

A study of KM critical success factors in Greek academic libraries

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Abstract: In the library environment, knowledge management (KM) has been recognized as improving overall performance, facilitating the creation of innovative services and assisting libraries in better serving the needs of their parent organizations. The purpose of the present study is to explore the level of presence of and possible associations among knowledge management critical success factors in Greek academic libraries, even if they do not consciously practice KM. The factors examined are: knowledge management strategy, organizational culture, organizational structure, human resources management, and information and communication technology infrastructure. The results indicate that, while academic libraries make wide use of information and communication technology tools and their organizational structure facilitates open communication, team-working is not widely practiced. However, libraries seem to have taken some steps toward building a knowledge-conducive culture and formulating a knowledge-centered strategy. Finally, the strong associations that were identified between knowledge management strategy and all the other factors suggest that library managers should focus on building a clear knowledge management strategy, which will determine the appropriate framework for the implementation of knowledge-conducive practices and the adoption of information and communication technology tools, while buttressed by a knowledge-friendly culture.

Keywords: knowledge management strategy, organizational culture, organizational structure, human resources management, information and communication technology, academic libraries

1. Introduction

Knowledge management (KM) is multidisciplinary field, with a wide array of contributing scientific domains, including Library and Information Science (LIS) (Dalkir, 2011). This multi-faceted nature of KM is evident in the plethora of definitions, approaches and solutions that can be found in the relevant literature. With respect to LIS, one of the still unresolved debates is whether there is actually a distinction between information management and knowledge management. According to the first school of thought, KM “is predominantly seen as information management by another name (semantic drift)” (Davenport and Cronin, 2000, p.1), while the second sees it as “an umbrella term for a variety of organizational

activities... that are not concerned with the management of information” (Wilson, 2002, section abstract). This lack of consensus has led to LIS professionals not being involved in KM programs, which for one deprives them from the influential role they could play in the field (Martin et al., 2006), and most importantly hinders libraries from reaping the benefits of KM for services improvement and innovation.

According to another viewpoint, KM “involves the management of explicit knowledge (i.e. knowledge that has been codified in documents, databases, web pages, etc.) and the provision of an enabling environment for the development, nurturing, utilization and sharing of employees’ tacit knowledge (i.e. know-how, skills, or expertise)” (Ajiferuke, 2003, p.247). In the library context, this approach drives the transformation of librarians’ traditional roles towards activities aimed at capturing and managing internal tacit knowledge (Al-Hawamdeh, 2005; Jantz, 2001) and at facilitating knowledge sharing not only among employees but also between employees and library users (Shanhong, 2000), with a view to improve the efficiency and effectiveness of their services (Wen, 2005).

Although knowledge management, in the aforementioned perspective, emerged from the business sector (Wen, 2005) and the application of business-oriented solutions may be a difficult task for non-profit organizations (Wang, 2006), libraries should take steps toward implementing business practices aiming at enhancing their effectiveness and improving their services. This is even more urgent today, as libraries are faced with budget and personnel cuts, constant changes in user needs and expectations (Johnson, 2014), and increased competition.

The effectiveness of KM initiatives depends on a number of critical success factors, including organizational culture, organizational structure (OS), human resources management (HRM) practices, and information and communication technology (ICT) infrastructure – also termed KM enablers – (for example, Lee and Choi, 2003; Yeh et al., 2006), as well as knowledge management strategy. Strategy guides and defines the processes and infrastructure (organizational and technological) required to manage knowledge gaps or surpluses (Zack, 2002), while knowledge management enablers constitute the necessary “...organizational infrastructure to enhance efficiencies of knowledge management activities” (Chan and Chau, 2005, p.4; quoted in Hsieh, 2007). Therefore, “knowledge management strategies can encapsulate and identify strategic directions in managing knowledge activities and knowledge management enablers are the vehicles that can facilitate these activities” (Chan and Chau, 2005, p.23; quoted in Hsieh, 2007).

In this context, the current study aims at exploring the level of implementation of various KM critical success factors by libraries of Greek public tertiary education institutions, even if they do not consciously practice KM in the business sense. In more detail, the factors examined in the study are knowledge management strategy, organizational culture, organizational structure, human resources management, and ICT infrastructure; the associations among these factors are also examined.

2. Literature Review

2.1. Knowledge management strategy

For organizations to effectively enhance their performance (Zheng et al., 2010), reap the fruits of knowledge management outcomes (Wong, 2005) and achieve knowledge creation (Choi and Lee, 2002), they should make sure that their organizational strategy is aligned with their knowledge management strategy (Lang, 2001; Liebowitz, 1999; Zack, 1999). In fact, “knowledge drives strategy and strategy drives knowledge management” (Tiwana, 2000, p.103). That is, while an organization’s

strategy and business model sets the tone for the selection of the appropriate KM strategy, the latter largely determines an organization's stance toward and subsequent investments in information technology and human resources (Hansen et al., 1999). In this respect, an organization's strategic context helps to identify the appropriate KM initiatives that support its mission, strengthen its competitive position and create value (Zack, 1999). It is therefore understandable that a clear, well-developed and well-understood knowledge strategy is important for success (Coakes et al., 2010; Zack, 1999).

Various knowledge management strategy classifications can be found in the relevant literature. Hansen et al. (1999), for example, distinguish between two strategy types: codification and personalization. The former focuses on connecting people with codified knowledge, while the latter on developing networks and facilitating conversations, for tacit knowledge sharing to be achieved. In a similar vein, Choi and Lee (2002) categorize strategies as "human-oriented", which emphasizes informal communication and tacit knowledge sharing, and "system-oriented", in which information technology (IT) is used for codifying, storing and sharing knowledge in a formal manner.

2.2. Organizational culture

Organizational culture has been variably defined in the management literature. Based on the common characteristics found in these diverse definitions, organizational culture can be described as:

"a shared, common frame of reference, i.e. it is largely taken for granted and is shared by some significant portion of members; acquired and governs, i.e. it is socially learned and transmitted by members and provides them with rules for their organizational behavior; a common psychology, i.e. it denotes the organization's uniqueness and contributes to its identity; enduring over time, i.e. it can be found in any fairly stable social unit of any size, as long as it has a reasonable history; symbolic, i.e. it is manifested in observables such as language, behavior and things to which are attributed meanings; at its core, typically invisible and determinant, i.e. it is ultimately comprised of a configuration of deeply buried values and assumptions; is modifiable, but not easily so" (Lundberg, 1990, p.19).

Organizational culture wields strong influence on individuals' knowledge-related behaviors, which in turn, influence specific outcomes, such as innovation and efficiency (Alavi et al., 2005). De Long and Fahey (2000) argue that culture actually determines if knowledge will be shared or hoarded and whether it will be created. The authors conclude that it is crucial for organizations to foster a culture that supports their knowledge management objectives. Some of the most widely discussed cultural values that lead to positive knowledge behaviors are collaboration, trust both among employees and between employees and the organization, and tolerance for mistakes (Donate and Guadamillas, 2011; Jeng and Dunk, 2013).

2.3. Organizational structure

Organizational structure, defined as "an enduring configuration of tasks and activities" (Skivington and Daft, 1991, p.46), has two dimensions. The first comprises rules, division of labor, prescriptions and the hierarchy of authority, thus constituting the formal 'framework' of the organization. The second includes the

interaction processes among organizational members, i.e. the informal structure of the organization (Skivington and Daft, 1991).

As regards formal structure, two of its elements – formalization and centralization – have been identified as exerting significant effects on knowledge management processes. Formalization refers to “the existence of formal rules and regulations and the organization’s efforts to enforce those rules” (Caruana et al., 1998, p.19) and centralization to “the extent to which decision-making power is concentrated at the top levels of the organization” (Caruana et al., 1998, p.18). Both formalization (Nayir et al., 2014) and centralization (Caruana et al., 1998) have a negative impact on the generation and implementation of new ideas, since they hinder open communication and the sharing of ideas (Damanpour, 1991). Similarly, the informal structure of the organization can enhance knowledge sharing (Kim and Lee, 2006) only if it supports social dialogue and open communication, thus facilitating horizontal and vertical information flows (De Long and Fahey, 2000; Hooff and Ridder, 2004). In this respect, a team-based OS promotes inter-organizational knowledge sharing (Coakes et al., 2010), allowing members build on each others’ ideas and strengths (Nadkarni, 1995; cited in Chong and Choi, 2005), helping the organization respond to change, adapt and innovate (Courtney et al., 2007).

2.4. Human resources management practices

Arguably, employees are the ones possessing the vast majority of knowledge resources within the organization (Kianto and Andreeva, 2014); as Davenport and Prusak (1998) put it illustratively: knowledge resides in the minds of individuals. Therefore, the effective management of people, who are both able and willing to share their knowledge, is of vital importance (O’Dell and Grayson, Jr, 1999) and HRM practices can be used for the alignment of employee behavior with the organization’s knowledge strategy (Hansen et al., 1999). HRM plays an integral part in the diffusion of knowledge within organizations, by such functions as employee assessment and selection, training and development and the formulation of appropriate communication, reward and recognition schemes (Chivu and Popescu, 2008). Reward systems and the inclusion of knowledge sharing in employee performance appraisals have long been argued to constitute the appropriate incentives people need to overcome their hesitation and share their knowledge (Kim and Lee, 2006; Liebowitz, 1999).

2.5. Information and communication technology infrastructure

Information and communication technology has been recognized as a critical factor influencing not only knowledge creation (Jeng and Dunk, 2013) and sharing (Kim and Lee, 2006) but also the overall knowledge management effectiveness (Gold et al., 2001). On the one hand, ICT facilitates rapid collection, storage and exchange of explicit organizational knowledge (Roberts, 2000), while fostering knowledge sharing and creation, by eliminating communication barriers and promoting social connection (Alavi and Leidner, 2001). Decision support systems, groupware, document repositories, knowledge maps, shared databases, video conferencing, electronic whiteboards, yellow pages, and discussion forums are some of the information and communication tools that are used to facilitate knowledge management (Meroño-Cerdán et al., 2007; Riggins and Rhee, 1999).

3. Methodology

3.1. Sampling and data collection

The personnel of the 10 academic libraries of the Attica prefecture of Greece comprised the target population of the current research. A total of 120 questionnaires were distributed in March 2015, using the in-person “drop-off method” (Zikmund, 2003, p.219); of these, 91 suitable for analysis were returned, achieving a 75.8% response rate.

As regards the final study sample, the majority of the respondents are librarians/ information scientists (88%), whereas just 2 are IT professionals, with an average age of 41.5 years. As expected, the number of male respondents is significantly lower (15.4%), as library personnel in Greece is dominated by females (Semertzaki, 2008). Regarding education, 13% of the respondents hold a post graduate degree, while 78 respondents (85.7%) hold a bachelor’s degree. It should be noted at this point that “library and information science” in Greece is offered as a bachelor degree, in contrast to other countries, such as the USA. As for work experience, respondents reported almost equal averages of organizational and job tenure, 16.17 and 16.34 years, respectively. The majority of the employees perform a wide range of tasks, including, but not limited to, cataloguing, loan/ interlibrary loan, and reference services. Finally, it is worth noting that library directors and heads of departments cumulatively represent only the 7% of the study sample.

3.2. Measures

For the collection of primary data a structured questionnaire was developed, utilizing the scales from the Kianto and Andreeva (2014) study. All items were translated from the English language into Greek, and appropriate wording adjustments were made, as the measures were indented for research in the business sector. All constructs were measured using multiple-item 5-point Likert scales, ranging from strongly disagree to strongly agree. Table 1 presents the questionnaire constructs, their operational definition and the number of items used to measure each.

Table 1. Questionnaire Constructs and Operational Definitions

Constructs	Operational definition	Items
Knowledge Management Strategy	The degree to which the library links knowledge with its strategy and the degree to which a clear and well-planned strategy exists.	6
Organizational Culture	The degree to which collaboration and innovation are stressed in the library.	5
Organizational Structure	The degree to which open communication and teamwork are stressed in the library.	5
HRM practices	The degree to which incentives are used in the library so as to encourage employees create and share their knowledge.	5
ICT Infrastructure	The degree to which ICT tools are used in the library and the degree to which ICT is sufficient to support the daily work.	5

A pre-testing was performed to assess the instrument’s content validity - i.e. “the subjective agreement among professionals that a scale logically appears to reflect accurately what it purports to measure” (Zikmund, 2003, p.302). An academic, an experienced practitioner and three librarians were asked to comment on question wording, in terms of clarity and relevance to the library environment. Minor

adjustments were made to the questionnaire, based on the pre-testing participants' comments.

3.3. Construct validity & reliability

Convergent validity, i.e. "the degree to which multiple attempts to measure the same concept are in agreement" (Bagozzi et al., 1991, p.425), is used to assess the instrument's construct validity (Campbell and Fiske, 1959), which "refers to the vertical correspondence between a construct which is at an unobservable, conceptual level and a purported measure of it which is at an operational level" (Peter, 1981, p.134).

Confirmatory factor analysis (CFA) using SPSS was performed to statistically check for convergent validity, since it has been argued to overcome the limitations of other procedures, such as the ones proposed by Campbell and Fiske (1959) (Bagozzi et al., 1991). Factor loadings [>0.6 , Fornell and Larcker (1981)] and the total variance explained (TVE) [>0.5 , Hair et al. (1995)] were used to test for convergent validity, while the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy [>0.5 , Hair et al. (1995)] was first examined to ensure that factor analysis could be performed. The results of the CFA indicated that the aforementioned indexes for three constructs, i.e. "knowledge management strategy", "organizational culture" and "ICT infrastructure" are within acceptable levels. More specifically, KMO is 0.851, 0.863 and 0.861 for "knowledge management strategy", "organizational culture" and "ICT infrastructure", respectively, while factor loadings range between 0.820 and 0.931. TVE scores are also significantly above the acceptable levels, 73.832, 80.688 and 72.757, for strategy, culture and ICT, respectively. As regards HRM practices and organizational structure, the analysis indicated that the items loaded into two distinct components each. In more detail, the "HRM practices" construct was split into "intrinsic motivation" and "extrinsic motivation", while the construct "organizational structure" was divided to "open communication" and "team-based" organizational structure.

Finally, Cronbach's α coefficient was used to test for the reliability of the constructs. The scores exceed the proposed by Malhotra (1999) 0.6 minimum acceptable level, for all constructs, ranging from 0.7 for "open communication" to 0.939 for "organizational culture".

4. Results & Discussion

Initially, the mean score per construct (see Table 2) was calculated. The results suggest that Greek academic libraries make wide use of ICT tools in support of decision making and informal communication. This is a rather expected find, considering libraries have been significantly influenced by technology and the digital revolution, and information scientists use ICT tools, such as external knowledge repositories (i.e. journal articles, theses etc.) and integrated library systems to organize and manage explicit knowledge. Results also indicate that libraries support open upward (between employees and management) and downward (among employees) communication, although the team-based organizational structure is not widely adopted. Moreover, libraries seem to have taken efforts toward fostering a knowledge-conducive culture and building a knowledge-centered strategy. These, however, are not backed up by the existence of reward schemas. The latter finding is not surprising, since the provision of incentives, especially monetary, is not an established practice in the Greek public sector.

Table 2. KM Critical Success Factors Mean Scores

	Mean	Std. Deviation
Knowledge Management Strategy	3.13	1.04
Organizational Culture	3.67	1.08
Intrinsic Motivation	2.56	1.30
Extrinsic Motivation	1.18	.49
Team-based Organizational Structure	3.07	1.18
Open Communication Organizational Structure	4.02	1.04
ICT Infrastructure	4.02	.87

In order to assess the possible interaction among the study variables, a correlation analysis was performed, using Pearson's rho (r) (see Table 3). First, knowledge management strategy was found to be significantly correlated with all constructs, except for intrinsic motivation. More specifically, KM strategy is positively associated with organizational culture ($r=.615$, $p<.01$), intrinsic motivation ($r=.546$, $p<.01$), team-based ($r=.490$, $p<.01$) and open communication ($r=.364$, $p<.01$) organizational structure. This suggests that knowledge management strategy not only guides the implementation of knowledge-supporting practices, such as HRM, but also affects the overall structure of the organization, while supported by its culture. This finding corresponds with Barclay and Murray (1997, p.1) view of knowledge management as a business activity, which "[treats] the knowledge component of business activities as an explicit concern of business reflected in strategy, policy, and practice at all levels of the organization". Moreover, knowledge management strategy is associated with ICT infrastructure ($r=.481$, $p<.01$), suggesting that the successful implementation of a knowledge management system depends on the creation and implementation of a KM strategy for identifying and maintaining the knowledge base (Jennex and Olfman, 2000).

Second, organizational culture is significantly positively correlated not only with open communication OS ($r=.618$, $p<.01$) and ICT infrastructure ($r=.720$, $p<.01$), but also with team-based OS ($r=.405$, $p<.01$) and intrinsic motivation ($r=.316$, $p<.01$), indicating that structure, HRM practices and ICT infrastructure are highly affected by organizational culture. This is consistent with past research findings, which suggested that the interaction among social (people) and technical (technology) systems could only be changed by changing organizational culture (Bhatt, 1998, 2001).

Third, analysis results showed a rather strong association between ICT infrastructure and open communication OS ($r=.581$, $p<.01$), meaning that ICT tools enable inter-organizational communication. Finally, extrinsic motivation was not found to be statistically significant correlated with any of the other factors; as previously discussed, this is not an unexpected finding, considering the Greek public sector.

is of vital importance for employees to overcome their resistance and actively engage in knowledge sharing and creation. Finally, as Sarrafzadeh (2008) argues, for LIS professionals to play a significant role in KM, they must “go beyond the narrow scope of their profession” (p.66) and obtain a comprehensive view of the library. This would require them to acquire new skills and responsibilities (Sarrafzadeh, 2008) and the building of a mind-set that libraries are organizations that need to innovate and excel in services provision to survive.

The current study has some potential limitations. First, the study sample was restricted to libraries of public tertiary education institutions of the Attica prefecture. Therefore, research should be expanded to include all academic libraries in Greece, including private sector libraries, so as to be able to explore the possible differences between the two categories. Second, as the study does not provide insights to how specific organizational factors affect the implementation of a knowledge management strategy, further research should look into this, also incorporating the issue of knowledge-creation. This would improve our understanding of the way practices and strategies can promote knowledge creation, which is essential for libraries to survive and better serve the needs of their parent institutions.

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