International Journal of Business and Economic Development
Vol. 1, No. 3; May, 2020. pp 39-51

Published by International Center for Promoting Knowledge

Perspectives and Recommendations on Documents and Records Management Systems as Knowledge Management Capabilities: Case Studies

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Abstract

This study addresses the role of data and information management in organizational capabilities and performance. For public Organizations to achieve optimal organizational performance, they need to improve the way they identify, organize, protect, and deploy data and information. In this investigation, case studies are performed on two Public Organizations. The aim is to understand the current level of records management capabilities and propose an "ideal" mechanism that will raise these two public organizations' records management systems to a level of excellence. A data information and, knowledge management capabilities maturity model is used within these two public organizations. The objective is to qualitatively validate the model in the context of public records management; and to apply this model to help these organizations to improve their documents and records management systems and knowledge management capabilities. Findings show that the both organizations waste time on document searches and knowledge retrieval.

Keywords: Public organization, Document management, Knowledge management.

Introduction

Data, information and, knowledge are strategic resource assets that can contribute to achieve an organization's sustainable competitive advantage (Barney, 1991; Garud & Kumaraswany, 2005; Nonaka, 1998; Penrose, 1995; Winter, 1987). Today, , data, information and, knowledge are disseminated in both hard copy and electronic formats (Spiegler, 2000). And yet, good data, information and, knowledge management within an organization is likely to help it improve its business performance and achieve the sustainable competitive advantages. Indeed, it is becoming increasingly obvious that the development of knowledge management capabilities is one of the most critical factors in almost all business fields (Earl, 2001). In large extent, an organizational' success depends n capacity to transform data, information, and knowledge into a strategic resource that will support its business performance.

Using a data, information and, knowledge management capabilities maturity model within two public organizations, the study aims to qualitatively validate this model (data, information and, knowledge management capacities maturity model) and apply it in the public records management context of these two organizations in order to help them to improve their knowledge management capabilities and data, information and knowledge management capacities for increasing organizational performance in terms of integration and differentiation of information and knowledge (Lawrence & Lorsh, 1967).

In this perspective, this study try to understand the phenomenon of the development of data, information and, knowledge-management capabilities in the public records management context. Indeed, the data, information and, knowledge-management capacities maturity model will help diagnose these organizations' current data, information and, knowledge-management capacities and to propose an "ideal" system of data, information and, knowledge-management capacities that will, raise these two public organizations, to a level of excellence. In fact, both of these organisations' records management systems are still manual and, consequently, cause headaches when one of the state's control services requests access to documents.

The remainder of the paper is structured as follows: first, we present the relevant literature review; second, we describe the methodology; third, we present the results of the study; and we end the paper with some discussions and recommendations.

Literature Review

Since the early 1990s, managers have considered that some resources and specific capabilities are crucial for the business process (Amit & Schoemaker, 1993; Lazaranova & Taylor, 2009). The challenge for public organizations is to identify, organize, develop and, deploy resources in a direction that allows them to reach a high level of organizational performance. This study uses the resource-based view of business performance that identifies knowledge as a strategic resource (Barney, 1991). The concept of data, information and, knowledge management capabilities is used to explain three dimensions: data, information and, knowledge management infrastructures; data, information, and knowledge processes and, data, information, and knowledge skills. Capabilities refer to an organization's ability to assemble, integrate and, deploy valued resources, usually in combination or the co-presence of other strategic resources (Amit & Shoemaker, 1993; Russo & Fouts, 1997; Schendel, 1994).

In this context, the concept of organizational capabilities is then referenced to the strategic application of organizational infrastructures, processes and, skills and, their use and deployment, in order to achieve business goals, on the one hand and, the firm's abilities to assemble, integrate and, deploy these value-enhancing resources in combination with other organizational resources in order to enhance business performance, on the other hand (Bharadwaj 2000; Peppart & Ward 2004; Ordóñez de Pablos & Lytras 2008, Karki et al., 2011; Saravia et al., 2013). This position reinforces those of the literature that supports the fact that organizational performance is achieved through the way manages its internal resources (Barney 1991; Peppart & Ward 2004). Amit and Schoemaker (1993) argue that the key capabilities, by definition, require a strategic vision, development time and, substantial investments. This would explain the partial success some organizations achieve when they do not base their business strategies on the diversification of resources but rather on the way they observe and valorize their internal resources and capabilities (Dierick et al. 1989).

Thus, the concept of organizational capabilities answer to the lack of theoretical assumptions n strategy, in general and, the widespread theoretical view that when a firm aligns its resources with its business strategies this is enough to guarantee its business performance (see, in particular, Venkatraman 1989; Venkatraman & Prescott 1990; Henderson & Venkatraman 1993; Barki et al. 2001; Earl 2001; Abou-Zeid 2002; Booto Ekionea & Swan 2008; Swan & Booto Ekionea 2008). The development of internal capabilities in accordance with business objectives is more and more perceived as the only way to achieve a sustainable competitive advantage and to support business performance (Peppart & Ward 2004). In addition, concerning knowledge management capabilities, the literature (e.g., Abou-Zeid 2003 as well as Chang & Ahn 2005) analyzes the concept of organizational capability following three main dimensions: knowledge infrastructures, knowledge processes and, knowledge competencies.

Extending the traditional notion of organizational capabilities to a firm's data, information and, knowledge management (DKM) function, here, a firm's DKM capabilities is defined as its ability to generate, mobilize and, use organizational data, information and, knowledge in combination with or in the co-presence of its other resources and capabilities. DKM capabilities can be analyzed according three dimensions, that is: data, information and, knowledge (DKM infrastructures, DKM processes and, DKM skills (see Figure 1).

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Figure 1. DKM Capabilities Taxonomy.

Knowledge is defined as a strategic resource that organization needs to manage its operations. According to the Resource Based-View: knowledge is disseminated within individual, electronic and, paper documents. A document is defined as being "recorded information generated, collected or received in connection with the implementation of the execution or completion of an institutional or individual activity and, that comprises content, context and, structure sufficient to constitute proof or evidence of the activity" (Barney, 1991). A record is the document that is created, received and, maintained as evidence and information by a natural or legal person in the exercise of statutory duties or the conduct of business (Scherer & Asmus, 2016). These records may have a primary (administrative, fiscal, and judicial) and a secondary value or function (event value, informational, and heritage). ocuments and knowledge management (DKM) is defined as a process that aims to identify, define, preserve, and diffuse key documents and knowledge.

It is, therefore, important to understand that the dimension of knowledge infrastructures includes information technologies (IT) (Abou-Zeid, 2003) that support knowledge management (KM) activities and cultural knowledge management infrastructures that integrate elements such as the corporative vision and the organizational values system (Armbrecht et al., 2001; Gold et al., 2001; Scherer & Asmus, 2016). In the second dimension of the organizational knowledge capabilities, KM processes are classified into three main categories: knowledge generation, mobilization and, application. In the business or IT processes, there are five maturity levels. At level 1, the exploitation of the resource processes is localized (Venkatraman, 1994). These processes are at an early stage and are only slightly controlled (Dekleva & Drehmer 2001; Ramasubbu et al. 2008, Chieh-Peng Lin & Sheng-Wuu Joe, 2012) because there is no formal process and, thus, when situations arise, they are reacted in a process that is developed is made up step by step and where there are no defined priorities (Luftman et al., 2004). At this level, the development of organizational capabilities is ad hoc and chaotic (St-Amant & Renard, 2004). In level 2, processes or using resources are internally integrated (Venkatraman, 1994; Mitchell, 2006; Puri, 2007), structured and reproducible (Dekleva & Drehmer, 2001; Ramasubbu et al., 2008, Chieh-Peng Lin & Sheng-Wuu Joe, 2012) and, the organizational capabilities are expressed and put forth in concise documented processes (St-Amant & Renard 2004; Choi et al., 2010; Palamar et al., 2013). level 3, the organization reaches the level of business-process reengineering (BPR) (Venkatraman, 1994) that is under the influence of a resource (Markus & Robey, 1988). It develops and exploits the processes that are relevant and integrated in all the organization's overall activities (Luftman et al., 2004; Mitchell, 2006;Puri, 2007; Booto Ekionea & Swan, 2008; Swan & Booto Ekionea, 2008). In level 4, the organization controls its processes while being capable measuring them (Dekleva & Drehmer, 2001; Ramasubbu et al., 2008). Here, it proceeds to the redesign business networks (Venkatraman, 1994) on a Resource-Based View. Also, its practices are documented and, its results are quantitatively controllable and measurable (St-Amant & Renard, 2004). level 5, the organization redefines its business mission (Venkatraman, 1994) and this mission will be oriented on resources. Also, the business vision and processes are elaborated with the organization's partners (Luftman et al., 2004; Saraf et al., 2007; Ye Du et al., 2008; Scherer & Asmus, 2016; Weyerhaeuser & Nowrojee, 2014), and the resource processes are continuously being optimized and improved (Dekleva & Drehmer, 2001; St-Amant & Renard, 2004; Ramasubbu et al., 2008; Miller & Wallis, 2011). Thus, knowledge can be used to develop new processes, products and, services, or to improve existing ones (Abou-Zeid, 2003).

Finally, the third dimension is related to the knowledge management skills or competencies. This dimension refers to the capability for an organization to facilitate the continuous process of knowledge generation and sharing (Ordóñez de Pablos & Lytras, 2008; Weyerhaeuser & Nowrojee, 2014). In addition, knowledge skills refer to the capability within an organization to develop its human and cultural infrastructure and use the appropriate available knowledge management technologies (Abou-Zeid, 2003; Chang & Ahn, 2005). At level 1 of this dimension, people apply their knowledge (Peppart & Ward, 2004) with few motivations or rewards (Luftman et al., 2004) and, success depends on individual efforts and competencies (St-Amant & Renard, 2004; Ordóñez de Pablos & Lytras, 2008, Evert, 2012; Hvide & Kristiansen, 2012), given that the major part of the necessary knowledge for task execution comes from within the organization's people (Nonaka, 1994).

But organizations need to develop specific capabilities to take advantage of good data, information and, knowledge management. The concept of data, information and, knowledge management capabilities (DKMC) is presented in three dimensions: DKM infrastructures, DKM processes, and DKM competencies (skills). The organizational DKM capabilities (DKMC) is evaluated through a data, information and, knowledge management

capabilities maturity model (DKMCMM) that has five maturity levels. The Case Study method helped to qualitatively provide a diagnosis of the data, information and, knowledge management systems (DKMS) that existed within these organisations' treasury and scheduling departments (TSD).

Methodology: Design of Case Study

In this section, we will present a design of case study, and specifically show all the procedures that leads to the conception of the documents and knowledge management capabilities maturity model from the definition and design until the final step which is the conclusion. According to Yin (1994), the case study is an empirical research that analyses a contemporary phenomenon in its natural state; it uses multiple sources of proof, or data, and is best applied whenever the lines between the context and the phenomenon are not clearly evident. Thus, the author identifies four plans for the case studies as presented. In this paper, we have chosen to take a synthetic approach to the research, where multiple levels of analyses overlap. Yin (1994) recommend the use of numerous sources of information: documents, archival materials, interviews, direct observation, participative observation, and physical objects.

Put Figure

Figure 2. Case study of the data, information and, knowledge management capabilities maturity model (DKMCMM) adapted from two public organizations adapted from (Yin, 1994).

Accordingly, this study uses various data sources (documents and Web sites), the questionnaire and, interviews. The paper documents and Web pages of the organizations studied allowed us to compress more thoroughly the organizational and sector-based context of the materials. Contandriopoulos et al. (1990) identified three large sources of data that may be furnished by the research subjects: documents, the researcher's observations and, use of data during interviews. Accordingly, to gather further information, this study used the focus group and feedback sessions during two half-day meetings for each organization. Other techniques, like event and station investigations (two weeks) and the questionnaire were also used. A total of 56 participants provided us with their opinions on their respective organization's documents and records management systems.

Results from two Public Organizations

This section presents the results of a case study of two public organizations, using a maturity model for specific organizational capabilities of data, information and, knowledge management that was adapted from Booto Ekionea (2008). This case study aims to identify the maturity level reached by each of the two public organizations for DKMC in order to determine for each organization's future challenges. Therefore, in addition to the consolidated results presented in Table 1, the sequence and the results of the research the first (PO1) and second public organization (PO2) are also examined.

Table 1. Documents and knowledge management capabilities maturity model (DKMCMM) Applied in two public organizations.

Discussion and Perspectives

To understand a research strategy's ability to bring results that can be applied more generally to other populations, contexts and, periods (which was not our objective in this study), one must ask to what extent the context in which the research was conducted influenced the results. The more solid the theory on which the research is based and the more coherent the empirical results are, in a particular context with the theoretical hypothesis, the more these results can be generalized other contexts (Guzman & Luiz, 2011).

For each dimension of the data, information and, knowledge management capabilities and by comparing the results of the case studies of both public organizations (see Table 1), it is possible to either confirm or invalidate the observations made at the onset: "1) The lower the maturity level of the organizational capabilities that are specific to data, information and, knowledge management, the lower the expected benefits of the system; 2) The higher the maturity level of the organizational capabilities that are specific to the organizations data, information and, knowledge management, the greater the expected benefits".

Infrastructure for Data, Information and, Knowledge Management

In this study, the two organizations studied are public-sector entities whose technology infrastructures are both at the first level and whose knowledge management systems are at the second level. These low levels do not allow the two organizations to draw upon the benefits of sound knowledge management. In fact, in order for public organizations to develop specific organizational capabilities for knowledge management, it must meet the following characteristics: 1) On a technical level, the exploitation of information technologies (IT) is solely used for data, information and, knowledge management. IT infrastructure in data, information and, knowledge management systems that are shared with outside partners and, IT emerges as an asset that support the data, information and, knowledge management and the business's vision. 2) At the organizational structural level, there are structures or specific posts for data, information and, knowledge management.

Thus, "information technologies" can increase the transfer of data, information and, knowledge by moving beyond the usual communication environment of the individual. In most organizations, research for knowledge sources usually limited to work-related colleagues who are in regular and routine contact with each other. However, there is a little chance that direct colleagues or individuals will communicate new knowledge they possess since they belong to the same group and there is a strong chance that they possess the same knowledge" (Kogrit & Zander, 1996; quoted in Alavi & Leidner, 2001, p. 121)

Processes for Data, Information and, Knowledge Management

In this study, the two organizations studied are still at the first and second levels process generation and the manipulation of data, information and, knowledge application. The limited development of these systems means that these two organizations cannot maximize the benefits of sound knowledge management. In order for the both organizations to develop the organizational capabilities that are specific to processes for data, information and, knowledge management, it must meet the following characteristics: 1) At the level of process generation business processes have been reengineered for optimal data, information and, knowledge management (DKM) that includes redesign of the DKM network it operates in conjunction with its partners (Venkatraman, 1994); 2) At the level of data, information and, knowledge manipulation, there exists processes that are pertinent to data, information and, knowledge management, and are integrated, mastered, measured, and controlled across each organization (Luftman et al., 2004); and the standards for the management processes are also coherent, defined and, well-understood D(Dekleva & Drehmer, 2001); 3) The processes for the application of data, information and, knowledge management include clear definitions, the repetition and documentation of processes for improving organizational capabilities, and results that are quantitatively controllable and measurable (St-Amant & Renard, 2004).

Thus, the processes for data, information and, knowledge generation or creation include all activities through which new knowledge produced within an organization. According to Alavi and Leidner (2001), data, information and, knowledge generation occurs under specific conditions: 1) organizational design; 2) the construction of a virtual community and; 3) the creation of spaces for data, information and, knowledge sharing. Desouza (2005) more or less said the same thing when he summarized the processes for data, information and, knowledge management as the creation, dissimulation and, use of knowledge within an organization. The creation of knowledge, in itself, refers to the identification of the internal and external sources of such knowledge and to the procedures for their extraction to serve as "inputs" for the process of data, information and, knowledge management. Moreover, the capture and storage of knowledge takes place in combination of procedures and processes that codify knowledge in a storage facility where it is readable by machine. The codification of explicit knowledge requires the transfer of explicit knowledge that is encoded n various electronic formats (Desouza, 2005). As codifying tacit knowledge, consists converting them to explicit knowledge in electronic format (Desouza, 2005).

Concerning the processes for data, information and, knowledge manipulation, the allow the increase of data, information and, knowledge visibility through one carrier (supplier, owner, or knowledge source) sharing it with or transferring it to another (researcher or knowledge audience) at its own pace. The manipulation of data, information and, knowledge allows us to obtain knowledge from an outside organization or external source by codifying, indexing, and obtaining it for later use (Alavi & Leidner, 2001).

Data, Information and, Knowledge Management Skills

In this study, the two organizations are still at the first, second and, third levels of knowledge management culture, motivation, and rewards and encouragement. Their low levels of development in knowledge management

do not allow these organizations to maximize the benefits of sound knowledge management. In order the both organizations to develop capabilities that are specific to personnel-related users of data, information and, knowledge management, it must meet the following characteristics: 1) On the cultural side, ensure that there is a culture and an organizational vision designed to capture, keep and, share data, information and, knowledge (Armbrecht et al., 2001). 2) Have capabilities to facilitate the continuous processes of data, information and, knowledge management (DKM), such as people applying and integrating their knowledge, interacting with others (Peppart & Ward, 2004), and redefining the business objectives related to DKM (Venkatraman, 1994). 3) Have the abilities to develop the human aspects of motivation by rewarding employees; defining an organizational policy of rewards and motivation; sharing the risks and the rewards; and elaborating with its partners, its business affairs as they relate to data, information and, knowledge management and its processes knowledge management (Luftman et al., 2004). 4) Have the abilities to use the available technologies of DKM by improving the efforts, competencies, and knowledge of individuals and the organization, with the organization identifying the competencies, knowledge and, best practices and, integrating them into processes of action, optimization, and continuous improvement (St-Amant & Renard, 2004); these should include developing the specific IT technical competencies that support the DKM. The organizational culture around data, information and, knowledge management should include information on the vision, and short-, mid-, and long-term policies and strategies in order to allow members of an organization to work in a spirit of cultural continuity. This will facilitate the direction of the mission and, thus, the objectives and strategies in data, information and, knowledge management the organization requires both (Abou-Zeid, 2002). Organizational culture can have a major impact on efforts to support data, information and, knowledge management since culture influences employees' daily behavioural norms as much as it guides interpersonal relationships. These standards determine what behavior is approved or disapproved within the organization. This culture receives its impetus and support from senior management along with the organization's definitions for concrete actions, business processes, priorities, mechanisms to motivate personnel, and measures of performance (Armbrecht et al., 2001). The strategic role of an organization should reflect a dynamic view of organizational capabilities (Grant, 1996; Teece et al., 1997) because knowledge management is a managerial activity that helps the organization to adapt to the market's needs (Lee et al., 2001).
Smith noted the following: "It is important for all organizations to promote the transfer of data, information and, knowledge across all its business processes and all personnel in the value chain" (2004, p. 9). He further asserted that "immunities that are well organized and essential allow people to supervise others, collaborate, and work together in virtual teams" (p. 13). As well, preparing a report on the advantages of a collaborative environment, Chatzkel (2004, p. 6) mentions that "we have proven the need to make available to our employees a collaborative environment for continuous learning and performance improvement within the organization". Wahle and Groothuis (2005, p. 31) stated that "when senior staff provides the opportunity for its employees to follow a continuous learning process, the organization as a whole develops a large capability to learn and compete".

Recommendations and Research Perspectives

This current study is emphasising the importance of the data, information and, knowledge management system in general and its impact in nowadays organizations. Two organizations are taken as sample, one is in the sector of health care and the other is in the sector of public finance. The different perspectives and recommendation will be listed in detail in each of the tables below.

KM Infrastructures: (1) KM Technology Infrastructures: The two public organizations are still on the 1st and 2nd levels of maturity the data, information and, knowledge management capabilities maturity model (DKMCMM)

Recommendations to the two public organizations	Research perspectives
1- Identify, acquire, and develop additional technological infrastructures that respond to a new business vision that is based on the data, information and, knowledge management (DKM).	1- Study appropriate DKM technologies for improving records management.
2- Exclusively dedicate or acquire some of the existing or new infrastructures for DKM.	2- DKM needs and IT software that are likely to support the business mission and strategic IT plan.
3- Develop or acquire IT software that will likely support its business mission and strategic IT plan.	3- Evaluation and perspectives for internal and external integration of the technological infrastructures dedicated to DKM.

4- Promote internal integration of the technological infrastructures that are dedicated to DKM.	4- Aligning IT infrastructures to the needs of each public organization, its customers, and partners.
5- Promote external integration of the technological infrastructures dedicated to DKM with other departments and partners.	
6- Align IT infrastructures to treasury and scheduling departments, the Finance Ministry, customers and partner's needs.	

Data, information and, knowledge management (DKM) Infrastructures: (2) DKM Structures: The two public organizations are still on the 2nd level of maturity in the documents and knowledge management capabilities maturity model

Recommendations for the two public organizations	Research perspectives
1- Facilitate the management of data, information and, knowledge across the organization.	1- Which DKM structures will improve records management?
2- Adapt the policy of data, information and, knowledge management strategies in the short, medium, and long term.	
3- Define, in collaboration with the finance and HR Departments, a policy of recruitment for DKM managers, and DKM and IT professionals to align with the new policy-oriented DKM.	
4- Create a division or a specific position within treasury and scheduling departments to manage the integration of DKM infrastructures to those of the finance ministry and the organization's business partners.	

DKM Processes: (3) Processes of data, information and, knowledge generation: The two public organizations are still on the 2nd level of maturity in the data, information and, knowledge management capabilities maturity model

Recommendations to the two public organizations	Research perspectives
1- Encourage support for overall quality by using reliable documents, data, information, and knowledge.	1- Which data, information and, knowledge customers, partners, professionals, managers, and decision makers need in order to carry out their daily tasks or to make decisions.
2- Ensure that performance criteria are evaluated considering efforts to integrate internal documents, data, information, and knowledge.	2- Specific processes, standards, and approaches for generating data, information and, knowledge within the treasury and scheduling departments, finance ministry, and partners.
3- Streamline organizational processes resulting from improved efficiency and capacity to deliver services to the client via a good DKM.	3- Documents data base, domain ontology, knowledge base, data warehouse, semantic web, geo-localisation, and business intelligent tools for integrating internal and external DKM policies.
4- Ensure the existence of specific processes and standards for data, information and, knowledge generation, while ensuring their integration with those of the organisation's business partners.	
5- Seize the opportunity to use capacities for generating data, information and, existing knowledge to create business improvements.	
6- Focus on the interdependence of the business processes and inter-connectivity systems of DKM.	
7- Create inter-departmental business relationships through the effective integration and sharing of data, information and, knowledge.	

DKM Processes: (4) Processes of data, information and, knowledge manipulation: The two public organizations are still on the 2nd level of maturity in in the data, information and, knowledge management capabilities maturity model

Recommendations to the two public organizations	Research perspectives
1 - Abandon the current practice of data, information and, knowledge management and adopt a new business logic that is based on DKM.	1- Ways to achieve and barriers against data, information, and knowledge transfer, diffusion, and dissemination within the within the treasury and scheduling departments and its partners.
2- Articulate an analysis of the business rules for reengineering this objective by encouraging electronic manipulation and automatic knowledge, internally and externally.	2- Implementation and diffusion of reengineered business processes according to DKM policies.
3- Streamline the business scope with business partners, internally and externally, based on the integration of data, information, and knowledge to facilitate the rational manipulation of knowledge in order to respond to rapidly changing customer needs in the era of the Internet.	3- Records management, business intelligence, and decision-making in knowledge eras: specificity of the two public organizations.
4- Ensure that the processes of data, information and, knowledge manipulation are relevant and integrated, standard, consistent, and understood by local stakeholders.	4- Documents and knowledge relevance, standards, measures, quality insurance, and business performance.
5- Ensure that the processes of data, information and, knowledge manipulation, both internally and externally, are controlled and measured.	
6- Develop business opportunities and adopt effective systems for manipulating data, information and, knowledge to achieve business performance.	

DKM Processes: (5) Processes of data, information and, knowledge application: The two public organizations are still on the 2nd level of maturity in in the data, information and, knowledge management capabilities maturity model

Recommendations for the two public organizations	Research perspectives
1- The organizations and the relevant policymakers need to identify and develop education programs and, ensure high-level professionals and managers of documents and knowledge management are integrated within these two public organizations.	1- Adoption/non adoption; DKM technology use; resistance to change.
2- Determine ways to develop the skills required to exploit the various sources of data, information and, knowledge in the business network and to increase the professionalism of managers, and decision-maker abilities to act.	2- Strategies to integrate DKM technologies for their effective use within the two public organizations and partners.
3- Review and design evaluation criteria to measure performance results of professionals, managers, and decision makers.	3- Definition and evaluation of organizational performance criteria and measures of DKM application by professionals, managers, and decision makers.
4- Examine the data, information and, knowledge management practices, both internally and externally, and ensure that their documentation and their results are quantitatively measured and controlled.	4- Definition and evaluation of DKM practices within the two public organizations in terms of meeting customers and partner's needs.

DKM Competences: (6) DKM Culture: The two public organizations are still on the 1st level of maturity in in the Data, information and, knowledge management capabilities maturity model

Recommendations for the two public organizations	Research perspectives
1- Develop a vision of supporting business transactions and making good decisions at each organizational level.	1- Develop and apply the two public organizations' inter-departmental vision and strategies, based DKM, to improve customer value and support organizational learning and business operations.
2- Articulate the business vision of data, information and, knowledge management by integrating internal and external relationship with the Finance Ministry, partners, and customers.	2- Evaluation of organizational and inter-departmental performance based DKM criteria, benchmarks, and measures.
3- Define and integrate data, information and, knowledge management strategies that integrate the two organizations, and their partners,	3- Priority of organizational and inter-departmental issues and challenges on

customers' data, information and, knowledge needs, as well as their interactions.	DKM technologies: which policy to develop and adopt?
4- Articulate their strategies on the redesign of business networks for data, information and, knowledge management.	
5- Ensure that performance criteria are evaluated considering efforts to integrate internal and external (with key) data, information and, knowledge.	
6- Ensure continuous monitoring of the benchmark results compared to other departments in the finance ministry, the government, and international levels.	
7- Recognize that organizational issues and challenges are greater than the selection of a technical architecture that would support a new management policy on the technological infrastructures that are dedicated to a DKM network with the relevant government partners.	

DKM Competences: (7) DKM Facilitating Skills: The two public organizations are still on the 2nd level of maturity in the data, information and, knowledge management capabilities maturity model

Recommendations for the two public organizations	**Research perspectives**
1- Define a policy of facilitating the management of documents and knowledge through staff motivation and organizational entities regarding the management of data, information and, knowledge.	1- Defining the motivation and rewards DKM policies that would support and encourage individuals and organizational entities.
2- Adopt a policy of adopting data, information and, knowledge management as an innovation of business processes and eliminate or minimize resistance to change.	2- Creating the structures, tools, technologies, or spaces that facilitate documents and knowledge exchange.
3- Support and encourage individuals and organizational entities to interact with others.	3- Developing and encouraging documents and knowledge coordination while considering organizational challenges and industry trends.
4- Assist in facilitating the demonstration of concept proof about the creation of new documents and knowledge or the harmonization of views on the definition of theoretical concepts on the protocols and technical procedures at the operational level.	
5- Encourage individuals and organizational entities to coordinate their data, information and, knowledge management across the organization.	
6- Implement the process of facilitating knowledge and maintaining continuous improvements while considering industry trends and the specific skills needed.	

DKM Competences: (8) DKM Human Resources Skills: The two public organizations are still on the 1st level of maturity in the data, information and, knowledge management capabilities maturity model

Recommendations for the two public organizations	**Research perspectives**
1- Develop measures to clearly define and assess the value added per employee and the return to data, information and, knowledge management; this will ensure all actors will understand the criteria for the development of human resources and the rewards.	1- Developing and defining DKM human resources policies and rewards.
2- Define a corporate policy of human resource development and rewards.	2- Creating the structures, tools, technologies, or spaces that facilitate documents and knowledge exchange.
3- Define a policy of sharing risks and rewards across the organization and with business partners.	3- Developing and defining policies associated with the DKM risks and rewards across the two public organizations, and their customers and partners.

DKM Competences: (9) KM Technical Skills: The two public organizations are still on the 2nd level of maturity in the data, information and, knowledge management capabilities maturity model

Recommendations for the two public organizations	**Research perspectives**
1- Establish a policy of systematic training of and incentives for professionals, managers, and decision makers, in the use of DKM technologies, in order to motivate them to cultivate, maintain, and share data, information and, knowledge.	1- Establishing systematic training and incentives for the use of DKM technologies.
2- Develop, through the organization and its business partners, specific technical skills related to the technological infrastructure required to support data, information and, knowledge management.	2- Policy for developing or acquiring DKM-specific technical skills.
3- Identify the skills, knowledge and best practices, and integrate them into business processes.	3- Identifying and integrating skills, knowledge, and best practices into business processes.

Conclusion

When asked why a public organization needs a new system for data, information and, knowledge management, Rubenstein and Geisler (2005, p. 44) answered by proposing eight reasons: "1- to create a bridge and eliminate the isolation between specialists and other organizational support entities; 2- learn from one's experience and that of other organizations; 3- avoid repeating the same errors or mistakes in many areas, the use of instruments and the duplication of expensive equipment; 4- support training at all levels; 5- support organizational entities that are weak or have fewer resources with the experience from organizational units that are richer and have better resources; 6- share ideas and "tricks of the trade"; 7- avoid being dysfunctional on the organizational design level, staffing, and workflow; 8- change the methods for improving productivity, cost reduction, and customer services".

The DKMC maturity model applied in the context of data, information and, knowledge management in the two public organizations reviewed in this study will serve as a foundation for the pursuit of research concerning the strategic planning and implementing of data, information and, knowledge management in general and for the validation of a standardized DKMC maturity model.

The number of participants and using only two public organizations limit the range of our conclusions. But the diagnosis, recommendations and research, perspectives found are very relevant for further research and organizational levels.

Finally, it is possible that the results obtained from the two case studies of public organizations are limited in scope and cannot be generalized. This was not the objective in the present study. Hence, it would be enriching for the research to come to lean on larger applications of the knowledge management capability maturity model in order to find observations that could be standardized for any industry or any given context.

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