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Knowledge Management Systems: A multidimensional Analysis

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KNOWLEDGE MANAGEMENT SYSTEMS: A MULTI-DIMENSIONAL ANALYSIS

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1   Introduction

As stressed by many academics and practitioners, knowledge is the key source for competitive advantage in modern organizations (Grant, 1996; Drucker, 2002; Goh, 2002; Leonard and Swap, 2004). These authors have come to realize that knowledge management is critical to organizational performance and survival in continuously changing economic, technological, political, and social environment. Nevertheless, effective deployment of knowledge management within organizations requires support materialized by knowledge management systems. Despite the richness of the literature on knowledge management systems, the definitions proposed for this concept are largely technology-oriented (Alavi and Leidner, 2001; Edwards et al., 2003; Kankanhalli et al., 2005; Lytras and Pouloudi, 2006; Wan et al., 2013). This restrictive view which considers knowledge management systems as software tools, resulted in the failure of knowledge management in many organizations. We think that knowledge management systems have many important dimensions to consider for effective support of the deployment of knowledge management in organizations. In this paper, we demonstrate that knowledge management systems have four facets (a technological facet, a human resources facet, a process facet, and a context facet), and propose a conceptual model - based on the structuration theory - which demonstrates that the importance and the characteristics of these four facets depend on the knowledge management strategy, the knowledge management activities, and the external environment. Our paper is organized as follows. Following this introduction, we introduce in section 2 the knowledge management system concept and present a framework which models knowledge management systems as nexuses of four interacting facets and identifies the drivers of the effectiveness of these systems. In section 3, we conclude this paper by synthesizing the validation results of the proposed framework and listing the future research directions.

2   The four facets of knowledge management systems

Software tools are not sufficient to effectively manage knowledge. Therefore, to better understand and implement the knowledge management process in organizations, there is a need to focus on the knowledge management system concept which includes both knowledge management tools, organizational context, and individuals. In particular, the human resources and the organizational context characteristics are essential for the knowledge management systems effectively support the knowledge management in organizations. In this paper, we define knowledge management system as the conjunction of four interacting components: technology, knowledge management process, people, and organizational context. Technology refers to IT-based knowledge management tools used to support the organizational actors while carrying out the knowledge management process activities. They include knowledge repositories, knowledge experts catalogs, and web2.0 tools. Knowledge

management process activities include capturing, storing, creating, sharing, and applying knowledge in order to foster continued organizational learning through feeding valuable lessons learned and best practices into corporate memory. People refer to organizational actors who carry out the knowledge management process activities. Such actors belong either to the organization concerned with knowledge management or to its partners (external consultants, providers, customers,…). Organizational context refers to a set of organizational characteristics that influence knowledge management. It includes organizational culture, national cultures of organizational actors, organization's structure, and management style.

The four components of knowledge management systems are interdependent and interact continuously. In particular, as demonstrated by the structurational model of technology (Orlikowski, 1992; Orlikowski and Robey, 1991) or the adaptive structuration theory (DeSanctis and Poole, 1994), there is a reciprocal relationship between the technology component, the people component, and the organizational context component of knowledge management systems. On the one hand, technology defines the ways that people think, options for behavior, and ranges of possible consequences (DeSanctis and Poole, 1994; Orlikowski, 1992). On the other hand, people simultaneously shape technologies while using them. Finally, the interaction between technology and organizational context is based on technology enactment by users. In other words, by using technology, organizational actors redefine the structural properties of the organizational context they inhabit (Orlikowski, 2000).

The four components of knowledge management systems are associated with four interdependent facets - a technological facet, a human resources facet, a process facet, and a context facet - that help describe their characteristics and identify the drivers of their effectiveness while interacting and influencing each other. These drivers describe the means required by the knowledge management systems components in order to play effectively their roles. They can be grouped into four categories related to four facets, and depending on both the strategy and knowledge management processes, and the external environment of the organization. Figure 1 below illustrates knowledge management system's components and their interactions.
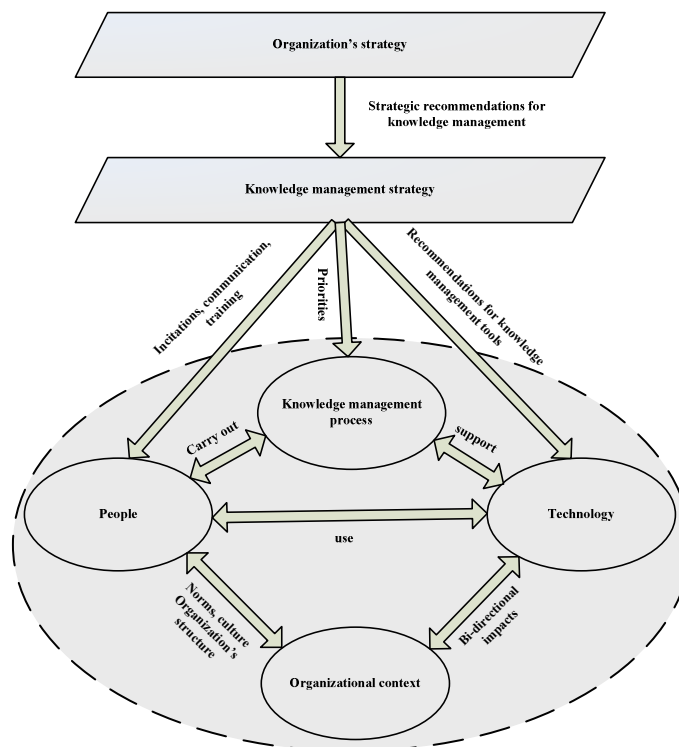

Figure 1.   The knowledge management system's four components.

3   Conclusion and future research directions

We have validated the proposed framework using a case study on the knowledge management systems used in the information systems architecture department of a French insurance company. In the early 2000s, this department has adopted a centralized knowledge strategy materialized by the creation of a catalog of experts in information systems architecture and many knowledge repositories like the applications repository, the organizational processes repository, the documentation repository and the architecture rules repository. These repositories contain explicit knowledge related to the information system architecture. A decade later, an audit of these repositories showed that their content is outdated and that they are rarely used. Following this failure, the information systems architecture department replaced the centralized management knowledge strategy by a decentralized strategy that recommends the use of collaborative knowledge management tools provided by the web2.0 platform. However, the deployment of this strategy has failed. On the one hand, many organizational actors have tried to use web2.0 tools for storing documents. On the other hand, using the tools provided by web2.0 has not improved knowledge sharing. Finally, the use of these tools has been diverted from its original purpose, leading to many ethical problems. The application of our model showed that the main cause of the failure of the implementation of these two knowledge management strategies is related to the weak support of the knowledge management process activities, particularly due to insufficient consideration of the human resources and organizational context facets of the knowledge management systems used in the information systems architecture department. Indeed, this department has not defined any system of incentives for organizational actors to create, transfer, and share knowledge. Moreover, the lack of an organizational culture, and the trust problems caused by the multiplicity of national cultures has been an impediment to knowledge sharing within this department. Finally, these barriers to knowledge sharing were amplified by the governance problems of web2.0 tools used. Accordingly, we have identified many research directions. The contribution of web2.0 tools to knowledge management support is a first research direction. A second research direction is the governance of web2.0 tools and the challenges raised by their use within organizations. The knowledge management strategy to be implemented is another research direction. In other words, instead of choosing either a centralized or a decentralized knowledge management strategy, it would be worth for organizations to adopt a mixed strategy combining the strengths of both centralized and decentralized strategies and taking into account the needs of managing both explicit and tacit knowledge.

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