

Strategic knowledge management: In search of a knowledge-based organizational model

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Abstract. This paper discusses the results and propositions of organizational knowledge management research conducted in the period 2001-2007. This longitudinal study had the unique goal of investigating and analyzing “Knowledge Management” (KM) processes effectively implemented in world class organizations. The main objective was to investigate and analyze the conceptions, motivations, practices, metrics and results of KM processes implemented in different industries. The first set of studies involved 20 world cases related in the literature and served as a basis for a theoretical framework entitled “KM Integrative Conceptual Mapping Proposition”. This theoretical proposal was then tested in a qualitative study in three large organizations in Brazil. The results of the qualitative study validated the mapping proposition and left questions for new research concerning the implementation of a knowledge-based organizational model strategy.

Key words: Knowledge management, strategic knowledge management, strategic information management, “Ba”, modelo organizacional baseado no conhecimento.

1. Knowledge Management (KM): from semantic drift to conceptual shift

The current debate about KM also appears extensively in recent publications and research works by mainstream authors in the field of librarian and information science, such as Davenport and Cronin (2000). They suggest that

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(...) though considerable academic and professional attention has been focused on this area in the past decade, the concept is not yet stable: the term appears to be used differently across domains with each claiming that its partial understanding represents a definitive articulation of the concept (Davenport & Cronin, 2000, p. 1).

Their inquiry is seminal: “*Is it a semantic drift or a conceptual shift?*”. Davenport and Cronin (2000) explored the concept of KM in the context of three areas committed to KM, that is to say, (i) librarian and information science (KM1 – information management or KM by another name), (ii) process engineering (KM 2 – business processes, ontologies, the management of ‘know-how’) and (iii) organizational theory (KM-3 – from knowledge as a resource to knowledge as a capability; tacit and explicit knowledge conversions; the context, “Ba” or organizational space for knowledge). The objective of their proposal – called “KM Triad Framework” – is the proposition of a tool or instrument of analysis suitable for exploring the tensions that might arise in any organization committed to KM, where different domains have different understandings. The “KM Triad” can be used to identify conflicts or territorial struggles and to contribute to collective understanding by all interactors in the KM space in organizations. Their conclusion suggests that in evolutionary terms, there is a major shift from information management (KM1) to informatizing (KM2) to information ethnologies (KM3). Knowledge management is not information management. Information management is just one of the components of knowledge management and the latter also includes topics on the creation and use of knowledge within and across organizational boundaries.

2. Strategic Knowledge Management: models, maps and conceptual trials

Alvarenga Neto (2005) proposed a KM integrative conceptual mapping proposition. His theoretical framework was based on three basic conceptions: (i) a strategic conception of information and knowledge – as proposed by Choo (1998) – factors of competitiveness for organizations and nations; (ii) the creation of an organizational space (at the tactical level) for knowledge, the enabling context or “Ba”: the favorable conditions that should be provided by organizations in order to use the best information and knowledge available – as suggested by Von Krogh, Ichijo and Nonaka (2001); (iii) the introduction of such a strategy at the operational level through several managerial approaches and information technology tools which are susceptible to communication and orchestration, metaphorically named here as a “KM umbrella”.

2.1. A Strategic Conception for Information and Knowledge in Organizations

Choo (1998) asserts that “knowing organizations” are those that use information strategically in the context of three arenas, namely, (a) sense making, (b) knowledge creation and (c) decision making. Concerning (a) sense making, its immediate goal is to allow the organizations’ members the construction of a mutual and shared understanding of what the organization is and what it does. Strategic reflections must be undertaken concerning the organization’s mission, vision, values and culture, allowing

its members to bring meaning to their lives and jobs. An ambitious and challenging vision or state of the future reveals the organization's intention and it is extremely valuable, contributing to communicating the types of knowledge that are welcomed and will be nurtured. Sense making's long term goal is the warranty that organizations will adapt and continue to prosper in a dynamic and complex environment through activities of prospect and interpretation of relevant information that allow them to understand changes, trends and scenarios about clients, suppliers, competitors and other actors in the external environment. Organizations face issues such as reduction of uncertainty and management of ambiguity. Competitive, competitor and social intelligences, environmental scanning, market research and similar activities are organizational initiatives that aim to construct meaning about issues for which there are no clear answers. Table 1 presents the organizational sense-making process through an information perspective.

Table 1
The Sense Making Process (adapted from Choo, 1998)

Information Needs	Information Seeking	Information Use
What are the new trends in our industry?	Environmental scanning	Reduction of uncertainty and management of ambiguity: collective interpretation
What are the core competences of our competitors?	Information systems	Shared knowledge construction
What do our clients value?	Research	Decision Making

(b) Knowledge creation is a process that allows an organization to create or acquire, organize and process information in order to generate new knowledge through organizational learning. The new knowledge generated, in turn, allows the organization to develop new abilities and capabilities, create new products and new services, improve the existing ones and redesign its organizational processes. Table 2 supplies an analogy between knowledge creation models and permits inferences between their differences and likenesses.

The third component of Choo's (1998) model involves (c) decision-making. The firm must choose the best option among those that are plausible and presented and pursue it based on the organization's strategy. The decision-making process in organizations is constrained by the bounded rationality principle, as advocated by March and Simon (1975). Many inferences can be made about the decision theory. Choo (1998) and also March and Simon (1975) list a few of them: (i) the decision-making process is driven by the search for alternatives that are satisfactory or good enough, rather than seeking for the optimal solution; (ii) the choice of one single alternative implies giving up the

Table 2
Knowledge Creation Processes (Choo, 1998, p. 130)

KNOWLEDGE PROCESSES (WIKSTRÖM & NORMANN, 1994)	KNOWLEDGE CREATION PHASES (NONAKA & TAKEUCHI, 1995)	KNOWLEDGE-BUILDING ACTIVITIES (LEONARD-BARTON, 1995)
<i>Generative Processes:</i> Generating new knowledge	Sharing tacit knowledge Creating concepts	Shared problem solving Experimenting and prototyping
<i>Productive Processes:</i> operationalizing new knowledge	Justifying concepts Building an archetype	Implementing and integrating new processes and tools
<i>Representative Processes:</i> Diffusing and transferring new knowledge	Cross-levelling knowledge	Importing knowledge

remaining ones and concomitantly the emergence of trade-offs or costs of opportunity; (iii) a completely rational decision would require information beyond what the organization is able to collect, and information processing beyond the human capacity to execute.

2.2. *The creation of an organizational space for knowledge, the enabling context or “Ba”*

The creation of organizational knowledge is, in fact, the augmentation of knowledge created by individuals, once the contextual conditions that should be supplied or enabled by the organization are fulfilled. This is what Von Krogh, Ichijo and Nonaka (2001) call “Ba”, enabling conditions or enabling context. “Ba” is needed at the tactical level in order to bridge the existing gap between strategy and action. In this context, understanding of the word “management” when associated with the word “knowledge” should not mean control, but promotion of activities of knowledge creation and sharing in the organizational space. Hence, KM assumes a new hermeneutic perspective – from knowledge as a resource to knowledge as a capability, from knowledge management to management towards knowledge. Nonaka and Takeuchi (1995) and Von Krogh, Ichijo and Nonaka (2001) list the many elements of “Ba”, namely: creative chaos, redundancy, layout, organizational culture and human behaviour, leadership, intention or vision of future and empowerment, as well as organizational structure and layout, among others.

2.3. *The “KM Umbrella” metaphor*

Finally, the “KM Umbrella” metaphor assumes that within its boundaries, many themes, ideas, managerial approaches and IT tools concerning information and knowledge in the organizational context are addressed and susceptible to communication and orchestration. It is imperative to highlight a few of them, such as, ‘strategic information management’, ‘intellectual capital’, ‘organizational learning’, ‘competitive intelligence’ and ‘communities of practice’. It is exactly the interrelation and permeability between those many themes that enable and delimitate the creation of a possible theoretical framework

that can be entitled “knowledge management”. Feedback is achieved by classifying the themes under the “KM umbrella” in the model proposed by Choo (1998). Competitive intelligence and environmental scanning are initiatives – managerial approaches and IT tools – that set the strategic concept of sense-making into action. That is, sense-making is a strategic conception and, e.g., competitive intelligence, an action-driven managerial approach – a way to turn strategy into action is by using the right managerial approach or IT tool that can be found under the “KM umbrella”. Communities of practice, strategic information management and organizational learning fit into the domain of knowledge creation.

Figure 1 represents and summarizes the integrative conceptual map used both as a theoretical framework and a guide for field research and data collection.

Corroborating with the integrative conceptual map above, Alvarenga Neto, Barbosa and Pereira (2007) proposed a conceptual basis towards a management model for knowledge-based organizations or knowing organizations. Their starting point is a quadripartite organizational construction, as follows: (i) strategy: focus on the firm’s knowledge and core competencies; (ii) structure: seeks flexibility for knowledge creation and dissemination; (iii) technology/processes: includes the functions of identification, capture, selection and validation, organization and storage, sharing, access and distribution, application and creation of knowledge; (iv) people: skilled knowledge workers. They assert that their proposal is performed through practices such as organizational learning, intellectual capital management and competitive intelligence, among others. Figure 2 summarizes the quadripartite organizational construction of the “Knowing Organization”.

Figure 1. KM: an Integrative Conceptual Model Proposition (Alvarenga Neto, 2005)

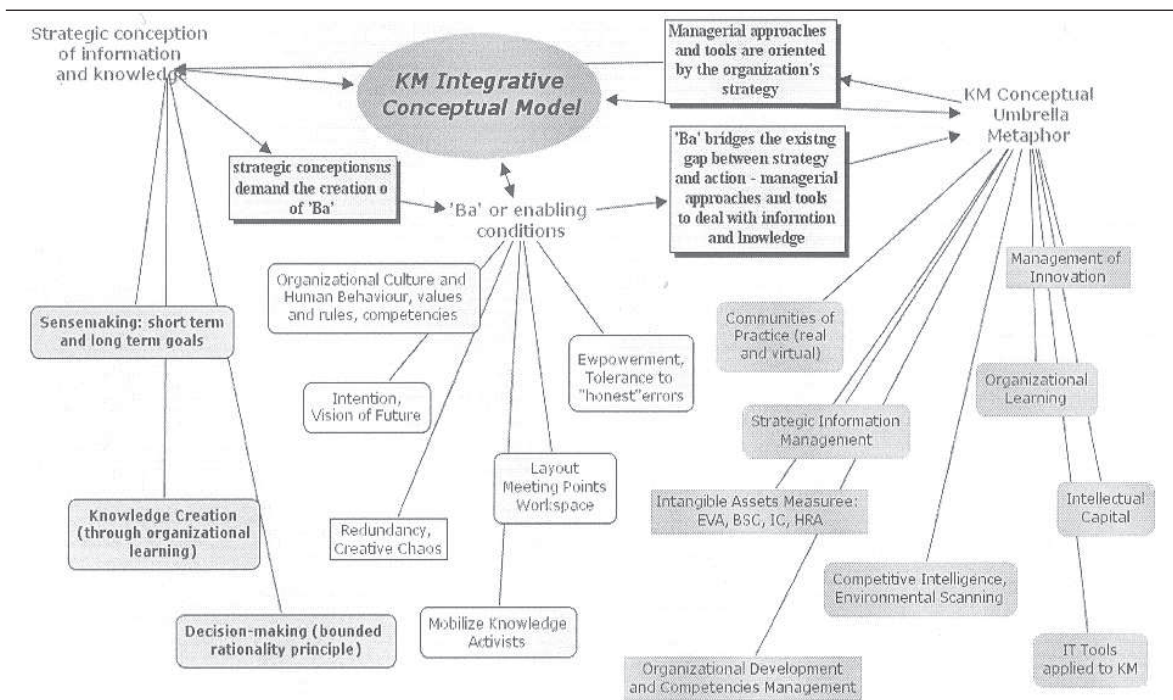


Figure 2. A quadripartite organizational construction for the “Knowing Organization” (Alvarenga Neto, Barbosa & Pereira, 2005)

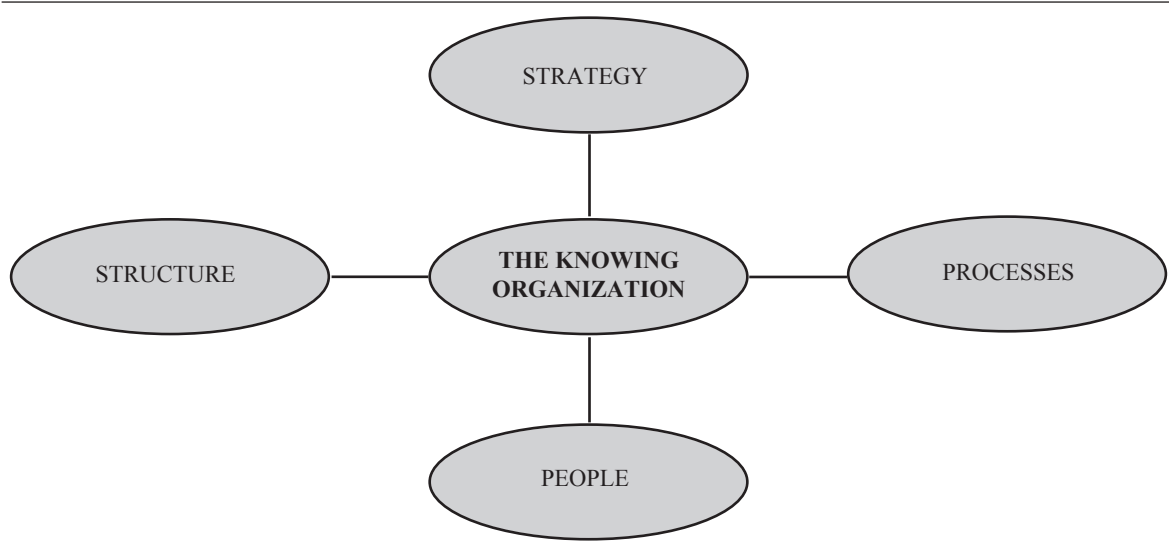


Figure 1 and Figure 2 present a few common points that were investigated. In the next section, before presenting the results, the methodologies are explained.

3. The Method

Two sets of studies will be presented in a longitudinal perspective (2001-2007). This longitudinal research had the unique goal of investigating and analyzing “Knowledge Management” (KM) processes effectively implemented in world class organizations. The main objective was to investigate and analyze the conceptions, motivations, practices, metrics and results of KM processes implemented in different industries. The first set of studies involved 20 world cases reported in the literature and served as a basis for the theoretical framework entitled “KM Integrative Conceptual Mapping Proposition”. This theoretical proposal was then tested in a qualitative study with three large organizations in Brazil. In fact, in order to verify and test the KM integrative conceptual mapping proposition, case studies in three large Brazilian organizations were conducted. The analytical model was divided into five analytical categories as guidelines for field research. A *sine qua non* condition in choosing the organizations was the fact that they should have already had KM implemented and, in this respect, three organizations – each belonging to one of three economic sectors – were chosen, that is to say, Centro de Tecnologia Canavieira (CTC), Siemens do Brasil and Pricewaterhouse and Coopers (PwC). The qualitative research strategy used was the study of multiple cases with incorporated units of analysis and three criteria were observed for judgment of the quality of the research project: validity of the construct, external validity and reliability. Multiple sources of evidence were used

– semi-structured interviews, documental research and direct observation – and the proposal of Miles and Huberman (1984) was adopted in order to analyze the data collected in the field. Their proposal consists of three flows of activities: data reduction, data displays and conclusion drawing/verification. The field research was carried out in the cities of (i) Piracicaba, SP, (ii) São Paulo, SP and (iii) Belo Horizonte, MG in the period from March 19th 2005 to April 12th 2005. A total of 17 interviews were conducted, which resulted in 35 hours of tape recording and 533 pages of transcriptions. As for documental research, approximately 1600 pages were analyzed with a loss of 12%. Four data reduction cycles were necessary until data could be incorporated in the final work and eight reduction displays were produced based on the analytical categories created. The results will be presented in the following section.

4. Results

4.1. First set of studies: 20 world KM cases related in the literature

Alvarenga Neto (2002) conducted a study based on 20 world KM cases reported in business literature. The sources for his study included magazines (such as CIO and Darwin magazines), public databases available on the internet (such as Webcom) and university databases (such as Texas University). His model of analysis model involved multiple variables but the main one revolved around Choo's (1998) proposal for the three arenas of strategic use of information in organizations: sense-making, knowledge creation and decision-making. The results revealed that the main emphasis of the 20 cases resided in the area of knowledge creation, with a strong commitment to information management. Among the list of practices mentioned in his research, those such as competitive intelligence, communities of practice, organizational learning, intellectual capital management and a few others were found. The findings of his study were the basis for the proposal shown in Figure 1 and a second set of studies was conducted.

4.2. Second set of studies: case study research in three large organizations in Brazil

Based on the theoretical framework designed as a result of the first set of studies, the main objective of the second set of studies was to investigate and analyze the conceptions, motivations, practices and results of KM in three large Brazilian organizations. The analytical model was divided into four analytical categories as guidelines for field research, namely: (i) reasons or motives that led the organization to KM initiatives; (ii) the firm's definition or understanding of KM or/and KM concepts; (iii) aspects, managerial approaches and tools considered under the aegis of the firm's KM area, program or project ("KM Conceptual Umbrella"); (iv) main results related to or generated by KM initiatives. The results are presented below.

4.2.1. Main reasons or motives for the adoption of KM initiatives

The main reasons or motives for the adoption of KM in the organizations of this study concerned the following aspects:

- i. Lack of practices of protection and sharing of information and knowledge, leading the organization to a constant reinvention of the wheel and continuous duplication of efforts;
- ii. Problems with data/information collection, treatment, organization and dissemination, indicating lack of strategic information management;
- iii. Recognition that both information and knowledge are the main factors of competitiveness in modern times;
- iv. Need for the creation of an organizational space for knowledge, also known as “Ba” or “enabling conditions”, vis-a-vis the need to address cultural and behavioral issues.

4.2.2. Organizational definitions for KM

There was a lack of consensus concerning a definition for KM in the organizations studied. Nevertheless, a few terms were common in the answers of interviewees (content analysis), namely, process, information, knowledge, innovation, tacit-explicit knowledge conversion, registration, sharing, organizational culture, access and use, among others.

4.2.3. Managerial approaches and tools considered under the “KM Umbrella”

The next step was to investigate the part of the proposed model named “KM umbrella”. Henceforth, the interviewees were asked to answer which aspects, managerial approaches and tools were considered under the aegis of the KM area, program or project in their respective organizations. A comprehensive summary of the answers is: (a) environmental scanning, competitive intelligence, market research, (b) strategic information management, electronic document management, process mapping, (c) intellectual capital management, competencies and people management, intangible assets, (d) communities of practice – both real and virtual, (e) organizational learning, including e-learning, (f) decision making support and (f) creation of the enabling conditions or “Ba”.

The interviewees were also asked about the emphasis or priority of KM in their organizations. Data analysis revealed that the starting point for KM initiatives – strategic information management – was reaching a stage of concept maturity, with consciousness that it is a permanent process. The organizations in this study were making efforts to advance in aspects related to sharing, organizational culture and the creation of “Ba” or the enabling conditions. We should highlight the existence of many initiatives that are genuinely Brazilian initiatives, adopted to address the creation of “Ba”, like the “Cultural Moment” at CTC and the “Knowledge Happy Hour” at Siemens.

4.2.4. Results of KM initiatives

Finally, the main results related to or generated by KM were nominated by the interviewees: (i) innovation cycle reduction and faster time-to-market solutions; (ii) market share and portfolio

increase; (iii) facilitation of expertise and people placement; (iv) creation of an organizational memory and repository; (v) increase in learning capacity and (vi) ability to anticipate competitors' actions and movements.

5. Conclusions

This paper's main goal was to discuss the results and propositions of organizational knowledge management research conducted in the period 2001-2007. Far from proposing a definite solution or a hermetic model, it hopes to contribute to a better understanding of the field, its borders, scopes and connections. A KM integrative model/map was elaborated starting from that proposed by Choo (1998), associated to the "Ba" or enabling conditions proposition conceived by Von Krogh, Ichijo and Nonaka (2001), in addition to the various managerial approaches and tools metaphorically called the "KM umbrella". These three interconnected ideas contribute to the construction of a theoretical framework as a starting point. Another corollary of this work assumed the task of testing this integrative conceptual KM framework through discussion and analysis of Brazilian research in three world class organizations committed to KM.

Both the presuppositions and the theoretical framework presented in the literature review (Figure 1) were confirmed in the cases studied so far. This framework integrates the strategic, tactical and operational levels of the organizations concerning KM initiatives, e.g.: the strategic concept of "sense-making" is driven into action by using managerial approaches or tools for this purpose – found in the "KM Conceptual Umbrella – such as competitive intelligence, market research or environmental scanning; the strategic concept of "knowledge creation" is activated by using managerial approaches or tools such as "strategic information management", "intellectual capital" and "communities of practices", among others. From strategy to action, "Ba" is needed to bridge the gap, as it creates the favorable context for aspects including creativity, innovation, empowerment and creative chaos. It is interesting to observe that the managerial approaches and tools considered in the "KM Umbrella Metaphor" are also interconnected: strategic information management is the starting point that can lead to the strategic management of intellectual capital, the organization of communities of practice, the start-up of organizational memory and organizational learning and so on.

The results identified that the main challenges facing organizations committed to KM are focused on change management, cultural and behavioral issues and the creation of an enabling context that favors the creation, use and share of information and knowledge.

The conclusions suggest that KM is an oxymoron, perhaps an impossibility. Knowledge as such cannot be managed; it is just promoted or stimulated through the creation of a favorable organizational context. There is strong qualitative evidence of a major shift in the context of the organizations contemplated in this study: from "knowledge management" to the "management of 'Ba'".

As a result of this paper, new questions arose concerning the implementation of a knowledge-based organizational model strategy. Is there a pure model or is it a hybrid based on previous propositions? If it is a hybrid, which elements are quintessential? Another question is whether the KM

integrative conceptual mapping proposition and the quadripartite organizational architecture proposed as a model for knowledge based organizations can be fused towards a model of analysis for future research.

References

- Alvarenga Neto, R. (2005). *Gestão do conhecimento em organizações: proposta de mapeamento conceitual integrativo*. Doctoral thesis in Information Science. Belo Horizonte: PPGCI, Escola de Ciência da Informação da UFMG.
- Alvarenga Neto, R. (2002). *Gestão da informação e do conhecimento nas organizações: análise de casos relatados em organizações públicas e privadas*. Master thesis in Information Science. Belo Horizonte: PPGCI, Escola de Ciência da Informação da UFMG.
- Alvarenga Neto, R., Barbosa, R. R., & Pereira, H. J. (2007). Gestão do conhecimento ou gestão de organizações da era do conhecimento? Um ensaio teórico prático a partir de intervenções na realidade brasileira. *Perspectivas em Ciência da Informação*, 12 (1), 5-24. Disponível em <http://www.eci.ufmg.br/pcionline/>
- Choo, C. (1998). *The knowing organization: how organizations use information for construct meaning, create knowledge and make decisions*. New York: Oxford Press.
- Davenport, E., & Cronin, B. (2000). Knowledge management: semantic drift or conceptual shift? *Journal of Education for Library and Information Science*, 41 (4), 294-306.
- March, J., & Simon, H. (1975). *Limites cognitivos da racionalidade. Teoria das organizações*. Rio de Janeiro: Fundação Getúlio Vargas.
- Miles, M., & Huberman, A. (1984). *Qualitative data analysis: a sourcebook of new methods*. Newbury Park, CA: Sage Publications.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: how Japanese companies create the dynamics of innovation*. New York: Oxford University Press.
- Von Krogh, G., Ichijo, K., & Nonaka, I. (2001). *Facilitando a criação de conhecimento*. Rio de Janeiro: Campus.

Resumo. Este artigo aborda os resultados e proposições da investigação da gestão do conhecimento organizacional conduzida no período de 2001-2007. Este estudo longitudinal teve como único objectivo o de investigar e analisar os processos de “Gestão do Conhecimento” (GC) eficazmente implementados no universo das organizações trabalham ou têm influência fora das fronteiras nacionais. O principal objectivo foi o de investigar e analisar concepções, motivações, práticas, métricas e resultados dos processos de GC existentes em diferentes indústrias. O primeiro conjunto de estudos envolveu 20 casos descritos na literatura e serviu de base para a abordagem teórica designada “Proposição do Mapa Conceptual Integrativo da GC”. Esta proposta teórica foi posteriormente testada através de um estudo qualitativo em três organizações de grande dimensão do Brasil. Os resultados do estudo qualitativo validaram a proposição do mapa e levantaram questões para nova investigação no âmbito da implementação de um modelo de estratégia organizacional baseado no conhecimento.

Palavras-chave: Gestão do conhecimento, gestão estratégica do conhecimento, gestão estratégica da informação, “Ba”, modelo organizacional baseado no conhecimento.