, such as computers and other physical items and infrastructure (Sedighi & Zand, 2012), time for people to share their knowledge and other activities regarding this matter (Al-Mabrouk, 2006) are also required for the success of KM initiatives;

Processes and activities: they are the core of KM (Sedighi & Zand, 2012) for directing members of what to do with knowledge (Abbaszadeh, Ebrahimi & Fotouhi, 2010). Some examples, such as identification, storage, sharing and creation of knowledge are adopted in frameworks (Wong, 2005; Anggia, Sensuse, Sucahyo & Rohajawati, 2013) and have characteristics, usually non-linear (Valmohammadi, 2010; Sedighi & Zand, 2012). These should be integrated into the daily flow of work to be performed by individuals (Gai & Xu, 2009; Abbaszadeh, Ebrahimi & Fotouhi, 2010);

Human resources management the management of human resources is vital for KM since it acts together with knowledge holders (Valmohammadi, 2010; Sedighi & Zand, 2012). Thus, the processes of recruitment (Wong & Aspinwall, 2005; Wong, 2005), development (Wong, 2005; Kumar, Singh & Haleem, 2015) and retention (Wong, 2005) of employees act as a pillar for KM (Abbaszadeh, Ebrahimi & Fotouhi, 2010), as they provide the company with individuals who possess knowledge relevant to organizational purposes;

Training and education: KM's vocabulary disengages from the conventional, for instance, making a distinction amongst data, information, and knowledge (Davenport, De Long & Beers, 1998). Thus, employees should be educated to standardize concepts (Akhavan, Jafari & Fathian 2006; Al-Mabrouk, 2006), lexicon, message, roles to be performed by the KM team (Wong, 2005) and their purpose in this management (Davenport, De Long & Beers, 1998). Employees should be trained with the required skills to develop their activities (Anggia, Sensuse, Sucahyo & Rohajawati, 2013), such as handling knowledge-driven tools (Abbaszadeh, Ebrahimi & Fotouhi, 2010) and preparing a promising field for them to participate in KM (Sedighi & Zand, 2012) effectively;

Motivation: consists of the establishment of rewards for employees to engage and practice KM (Al-Mabrouk, 2006; Lin & Lin, 2006), which is a challenge (Davenport, De Long & Beers, 1998). Such incentives may consider rewards (Valmohammadi, 2010) through awards (Davenport, De Long & Beers, 1998), recognition for sharing good ideas, as done in Buckman Laboratories (Davenport, De Long & Beers, 1998; Wong & Aspinwall, 2005), or valuation of the individual through career paths (Zieba & Zieba, 2014);

Teamwork: consists of the gathering of two or more individuals, who influence themselves and interact (Wai, Hong & Din, 2011) and cooperate for a common purpose. Teamwork raises the potential of KM processes and activities (Sedighi & Zand, 2012) and it is a fruitful way to create, share, (Wai, Hong & Din, 2011) and exchange knowledge by promoting the development of organizational knowledge (Akhavan, Jafari & Fathian, 2006). It is worth noting that KM does not eradicate individual work, but recognizes the potential of the union of individuals through common goals (Sedighi & Zand, 2012);

Culture: it is composed of parameters for values, norms and social customs that shape the way people behave (Al-Mabrouk, 2006). Within the KM, a desirable culture should foster knowledge sharing (Davenport, De Long & Beers, 1998) and admission of error (Wong, 2005) in order to create a degree of trust between individuals (Gai & Xu, 2009; Valmohammadi, 2010). This culture tends to establish a collaborative environment (Lin & Lin, 2006) for the appraisal, creation, sharing, and application of knowledge in the organizational scope (Al-Mabrouk, 2006);

Information technology: by the technical aspect, technology is a means by which explicit knowledge tends to be stored (Wong & Aspinwall, 2005) and shared in the organization (Anggia, Sensuse, Sucahyo & Rohajawati, 2013), by the use of a database, intranet (Sedighi & Zand, 2012) and internet (Kumar, Singh & Haleem, 2015). This social aspect, including technology, such as video conferencing and telephones, acts as an element of connection between individuals for the sake of tacit knowledge (Skyrme & Amidon, 1997; Wong & Aspinwall, 2005; Sedighi & Zand, 2012; Kumar, Singh & Haleem, 2015). However, this dimension must be understood as a means to KM and not as a definitive solution (Abbaszadeh, Ebrahimi & Fotouhi, 2010; Valmohammadi, 2010);

Measurement: measuring is required in order to assess the fulfillment of objectives and gauge the progress of KM (Valmohammadi, 2010; Kumar, Singh & Haleem, 2015). It comprises establishing measurable goals for further measurement (Lin & Lin, 2006), usually defined by financial indicators or metrics, as well as acceptable non-financial measurements (Gai & Xu, 2009) due to the intangibility of knowledge. Some measurements make use of organizational diagnoses (Akhavan, Jafari & Fathian, 2006) and the valuation of knowledge. Regarding the latter kind of measurement, notable efforts are being employed by the field of study called intellectual capital (Al-Mabrouk, 2006; Sedighi & Zand, 2012);

Pilot Project: this regards the introduction of KM in a smaller organizational scope in order to obtain lessons learned and best practices, aiming at the extension on a broader business scope (Skyrme & Amidon, 1997; Akhavan, Jafari & Fathian 2006). The initiatives made by Microsoft, Hewlett-Packard and BP Exploration (oil segment), according to Akhavan, Jafari, and Fathian (2006), used pilot programs that, after testing at a smaller scale, enabled the deployment of the KM to the full organizational scope.

Therefore, the previously consolidated dimensions constitute the critical parts to the success of holistic KM that should be considered together in a KM framework. These dimensions are addressed in the analyses of Moscoso-Zea, Luján-Mora, Cáceres and, Schweimanns (2016). The methodological procedures used in this examination are presented in the following section.

3 METHOD

In order to examine of the Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns framework (2016), Content Analysis (Bardin, 1997) is employed. Content Analysis allows a scientific production to be examined in order to make inferences and quantify elements identified in the text. In this method, the first step is to define a registration unit, which is the element to be investigated by the examination of the scientific production. In this research, the registration units are the dimensions of the holistic KM (HKM), presented in the previous section.

The application of this method has two phases. In the first one, the article with the Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) framework definition is read as a whole, aiming to identify the presence or absence of HKM dimensions. By using a qualitative interpretive approach, the subjectivity of the researcher is admitted (Creswell, 2014). However, for the results to be trustworthy, direct citations are used as

a way to allow the reader to understand the inferences made. Thus, the application of the method emphasizes the methodological rigor indicated by Flick (2014), which allows for checking of the results.

In sequence, we identified the dimensions of the HKM in the framework, and these are analyzed by the quantitative approach (Creswell, 2014). This approach is based on the use of mathematical techniques. In this research, the HKM dimensions are quantified as a percentile in order to show the degree of adhesion of this framework to HKM. Thus, this result reveals its adherence to the HKM perspective, pointed out as required to be considered in the development of KM frameworks.

In summary, the Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) framework is examined using a Qualitative Content Analysis, in order to identify the existence or absence of the HKM dimensions. Subsequently, these dimensions are quantified to obtain the percentage of adhesion of this framework to HKM. Thus, these procedures - interpretive reading and percentile calculations, respectively - are manual in nature.

The justification for the analysis of this framework is based on two related aspects, theoretical orientation and temporality. The theoretical orientation is based on the fact that Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) cite Heisig (2009) in their proposed framework. Heisig (2009) points out the need to develop HKM frameworks. Furthermore, the KM framework development is based on Enterprise Architecture (EA), in which the authors state "EA addresses the need to manage increasing complexity and deal with continuous change by providing a holistic view of the organization, including their organizational components and their relations" (Moscoso-Zea, Luján-Mora, Cáceres & Schweimanns, 2016), p. 245, authors' underlining). Therefore, it is plausible to infer that Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) are guided by this feat. As for temporality, this framework was published in 2016, which refers to the possibility that it presents an evolution concerning what has already been done in the KM field. Thus, both theoretical orientation and temporality instigate the analysis of this framework before the HKM.

Besides, it is worth noting that the results, coming from the analysis of this framework, are not intended to grant credit or discredit to it. It is only sought to understand if new frameworks of KM have been tackling the need to approach this research field from the perspective of the holistic paradigm, pointed out as essential for success in KM.

4 ANALYSIS AND RESULTS

Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) assert that the frameworks, considering their proposal, "[...] have not been well explained in terms of how to implement them in practice to cover all KM dimensions" (Moscoso-Zea, Luján-Mora, Cáceres & Schweimanns, 2016, p. 244). By this statement the authors are attempting to "[...] present a KM framework which can be used in practice to capture, use and transfer knowledge" (Moscoso-Zea, Luján-Mora, Cáceres & Schweimanns, 2016, p. 245), claiming it as a proposal that might serve as a guide for organizations.

The researchers' framework addresses the types of tacit and implicit knowledge along with the dimensions of people (1), processes (2) and technology (3). Explicit knowledge is one that can be formulated, documented and reproduced; while "Implicit knowledge also known as tacit knowledge is knowledge that is difficult to document or formulate, and is normally associated with human knowledge" (Moscoso-Zea, Luján-Mora, Cáceres & Schweimanns, 2016, p. 247, authors' underlining), treating implicit knowledge as tantamount to tacit, thus diverging from the perspective of Nickols (2000) e Grant (2007).

The people dimension (1) clarifies that individuals are the knowledge holders and the mainstay of KM. The authors' framework is careful to "[...] capture and to transfer knowledge from people in organizations" (Moscoso-Zea, Luján-Mora, Cáceres & Schweimanns, 2016, p. 246). The process dimension (2) reflects on how people perform their activities in the organization and merge with technology because it is a way that supports individuals in their tasks (Moscoso-Zea, Luján-Mora, Cáceres & Schweimanns, 2016).

The technology dimension (3) consists of the Enterprise Architecture (EA) and Business Intelligence (BI) elements. The authors point out that EA aims to optimize organizational processes and support business strategy, adopting the following definition: "EA is defined as 'a coherent set of principles, methods and models

that are used in the design, realization and maintenance of an enterprise's business architecture, organizational structure, information architecture and technology architecture with respect to the corporate strategy" (Moscoso-Zea, Luján-Mora, Cáceres & Schweimanns, 2016, p. 244). BI is understood as

[...] the conversion of organizations resources to knowledge. It is the data mining and the integration of information from corporate data warehouses to produce large amounts of information needed for effective decision making process and for planning strategically to achieve a competitive advantage in its industry. (Moscoso-Zea, Luján-Mora, Cáceres & Schweimanns, 2016, p. 244-245)

By means of the conjunction of these dimensions and types of knowledge, Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) argue that their framework "[...]" details how a KM implementation should be done in order to capture explicit and implicit knowledge" (Moscoso-Zea, Luján-Mora, Cáceres & Schweimanns, 2016, p. 244) by printing a procedural order to be followed to achieve the above. The KM processes set to the framework, adhering to the dimension "Processes and activities" of holistic KM, are at the core of KM (Sedighi & Zand, 2012) because they state what can be done with knowledge (Abbaszadeh, Ebrahimi & Fotouhi, 2010). In the Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) model, such processes are production (a), collection (b), presentation (c) and use (d) of knowledge.

Implicit knowledge is produced (a) by the people who conduct the organization's processes. The production of knowledge (a) is not described by Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) in order to demonstrate how such knowledge is created, as done in the proposal of Nonaka and Takeuchi (1995), which deals with the process of knowledge creation and presents tools for its operationalization. Thus, the analyzed framework assumes that knowledge is produced by people and serves as input to the next step: collection step.

This knowledge is collected (b) by BI technology and EA. Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) do not clarify how this collection happens, because since the technological devices capture the tacit knowledge, people must articulate it somehow in order to be processed by the BI tools and EA. As in the production process (a), the collection process (b) is obscure in the framework. Regardless, the framework model's description implies two methods of knowledge collection: technological tools can extract information from other technological systems or receive them through manual input made by people.

In both situations, there would be a knowledge externalization process involved. In the former, the individual would have to articulate his knowledge in a format to be inputted into the system manually. In the latter, the same should be done, but in another system. Thus, the technological integration enables collection of the knowledge, stored as information, by the BI tool, for example. Briefly, the processes of production (a) and collection (b) are not prescribed and do not indicate, in their description, actions that could be done to create or capture knowledge.

The core of the Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) framework is the technology dimension (3). Since technology is a medium whereby explicit knowledge tend to be stored (Wong & Aspinwall, 2005) and shared in the organization (Anggia, Sensuse, Suchahyo & Rohajawati, 2013), through the use of a database, intranet (Sedighi & Zand, 2012) and internet (Kumar, Singh & Haleem, 2015), regarding the technical aspect, the framework adheres to the "Information technology" dimension of HKM.

Once knowledge is captured (b), it is processed by the BI and EA. Both tend to allow for knowledge discovery in databases. BI employs the Extraction, Transformation, and Loading (ETL) process in order to extract data from other systems, treat it and upload it to a data center for analysis. In EA, a scanned document can be captured by this tool and translated into outlines that "[...] describe organizational structures (people), business processes, applications and technological infrastructure" (Moscoso-Zea, Luján-Mora, Cáceres & Schweimanns, 2016, p. 247).

Thus, technology, through the use of BI and EA tools, nurtures the diagramming of explicit knowledge for its visualization in different perspectives. In order to visualize this knowledge, Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) emphasize that a technological system of KM can be useful in this sense. The use of BI, EA, and a KM technology system converges with the combination process of the Nonaka and Takeuchi (1995) SECI framework; however, Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) do not present an association of the process of these technologies with the SECI combination phase.

After transformation of the data processed by technological means, the presentation (c) of this knowledge can be visualized through reports and panels, in an explicit format. So, this knowledge can be used (d) by the people and processes of the organization as support in the decision making, for instance, restarting the iterative cycle of the framework (Moscoso-Zea, Luján-Mora, Cáceres & Schweimanns, 2016).

Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns state that their framework “[...] details how a KM implementation should be done in order to capture explicit and implicit knowledge” (Moscoso-Zea, Luján-Mora, Cáceres & Schweimanns, 2016, p. 244, authors' underlining). This clarification is not presented transparently, since the production process (a) of the tacit knowledge by the people, as well as their collection (b) by the technology, are obscure in the analyzed framework. The framework presentation mainly discusses the role of technology in information processing for the discovery of knowledge and through the processes of the framework. It assumes that explicit knowledge is present in all phases, being derived from the tacit knowledge, which is not directly addressed in the study.

The authors conclude that “[...] the use of BI and EA tools bridges the gap of capturing all the knowledge dimensions” (Moscoso-Zea, Luján-Mora, Cáceres & Schweimanns, 2016, p. 248), with the dimensions of people, processes, and technology. This statement is rather comprehensive. From the technological point of view, one can even raise this as a hypothesis to be investigated, but on the KM side, in which people, processes, strategies, among other dimensions are considered, this statement presents itself as premature.

Finally, the Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) model results in a strictly technologically focused approach that orchestrates and describes how BI and EA technologies can be useful for the discovery of knowledge. In synthesis, the framework presents the following holistic KM dimensions:

Strategy: no;

Leadership and support of senior management: not specified;

KM team: not specified;

Resources (financial, human, material and time): not specified;

Processes and activities: yes. Production, collection, presentation and use;

Human resources management: not specified;

Training and education: not specified;

Motivation: not specified;

Teamwork: not specified;

Culture: not specified;

Information technology: yes. Framework core;

Measurement: not specified;

Pilot Project: not specified.

As shown previously, the Moscoso-Zea framework, Luján-Mora, Cáceres and Schweimanns (2016) has a technological focus. However, the authors point out that the model addresses all dimensions of knowledge and provides a holistic view, including its organizational components and relationships. What can be seen is that the framework presented tends to address the whole of the Information technology dimension, but not the whole of KM, made up of 13 dimensions, which includes technology.

From this point of view, the presented holistic perspective is grounded on the technological aspect, missing better treatment of the other dimensions critical to the success of holistic KM. A consequence of this approach is failing to achieve corporate objectives. For instance, the strategy alignment regarding the organizational with the KM (Skyrme & Amidon, 1997; Al-Mabrouk, 2006) is imperative to let the KM support the corporate goals. Besides, this alignment must be clarified to the staff (Wong, 2005; Lin & Lin, 2006; Gai & Xu, 2009), so the KM objectives can be achieved and, consequently, those of the organization.

Furthermore, the leadership and support of senior management act as a means of sustaining KM (Wong, 2005), through resources such as financial, moral, time and strategic knowledge targeting to be managed (Davenport, De Long & Beers, 1998; Al-Mabrouk, 2006; Arif & Shalhoub, 2014; Kumar, Singh & Haleem, 2015). Thus, the dimensions “Leadership and support of senior management” and “Strategy” constitute vital dimensions for the success of KM. Neglecting a proper treatment for them leaves the KM

incomplete, regarding the precepts of the HKM, not contemplating all the critical dimensions for the success of this form of management.

Considering the analysis conducted on the Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016), the above-weighted dimensions are presented in Fig. 1, which expresses the adherence of the framework to the dimensions of the holistic KM established by this research. The presence of a dimension places it on scale 1 (outer edge) of the graph, and its absence marks it on the scale 0 (center).

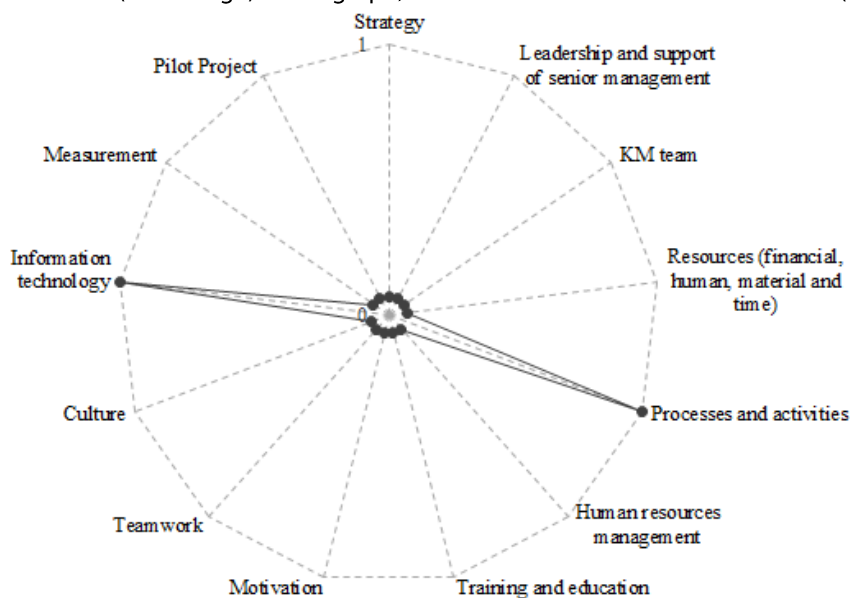


Figure 1. Adherence of the Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns framework (2016) to the holistic Knowledge Management.
Source: The authors.

Therefore, the Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns (2016) framework includes the dimensions "Processes and activities" and "Information technology," denoting that 15.4% (2 of the total of 13 dimensions) adhere to the holistic KM framework, according to the presented characterizations in this paper.

5 CONCLUSION

This research was conducted with the intent to analyze the adherence of the Moscoso-Zea, Luján-Mora, Cáceres and Schweimanns framework (2016) to the holistic KM. First, the theoretical fit of KM in relation to the holistic paradigm was developed in order to characterize this form of management and to highlight the dimensions to be contemplated in a framework based on this paradigm. Through mixed methodological procedures, which made use of the qualitative content analysis and the quantitative approach, the degree of adherence of the framework to holistic KM was assessed.

As a result, the analyzed framework adheres in 15.4% to the dimensions of holistic KM. This result announces that the holistic framework gap has not yet been filled. However, this result is not conclusive in this announcement, since there is a need for analysis of other frameworks for a more consistent finding. At this point, this research contributes from three perspectives.

The first, to investigate whether the academy has been accepting the conclusions of studies that point to the holistic paradigm as necessary to the development of KM frameworks. In this perspective, we find the need for continuity of research that intends to develop comprehensive frameworks that together consider all the dimensions of holistic KM presented in this research. Although the analyzed framework took into account a holistic view in its development, the theoretical background focused on technology only enabled the development of a comprehensive solution to a part of the whole according to a broader perspective of HKM such as presented in this research.

The second contribution is related to the percentage view of how much the framework adheres to KM's holistic paradigm. In this perspective, the proponents of the framework, dating from 2016, as well as other researchers, can take care that their proposals are positioned more solidly on these KM dimensions.

The third contribution is the presentation of a method to promote the analysis of frameworks considering the imperative of holistic KM. In this perspective, other researchers can make analyzes, considering the methods presented in this research, in order to reveal a broader perspective of how well KM has been developed for a holistic approach. Thus, the analysis of other frameworks is a suggestion for future research.

It is worth noting again that there is no attempt, from this research, to grant merit or demerit to the framework. Developing a framework is a challenge since there are several organizational aspects to be considered in the knowledge-oriented negotiations. Therefore, the proposition of a framework already stands as a contribution. However, it is necessary to contemplate knowledge in its whole, this being a difficult requirement for successful KM in the various contexts of its application.

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