A CONSTRUCTIVE RESPONSE TO THE CHALLENGES FACED BY HIGHER EDUCATION INSTITUTIONS: *UNIVERSITY KNOWLEDGE MANAGEMENT*

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Abstract

Higher education institutions can provide important benefits to the business world and the society at large by creating and diffusing new knowledge. They have to manage their knowledge effectively in order to realize this. Knowledge management (KM) has much to offer for these organizations faced by various challenges knowledge-based economy imposes. University knowledge management (UKM) is an important, however, understudied subject of study. This paper reviews the relevant organizational knowledge management literature, presents an overall view of the challenges faced by contemporary universities, and conceptualizes the main subprocesses of university knowledge management. It proposes three interdependent subprocesses named as research-related, educational and administrative knowledge management. University knowledge management process is offered as an emergent strategic tool improving the productivity of the university and supporting many aspects of college-level teaching, learning, and administration.

Keywords: Administration, Education, Higher Education Institutions, Knowledge Creation, Knowledge Management (KM), University Knowledge Management (UKM), Research.

1. Introduction and purpose

Organizational knowledge management has become a prerequisite for the survival of contemporary organizations. Today, all kinds of organizations have to manage their knowledge effectively in order to survive, and furthermore, realize their aims. Therefore; knowledge management, as an organizational process, must be designed appropriately, conducted in the most effective manner, and developed continuously. This process is important for universities, as well as all other organizations. Moreover; universities, representing the main organizations of the academic world characterized by research and education activities, are critical organizations for the advancement of knowledge management implementations (Mikulecká & Mikulecký, 2000). Managing knowledge effectively has a special importance for universities which have in-depth relationships with "knowledge" structurally. Besides, higher education institutions are expected to play a leading role for spreading new knowledge throughout the society. An effective knowledge management process facilitates the university to realize its general mission and fully execute its social functions (Conceicao et al., 1998; Oosterlinck, 2002). Consequently, university knowledge management improvement studies should be advanced. Understanding the current status of knowledge management applications in the universities and proposing further implications of university knowledge management are important, however understudied, subjects of study (Kidwell et al., 2000; Rowley, 2000; Agrawal, 2004).

This paper aims to contribute to the understanding of university knowledge management via conceptualizing the basic aspects of the process. For this, literature regarding organizational knowledge management process will be reviewed first. Then, universities -as organizations experiencing a global change and faced by several challenges- will be discussed and the main emerging dimensions of university knowledge management process will be examined. Thus, key
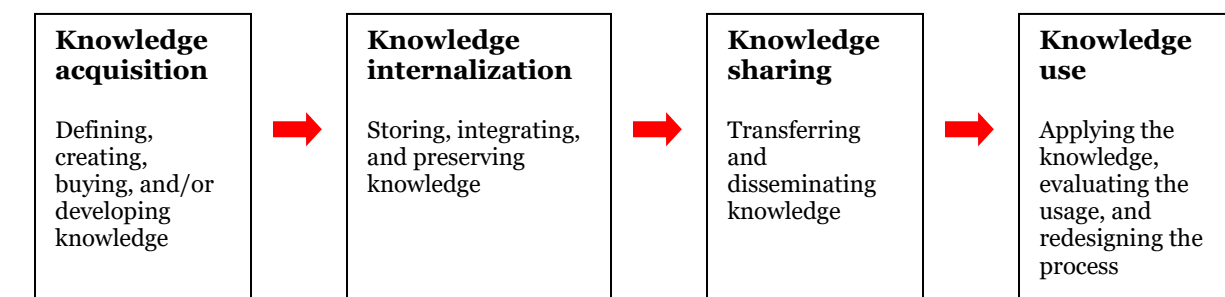
points of university knowledge management will be identified and implications for future research and university applications will be suggested.

2. Knowledge management process in organizations

Recent work in the area of strategic management and economic theory has begun to focus on the organization's resources and capabilities. This perspective is referred to as the resource-based view[*] and has gained acceptance in the strategic management literature (Prahalad & Hamel, 1990; Barney, 1991; Connor, 2002). The resource-based view suggests that organizations should position themselves strategically based on their unique, valuable, and inimitable resources and capabilities (Prahalad & Hamel, 1990; Zack, 1999; Connor, 2002). In this sense, knowledge is considered as the most important strategic resource of the organization (Nonaka, 1994; Kogut & Zander, 1996; Zack, 1999; Wijetunge, 2002). Knowledge is meaningful and authenticated information, whereas information is processed and organized data (Davenport & Prusak, 1998; Alavi & Leidner, 2001; Yahya & Goh, 2002). Knowledge is more helpful than information to facilitate the strategic decisions on time. It is categorized as explicit and tacit knowledge (Nonaka & Takeuchi, 1995; Polanyi, 1966). Explicit knowledge is easy to articulate, capture, and distribute in different formats. Tacit knowledge is generally unspoken and hidden (McInerney, 2002). It is difficult to capture, codify, adopt and distribute tacit knowledge; because individuals cannot easily articulate this type of knowledge (Bhatt, 2000). It can be thought of as the know-how that is acquired mainly through personal experience (Nonaka, 1994; Ipe, 2003; Perez & Pablos, 2003). New organizational knowledge is created through the interaction between tacit and explicit knowledge of individuals (Nonaka & Takeuchi, 1995; Nonaka et al., 2000; Yim et al., 2004).

Taking advantage of the knowledge resource requires systematic efforts. All knowledge processes are social processes existing regardless of whether or not there are specifically designed and implemented programs and activities dealing with them (Timbrell et al., 2005). Preferably, they should be recognized and improved at a strategic level. A comprehensive process should be designed for the management of knowledge, treating both tacit and explicit knowledge with the objective of adding value to the organization (Dalkir, 2005). Hence, knowledge management process should be regarded as the continuum comprising the knowledge-related definition, acquisition, creation, buying, development, sharing, diffusing, integration, usage, and evaluation activities; as well as reengineering the whole process (Demarest, 1997; Beijerse, 1999; Liebowitz, 2000; Beech et al., 2002; Perez & Pablos, 2003). Basically four phases include and summarize the different activities in the overall process of knowledge management which has also a function supporting the strategic management process of the organization. These are the phases of knowledge acquisition, internalization, sharing and use.

Figure 1: A conceptual model of organizational knowledge management

Knowledge acquisition	Knowledge internalization	Knowledge sharing	Knowledge use
Defining, creating, buying, and/or developing knowledge	Storing, integrating, and preserving knowledge	Transferring and disseminating knowledge	Applying the knowledge, evaluating the usage, and redesigning the process

[*] This view of the firm can be traced back to Penrose (1959).

The phase of knowledge acquisition comprises the operational definition of the knowledge organization needs, determining the knowledge gap, new organizational knowledge creation and buying and/or development of the needed knowledge. Organizational knowledge is stored, integrated into repositories and preserved at the knowledge internalization phase. Knowledge sharing implies the transfer and dissemination of knowledge throughout the organization. At the phase of knowledge use, knowledge is exploited and applied to organizational goals and objectives. Then, the efficiency of this usage is evaluated. If needed, the process is redesigned. Various social and technical tools are used at each phase of knowledge management. In order to effectively execute the process, appropriate tools should be selected and used efficiently at each phase. Note that the phases cannot be seen as simply sequential. Rather, recursive relationships characterize the process (McAdam & McCreedy, 1999).

There is no universally accepted model of knowledge management which is applicable to all organizations. Contextual origins of most models relate to large private enterprise studies. However, the field has become established and interest from other sectors has grown since 1990's. Thus, knowledge management has passed the fad level (Ramsay, 1996; McAdam & Reid, 2000).[*] Very different models have been put forward from then up to now. These are designed for various contexts, to be valid for several types of organizations. However, the model explicated above is a general one that could be useful for demonstrating the general knowledge management processes of most types of organizations. A knowledge management conceptualization for a specific type of organization must depend on the key attributes of that type of organization and consider the actual and potential challenges faced by those organizations. For that reason, to conceptualize university knowledge management, universities will be discussed with a particular focus on their characteristics and the challenges they face.

3. Universities as organizations: the status and the challenges

Traditionally, creating new knowledge and disseminating it throughout the society is perceived as the main function and responsibility of universities (Reid, 2001; Loh et al., 2003). Regarding this function, universities have two main activities. These are research and education. Universities contribute to the social capital of the society with their graduates and create/produce new knowledge with the research they conduct. They have been in a someway isolated situation in the society, partly because of the specialties of their main activities and partly because of their established characteristics resulting from academic autonomy. Consequently, sometimes they have been described as ivory towers and the knowledge they create has been evaluated as an output far from being applicable to real world problems (de la Mothe et al., 2000; Loh et al., 2003). Anyway, universities have had significant importance for knowledge creation. This expresses the strategic positioning of the university in the modern world.

The socio-economic transformations coexisting with the increasing significance of knowledge and knowledge processes in economic and social life have had profound effects on the university system as well. Globally, knowledge creation has gained a heterogeneous structure (Krücken, 2003; Zaharia & Gibert, 2005). The number of knowledge-creating actors has increased. Many institutions other than universities have become increasingly active in knowledge creation. Formerly, the university had enjoyed a privileged social status due to its relationship with knowledge. Emergence of new knowledge-creating actors expresses a threat towards the

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[*] Nevertheless, the so-called offshoots of knowledge management still run the risk of being perceived as fads. Expanding rigorous research on KM fields will help to prevent the work on those fields from becoming a game among academics.

privileged social status of the university. Another point deserving attention is the changing balance between the main activities of the university. Especially after the World War II, higher education began to serve a larger proportion of the society (Trow, 2000; Muthesius, 2001). This development has inevitably led to an increased concentration on education. Today, the growth of demand for higher education continues with increasing diversification of the demand (OECD, 2004; Zaharia & Gibert, 2005).

The advancement of information technology has affected higher education institutions, as well as business organizations. This seems to have caused even drastic changes. Assimilation of information technology into the academic environment has led to an increasingly virtual education system and paved the way for questioning the validity of classical university perceptions (Jarvis, 2000; Loh et al., 2003; de Zilwa, 2010). Additionally; accelerated by new information and communication technologies, internationalization of education and research has become another main challenge faced by universities today (Blight et al., 2000; Magrath, 2000). Related to these transformations, many aspects of conducting research have also evolved. Previously, research activities were generally conducted by a special researcher group, namely a class having postgraduate education degrees. Today, research develops mostly based on the cooperation of people who have a variety of backgrounds and are from different sectors. These sets of people are representative of both university and non-university researchers who are employed in joint projects, generally sponsored and directed by more than one organization. With these developments, it is not surprising that the university's capability to behave independently has weakened and its institutional isolation has diminished (de la Mothe et al., 2000; Loh et al., 2003). Main challenges faced by the contemporary university are summarized in Figure 2.
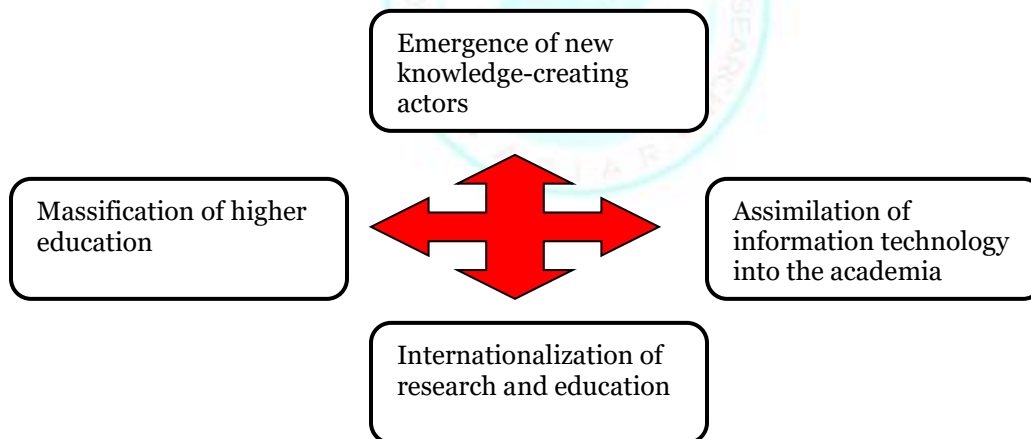

Figure 2: The main challenges faced by the contemporary university

Some have argued that the "university" -as implied by the classical meaning of the word- has come to an end (Conceicao, 1998; Loh et al., 2003). A more realistic approach discusses over the status of the university in the new era characterized by knowledge-based economy and society. The university still has a critical role for research (Chataway & Wield, 2000; Numprasertchai & Igel, 2004). Further, fundamental research remains a privileged domain of the university (Zaharia & Gibert, 2005). Despite the new knowledge-creating institutions, the university will be important anyway, especially for the creation of some specific knowledge such as the knowledge

dependent on the long-term research results. These research results have critical importance for long-term economic development. This seems to be increasingly valid for the knowledge-based economy; therefore, it is very important to preserve the institutional integrity and continuity of the university (Conceicao et al., 1998). The new era is not an era that the university loses importance. What differentiates the new era is the crucial need of the university for cooperation and various interactions so as to realize its functions. The need for interaction is valid for institutions at all levels of higher education, from community colleges to major research universities (Maurrasse, 2001; Fuller, 2002). Besides, the challenges of the new era require complex internal rearrangements in the university. The university needs to improve its adaptive capacity (Wissema, 2009). This is necessary for new knowledge production. Knowledge management plays a critical role at this point. The university, whose main mission is to create and diffuse knowledge, has to make its own knowledge processes effective. This will make it easier to cope with the challenges that the new economy imposes to the university.

4. Knowledge management process in the university: Sub-processes and the key points

Business organizations seek to acquire the knowledge they need. The university is also in pursuit of knowledge. Moreover, higher education institutions deal with knowledge as an implication of the requirements their main activities put forward. Namely, the university is in the knowledge business. This forms an advantage of the university in knowledge management applications. Therefore, KM is certainly relevant to universities. However, research points to the difference between business and academia with respect to knowledge management and creation (Tian et al., 2009). Universities include micro-environments where rewards are intellectual rather than financial (Bolton, 2000). So, configuration of KM may considerably differ in these settings. To clarify the main subprocesses and key points, a holistic view of UKM focusing on primary activities is adopted in this section.

A distinctive feature of the university should be the synergistic combination of research and education (Oosterlinck, 2002). Research should enrich and advance the education activities. And education should provide new researchers, supply knowledgeable professionals to the society as an outcome of its processes. Education should support the research activities in the long term. Knowledge management implementations relevant to the research and education activities of the university form the first two subprocesses of university knowledge management. Other than research and education, administrative activities are important for the university. They affect the quality of educational and research-related outcomes. Accordingly, administrative knowledge management constitutes the third subprocess of university knowledge management.

The knowledge management subprocess that deals with the research function of the university is named as *research-related knowledge management*. Research activities are concentrated on new knowledge creation. Knowledge management applications should support this. Consequently, this subprocess should facilitate the coordination among researchers without harming the free environment needed by the research activities -and therefore pave the way for enriching effects of multidisciplinary knowledge creation. Interactions among the university members affect knowledge creation positively. Accordingly, research-related knowledge management subprocess should support those interactions with the help of appropriate tools. Interactions among university members and outside parties are also useful. Especially, gathering the tacit knowledge of outsiders will enrich and support the research activities. Thus, interactions among university members and outsiders should also be encouraged (Yli-Renko & Tontti, 2002; Numprasertchai & Igel, 2004). For successful research-related knowledge management, effective university knowledge storage systems should be developed and

information technologies should be utilized for knowledge acquisition and sharing. Thus; university researchers and the faculty can be aware of others' research and studies and waste of resources -including time- could be prevented, or at least lessened to an acceptable degree. And also, the possibility of generating unnecessary duplicative studies could be decreased to a minimum level. This is useful for the effective functioning of the university, because there is no need to rediscover America. For the very same reason, social knowledge sharing tools should be utilized as well as information technologies.

Effective execution of educational policies in the university requires an efficient coordination of people, organizational processes, technology, and structural dimensions (Agrawal, 2004). Knowledge management can contribute to the educational activities of the university via facilitating this coordination. The relevant subprocess is the *educational knowledge management* subprocess. Today, instead of teaching efforts, learning processes are at the main focus of education initiatives and programs. Effective usage of information technology and social knowledge sharing tools can support learning. Skills composing the learning capability have especially gained importance. Because the more technologically advanced a society is, the more its competitive edge is found in non-technological skills (Oosterlinck, 2002). Through an effective educational knowledge management, the university can enhance the learning capability of its members. Educational activities are especially related to the diffusion of knowledge. Educational knowledge management subprocess will ensure the diffusion of knowledge be more systematic and directed toward the educational purposes. Therefore, the outcomes of the education function will be much more improved. For educational knowledge management; knowledge storage systems should be functional, and access to knowledge bases should be facilitated for personnel, especially the people charged with responsibility for educational activities. If knowledge regarding educational activities is managed effectively within the university, general quality of the education serviced by the university to the society will increase.

University knowledge management process deals not only with the main functions of the university. Administrative activities are also important for the organization and organizational knowledge management. An effective administrative function is needed to coordinate the diverse university activities. This requires the acquisition of sufficient administrative knowledge besides the effective management of this knowledge. The administrative knowledge required comprises the knowledge related to both research and education activities. It may include both university originated and non-university originated knowledge. Administrative knowledge management subprocess maintains and develops the outputs of support functions such as computer services, enrollment management, physical plant management, research support and student services (Geng et al., 2005). The outputs of administrative knowledge management subprocess may function as an important element of the decision support system. To be implemented effectively, this subprocess should be designed in accordance with the other two subprocesses, as well as the general and distinctive characteristics of the university. Otherwise, problems caused by the administrative units may affect research and education activities negatively. Many universities throughout the world suffer from the ineffectiveness of administrative structures and interventions (Drew & Bensley, 2001; Maassen, 2003; Dzhaparova, 2005). Administrative knowledge management subprocess may mitigate the conflicts and help to overcome those problems via enabling systematic and disciplined execution of administrative services.
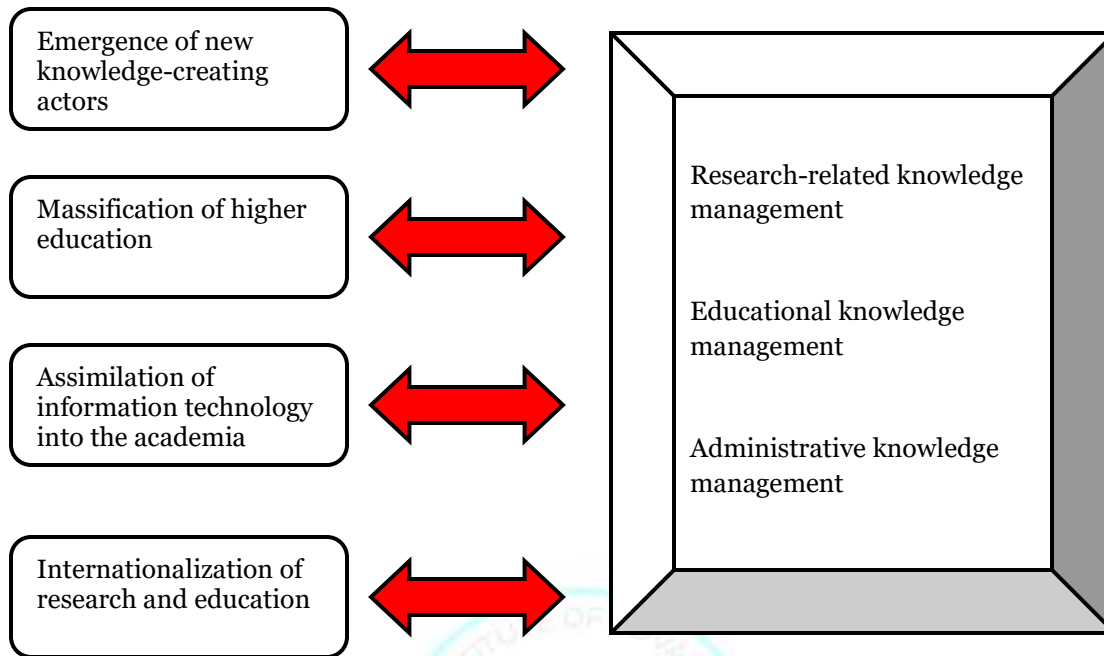
Figure 3: Main challenges and the university knowledge management process

Figure 3 illustrates the challenges in which affect the reformation of universities and which have so far been discussed and the main subprocesses of the university knowledge management. University knowledge management process -basically- consists of the research-related, educational and administrative knowledge management subprocesses. In each subprocess, all the functions of knowledge management which express the operational phases of the process, - namely knowledge acquisition, internalization, sharing, and use- exist. The productivity of the university knowledge management process is dependent on the synergistic combination of subprocesses, availability of required structural and cultural support factors, and functioning of the process as integrated to the strategic management process. Thoughtful attention of administrators to university practices is also a vital factor for success. Practices, defined as *"what organizational members actually do"*, are regarded as manifestations of knowledge (Szulanski, 2003, p. 20). Therefore, understanding and advancing UKM is based on keeping up a lively attention to all research-related, educational and administrative practices.

This study has recognized UKM as a complex social process; rather than an arithmetic summation of distinct knowledge-related technical programs, interventions and approaches. Few works have considered understanding UKM as a holistic and integrated process while evaluating specific UKM examples (Metcalfe, 2006; Cranfield & Taylor, 2008; Pither, 2009). Most studies in the literature have focused on specific KM applications in an isolated manner. It is not easy to find cases where all types of knowledge are taken into account when developing KM/UKM concepts and tools (Geng et al., 2005; Jucevicius, 2007). UKM research has fallen short to catch the complexity of KM. Consequently, the field of UKM has been described as an area that is *"limited to abstract concepts, ideas, frameworks, models, and anecdotes"* (Ramachandran et al., 2013, p. 77). Studies have mostly neglected the social character of KM and the literature has failed to reflect common and reliable understandings of UKM. A holistic

approach is strictly needed to guide future research. This approach should recognize UKM as an emergent, ongoing, organic process; rather than something having a mechanical structure. UKM, which is based on very diverse and rich sources of knowledge, should also be regarded as a never-ending process. Because -at least a considerable part of- that knowledge is always on the making and open to dispute (Styhre, 2011).

5. Conclusion

Scholars have outlined the importance of adopting knowledge management for all kinds of organizations. However, relatively little attention has been paid to university knowledge management with an emphasis on universities' distinguishing features. In fact, knowledge management has much to offer for higher education institutions faced by challenges the knowledge-based society imposes. This study presents an overall view of the challenges faced by the contemporary university and conceptualizes the key constituents of university knowledge management. It proposes three interdependent subprocesses named as research-related, educational and administrative knowledge management. University knowledge management process is offered as a strategic tool improving the productivity of the university. It supports many aspects of college-level teaching, learning, and administration. Additionally, it facilitates the university mission and helps to overcome the challenges knowledge-based society generates for the university. With appropriate planning and effective implementation, knowledge management can contribute to the self-renewal of the contemporary university.

6. Implications for future research and practice

This paper aimed to provide insights into knowledge management processes in higher education institutions. A basic model of university knowledge management is offered. Relatively little information on the subject is available. Hence, a more complicated university knowledge management model could be developed based on further theoretical work and empirical research. This paper adopted a global perspective. However, different national and regional characteristics should be considered while designing and evaluating the knowledge management processes of specific universities. Future research should consider the much more specific distinctive features of universities analyzed. Comparative knowledge management studies, including extreme cases, can lead to a better understanding of the subject. Future research should also investigate how subprocesses of university knowledge management affect each other. Additionally, project-based collaborative activities of universities and other organizations are very important in the new economy. Therefore, future research should also concentrate on project-based administration issues and project-based knowledge management efforts of universities. Not only researchers, but also policy makers and practitioners should have an interest in university knowledge management. UKM process is something that university administrators have to keep an eye on, though incurring costs and uncertainty. Insights gathered from UKM research and managerial wisdom can help administrators to be able to make some efforts to understand the social processes, and consequently design thoughtful interventions when and where needed.

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