Knowledge Management and its Applicability to Higher Educational Institutions

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Abstract: Knowledge management is a critical element that many business organizations are using to gain competitive advantage today. The rapid changes happening in the business setting demand that businesses employ knowledge as a raw material for innovation and corporate development. Similarly, institutions of higher education are not free from problems and challenges. Educational organizations need to rethink the way they manage their operations with the purpose of responding to the greater demands of students, employers, and accreditation institutions. Based on the current understanding of knowledge management in literature and the experiences reported by some universities that are utilizing knowledge management in their academic and administrative operations, it seems that knowledge management tools and techniques used in the corporate setting are useful and applicable to higher education institutions.

The field of knowledge management is a new discipline that has proved to be valuable in the corporate sector (Gourova & Antonova, 2008; Grimaldi, Rippa, & Ruffolo, 2008). In this technological and information-driven age, knowledge is regarded as the main driving force for gaining a real and significant competitive advantage. Organizations today are compelled to incorporate knowledge management techniques for capturing, sharing, and applying knowledge in their operations (Wajidi & Asim, 2009). In addition, a knowledge culture is required for promoting a climate of perpetual learning within the organization. This is necessary if they seek to achieve their mission and experience sustainable growth (Hatten & Rosenthal, 2002; Hauschild, Licht & Stein, 2001; Mihavics, as cited in Vyhmeister, 2005).
Knowledge management has been preached and adopted by many business organizations in the corporate sector. It is seen as critical for corporate success in the 21st century business environment. The question this article addresses is whether the methods and techniques of knowledge management practiced successfully in the corporate sector are also applicable to higher educational institutions. Is there evidence from literature to suggest that the application of knowledge management tools and methods can add value to higher education institutions?

To address the issue mentioned above, this article begins with a brief review of literature on the nature and knowledge management systems to give readers a brief background about knowledge management. This is followed by a short relook at the influences of organizational culture and learning on knowledge management. Having established an understanding of what knowledge management entails, this article then addresses the issue of the applicability of knowledge management tools and techniques in higher education institutions through revisiting of related literature and references to several universities that have adopted knowledge management techniques and tools in their academic and administrative operations.

**Knowledge**

Knowledge has become an increasingly critical resource, and it is almost impossible to gain competitive advantage without managing it strategically. Knowledge is information that managers and workers transform, contextualize and apply in order to create value for the business, which in turn allows it to remain in the market (Pearlson & Saunders, 2004). Knowledge also occurs when people add their own experience and judgment to the already existing information (Kidwell, Vander Linde, & Johnson, 2000).

Today, it is practically impossible for business enterprises to remain competitive without managing knowledge effectively. Organizations must create a knowledge culture, since knowledge is now “the driving force in our economy” and “the lifeblood of a corporation” (Hauschild et al., 2001; Yeh, 2005 p. 36). This fact cannot be overlooked by organizations pursuing sustainable growth.

Various types of knowledge can exist in an organization. Combe (2006) divides knowledge into four types:

- **Explicit** The formal knowledge of the company in the form of documents, etc.
- **Tacit** Knowledge stored in employees’ minds, also called “know-how.”

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**Theoretical**
Knowledge called “know-why,” in other words, the reason for this particular knowledge.

**Strategic**
Knowledge commonly called “know-what,” which implies knowledge that is relevant for decision-making and for adding value to the company.

**Knowledge Management Systems**
One basic task in managing an organization’s knowledge is to determine the “stock” of information possessed and its benefits (The Results-Driven Manager, 2007). Once an organization has completed this process, it needs to manage its knowledge effectively to increase the value of the firm. To manage knowledge, an organization must generate, transfer, and apply its knowledge in its operations (O’Brien & Marakas, 2006). Managing knowledge in an organization implies connecting people with the knowledge they need so that they can apply it in their daily activities (Kidwell et al., 2000). When knowledge management is well developed, it enhances the performance of an organization (Sarawanawong, Tuansuk, Vongprasert, & Khiewyoo, n.d.).

Sijing (2002) suggests that the structure of a knowledge management system includes individualization, knowledge intercommunication, management methods, sharing evaluation, infrastructure, flow reconstruction, knowledge dissemination, and access and search. Meso and Smith (as cited in Abdullah, Selamat, Sahibudin & Alias, 2005) suggest that the components of a knowledge management system are technology, function, and knowledge. Technology would include things such as computer-mediated collaboration, group decision support, intelligent agents, and data mining. Function includes skills such as using knowledge, finding knowledge, creating knowledge, and packaging knowledge. Knowledge implies concepts such as know-how, know-what, know-why, personal tacit, and cultural tacit. For Meso and Smith, these are the main components of a knowledge management system.

The implementation of a knowledge management system can benefit businesses in various ways:

- Competitive advantage can be gained. When business organizations integrate knowledge with business strategy, they can obtain competitive advantages and improve their ability to innovate, especially at this time when diverse trends show that businesses need to manage knowledge appropriately (Combe, 2006; Pearlson & Saunders, 2004; Tang, 2008).

- Agility and flexibility: “ Agility, adaptability and alignment are possible only when partners promote knowledge flow between supply chain nodes” (Myers & Cheung, 2008, p. 68). This implies that transferring knowledge across the firm provides value for all the stakeholders
because the business becomes more adaptable to environmental changes, which in turn benefits the entire organization.

- Quantitative benefits: An empirical study that evaluated the impact of IT on Knowledge in an Italian manufacturing company called “Exeura,” found that they could reduce up to 20% of personnel complaints and training by using a knowledge management system in its managerial processes. Efficiency (measured in monetary units) was increased in this company as well (Grimaldi et al., 2008).

Currently, corporations are employing numerous knowledge management tools and methods for managing knowledge appropriately. Some of the most important techniques are the following: For capturing knowledge, companies are using knowledge mapping (Kim, Suh & Hwang 2003; Pearson & Saunders, 2004), expert systems, case-based reasoning, fuzzy logic (Laudon & Laudon, 2008), and storytelling (Gill, as cited in Milam, 2003). For discovering knowledge, the most important techniques are data mining (Laudon & Laudon, 2008), neural networks (Baets, 2005; O’Brien & Marakas, 2006), intelligent agents (Abdullah, et al., 2005), and digital dashboards (Milam, 2003).

With regard to sharing and disseminating knowledge, the common techniques are; enterprise knowledge portals (Laudon & Laudon, 2008; O’Brien & Marakas, 2006) blogs, wikis (Shelley, 2008) e-mail reports (Laudon & Laudon, 2008), and groupware (Abdullah et al., 2005). For the creation of knowledge, companies are utilizing virtual reality (O’Brien & Marakas, 2006, Milam, 2003). Finally, knowledge application organizations are using computer-mediated collaboration, e-task management, and group decision support (Abdullah et al., 2005, Baets, 2005).

All the knowledge management techniques and methods mentioned above are seen to enhance the administration of knowledge within business organizations. However, knowledge management requires a culture that supports its initiatives and a learning approach that allows the organization the creation and transference of new knowledge. The concepts of organizational culture and organizational learning will be briefly discussed in the next section since they are intertwined with knowledge management.

The Role of Organizational Culture in Knowledge Management

It is undeniable that organizational culture has a great impact on the way an institution deals with change and innovation. The culture of an organization is a critical determinant of how to assimilate new ways of doing things. Shein (as cited in Luthans, 2008) suggests that culture is a pattern that shapes the way a group of people deals with problems, how they learn, and what values and
beliefs they possess. The culture of an organization influences its thinking and its behavior; in other words, it affects how the organization develops its operating and strategic activities (Gurteen, 1999). Consequently, it is critical that organizational culture be considered when the organizations are dealing with knowledge management.

The main features of a culture, according to Luthans (2008 p. 75), are observed behavioral regularities, norms, dominant values, rules, and organizational climate. In dealing with knowledge management, organizations must be aware of the impact of organizational culture on adopting this management approach. Park (as cited in Stankosky, 2005) observes that a knowledge management program must be known by the people and adapted to the organizational culture before its implementation.

Organizational culture must be managed if it is going to contribute to organizational success. If it is not, the culture of the organization can be an impediment to the success of the knowledge management endeavor (Sarawanawong et al., n.d.). Furthermore, organizational culture can also be an obstacle that keeps people from sharing knowledge (Serefogu, Durmaz, & Gubuz, 2008). Finally, in some cases, the culture might even eliminate knowledge management of the organization. Sarah and Haslett (2003) posit that if the culture of the organization does not promote sharing and learning activities among its employees and reward them for their contribution, the knowledge management system is useless within the organization.

The Role of Organizational Learning in Knowledge Management

The concept of organizational learning encompasses the attitude and willingness of any institution to evaluate its performance and the incorporation of appropriate knowledge for achieving its mission. This means that organizations need to assess their past managerial execution and effect the necessary adjustments to help them to continue attaining their goals (Mihavics, as cited in Vyhmeister, 2005).

Organizational learning entails procedures and actions in which the organization utilizes its tacit knowledge (Baets & Van Der Linden, 2005). Organizational learning is focused on how an institution is continually learning and putting into practice new knowledge and effecting the necessary adjustments in its structure and practices. Vyhmeister (2005) holds that organizational learning encompasses the idea of change, experience evaluation, and active response to external conditions; thereby organizations will have more guarantee of success.
A learning organization will be engaged in obtaining and sharing knowledge and will be open to modifying its administrative behavior in response to the acquisition of new knowledge (Garvin, 1998, as cited in *Harvard Business Review*). Consequently, the more an organization is willing to shift its behavior as it incorporates new knowledge, the better and greater its learning will be.

Having given a brief revisit of the nature and importance of knowledge management and knowledge systems for organizations, and the role and influence of organizational culture and learning in knowledge management, the following section examines the applicability of knowledge management in higher educational institutions.

### The Need and Applicability of Knowledge Management in Colleges and Universities

Rapid changes in the business environment are affecting all organizations; both for-profit and not-for-profit. Institutions of higher education are no exception. They cannot remain static or indifferent to this social and economic reality. McCaffery (2004) explains that traditional universities are now competing with other types of tertiary institutions such as corporate universities, virtual universities, and mega universities.

The university sector is experiencing a decrease in student enrollment. At the same time, they are facing pressure to improve the quality of their graduates. Due to limited financial resources, many governments are reducing their allocations or grants to education institutions, and there is a need for university to be more creative and to look into other sources of raising revenues (Reid, 2000; Sarawanawong et al., n.d.; Yeh, 2005). This has brought about calls for colleges and universities to take on board the methods and tools of knowledge management that have been shown to be beneficial and value adding in the corporate sector (Yeh, 2005).

Management of higher educational organizations are subject to pressures and influences (discussed earlier in this article) similar to those of commercial organizations. Yeh (2005) believes that if universities adopt a knowledge management system in their operations, they can cope more successfully with the new challenges they are currently facing. He goes on to say that the creation, transfer, and application of new knowledge will lead an organization to enhance its practices and be more flexible in adapting to the changing environment.

Despite the fact that colleges and universities are usually not-for-profit organizations, the amount of social change and the effects of globalization on the whole economy demand a paradigm shift in the way they have been managed. In order to operate more successfully in these challenging times, the
author of this article believes that it is critical that educational administrators become aware of the importance of knowledge for better management of their institutions.

It is well accepted that an economy is based on knowledge, which is the “raw material for innovation” and competition (Boisot, as cited in Mckenzie & Van Winkelen, 2001; Davenport, 2001; Hauschild et al., 2001 p. 80; Kokacková & Malá, 2009). On these grounds, it is suggested that the adoption of a knowledge management system and a knowledge culture in higher education institutions may increase the probabilities of survival and development.

Further, it has been suggested that in the complex scenario in which universities are involved, knowledge management systems can contribute to enhancing the different types of activities these organizations perform. Knowledge management can aid educational institutions in improving their decision-making processes, in reducing the time for designing curriculum, in research development, in improving academic and administrative activities, and in lowering operating costs (Kidwell et al., 2000).

In addition, colleges and universities can increase student enrollment and retention, and retain key technology employees. They also can be more competitive, since they may offer on-line courses, which are more accessible to more students, as well (Milam, 2003). In this sense, the adoption of knowledge management techniques that allow these organizations an effective integration with their operating activities, will positively impact their own academic and administrative performance.

The arguments for the application of knowledge management in colleges and universities sound convincing. As mentioned early, the question here is whether the tools and methods of knowledge management, specific to the corporate sector, that have been shown to be beneficial and value adding, are also appropriate to the operations of higher education institutions.

Examples of Knowledge Management Techniques in Higher Education

It has been suggested that many of the corporate knowledge management techniques are applicable to university operations. Some specific areas in which knowledge management can be applied in higher educational institutions include the research process, the curriculum development process, student and alumni services, administrative services, and strategic planning (Kidwell et al., 2000). McKnight (2007) holds that libraries can use knowledge management in their operations. She suggests the use of intranet, expert systems, different types of blogs, and wikis for improving the decision-making process and helping library users obtain the information they need.
Luan (2002) points out that data mining helps to answer questions such as “who are the students that are taking the most credit hours? Who are the ones likely to return for more classes? Who are the ones who persist at our university/college? Which alumni are likely to donate/pledge more? What type of courses can we offer to attract more students?” Luan also suggests that data mining is suitable for managing alumni, enhancing institutional effectiveness, marketing activities, and enrollment management. Data mining can be employed for various institutional investigations such as one-year retention, six-year graduation, alumni rate prediction, course schedule planning, and predicting potential demand for library resources (Kumar, Luan, Bohannon & Sujitparapitaya, 2007).

The experiences in adopting knowledge management tools and methods by a limited number of universities in different countries are briefly presented below:

- In 2003, Ohio State University established the Center for Knowledge Management, whose goal is “to leverage the strengths of people, processes, data and technology to foster the creation, analysis and dissemination of new knowledge” (Cain, Branin & Sherman, 2008). The authors contend that since the creation of this knowledge center, this university has improved the ways in which faculty members are sharing and documenting their knowledge. In addition, faculty and students have better interaction.

- Monash University, Australia, is utilizing conversation-based learning tools and methods for organizational learning and knowledge creation. They have called this new approach the Monix project. This conversation-based learning tool includes collective conversations, conversation spaces, dialogue, a learning studio and a project studio, strategic images/cartoons, a conversation café, and visualization. These two latter approaches have helped the people in this university on “the journey of knowledge-creation and learning” (Sarah & Haslett, 2003, p. 12).

- The university Petroleum-Gas of Ploiesti, Romania is utilizing a case-based reasoning (CBR) model for knowledge creation and teaching activities management in their distance education program. In this university, the process of replying students’ questions has been automated. When a student asks a question about a particular topic, the system checks if a similar question has been asked in the past and then replies to the question using the stored knowledge in the educational system knowledge base. This university is also employing data mining for research activities management, with the assistance of Weka software. At the time of the report, the application is in progress and it
is expected that, with the application of these two knowledge management techniques, the university can improve the quality of their decisions (Oprea, Tudor & Tanasescu, 2008).

- At the Middle East Technical University, Turkey, they are developing a knowledge culture by using technology for creating and gathering information and for disseminating academic knowledge (Serefoglu, Durmaz & Gurbuz, 2008). The Institute of Technology and Commerce, Taiwan, is employing a culture of sharing knowledge, knowledge road map, self-service intranet portals and networks, and community of practice knowledge sharing learning communities. They have also implemented a knowledge management model that includes knowledge management strategies, knowledge management road map, knowledge management process and implementation, knowledge base and transfer, knowledge management infrastructure, and measurement and evaluation (Yeh, 2005).

The few case reports of universities adopting knowledge management tools and methods of the corporate sector appear to be positive. The reports given by these universities suggest that the applications helped them to solve problems and at the same time, they experienced growth. Table 1 summarizes the main knowledge management techniques applied to these higher educational institutions and the benefits obtained as a result of such application. This table presents the experience of five universities representing five countries on four continents. As the table indicates, the application of knowledge management techniques has brought about benefits. Implicit in this table is the fact the corporate knowledge management appears to be applicable to colleges and universities.

From the benefits and experiences reported by several universities, there are some impediments that higher educational institutions must overcome when applying knowledge management and creating a knowledge culture throughout the organization. The following section will deal with some of the major challenges in applying knowledge management in colleges and universities.

Challenges in Implementing Knowledge Management in Higher Education

Many administrators in higher education regard investing in technology as good enough to solve the issue of knowledge. Reid (2000) mentioned that college presidents were spending a lot of money on technology, and they did not know “where they were going.” The lesson is clear: in conjunction with the investment in technology, the creation of a knowledge management system and a knowledge culture within colleges and universities is necessary. It seems that
although investment in technology is a necessary first step it is certainly not sufficient for managing knowledge satisfactorily and for the creation of a knowledge culture (Hatten & Rosenthal, 2002; Hauschild et al., 2001). In order to create a favorable environment for knowledge integration within colleges and universities, educational administrators must recognize and deal with some specific challenges. Several of these challenges are discussed below.

Table 1
Knowledge Management Techniques

<table>
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<tr>
<th>Educational institution</th>
<th>Knowledge management technique applied</th>
<th>Benefits reported</th>
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<tbody>
<tr>
<td>Ohio State University, USA</td>
<td>Knowledge sharing and OSU: pro</td>
<td>Improvement in knowledge sharing of best practices, better interaction between faculty and students</td>
</tr>
<tr>
<td>Monash University, Australia</td>
<td>Conversational-based learning tools, conversation café, and visualization</td>
<td>Increase in knowledge creation and learning</td>
</tr>
<tr>
<td>Petroleum-Gas University of Ploiesti, Romania</td>
<td>Case-based reasoning and data mining</td>
<td>Improvement in on-line teaching activities, better management of research activities, and quality in decision making</td>
</tr>
<tr>
<td>Middle East Technical University, Turkey</td>
<td>Creation of a knowledge culture through the use of technology</td>
<td>Development a knowledge culture and dissemination of knowledge within the university</td>
</tr>
<tr>
<td>The Institute of Technology and Commerce, Taiwan</td>
<td>Road-map, self-service intranet portals and networks, and community of practice</td>
<td>Organizational growth and a greater organizational ability to solve problems</td>
</tr>
</tbody>
</table>
Failure to Integrate Knowledge Management

In numerous colleges and universities, there is no integration of knowledge management in their administrative and academic operations because it is a new discipline, but it is one that is growing rapidly (Gourova & Antonova, 2008; Sijing, 2002). Kidwell et al. (2000) posit that colleges are recently beginning to use knowledge management.

Information Instead of Knowledge

Of twelve universities in the United Kingdom that had a real information/knowledge management system in place, only two of them utilized the term knowledge management, the rest of them preferred to continue using information (McKnight, 2007). The issue seems to be the inability of higher educational institutions to shift their thinking to where knowledge can be the focus and not information (Cope, Cope III, & Folse, 2004). A significant number of universities have a rigid structure that impedes the incorporation of interdisciplinary disciplines (such as knowledge management) since they regard themselves as individual organizations (Oosterlinck, n.d.).

Lack of Planning and Rapid Societal Changes

Another problem that universities face is a lack of planning concerning knowledge management (Sarawanawong et al., n.d.). Actual changes are occurring faster than the ability of academic institution to keep pace, which is forcing universities to do their business in a different way (Cain et al., 2008). Holmes and Gardner (2005) maintain that the educational system is not developing at the same speed at which society advances, which implies that academia must adopt a new approach for dealing with educational and managerial issues.

Human Resources and Priorities

Another specific problem that deters knowledge management implementation is a lack of staff, lack of leadership, unclear priorities, and distrust of data (Cope et al., 2004). Milam (2003) mentions other problems such as insufficient time of employees to devote to knowledge management, an organizational culture that does not contribute to knowledge sharing, a failure to realize the benefits of knowledge, financial benefits that are difficult to measure, and the fact that people do not possess the skills to deal with knowledge management techniques. In Khon Kaen University, Thailand, Sarawanawong

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Ismail Garcia and colleagues (n.d.) assert that many staff members lack comprehension of the knowledge management process, which implies that learning and sharing culture needs to be improved in this institution. Together with this, more knowledge policies are required and better ways of storing organizational knowledge are necessary. Another example comes from Middle East Technical University, Turkey, where in an empirical study, Serefoğlu et al., (2008) found that not many people consider the benefits of knowledge management. In contrast, many show a low disposition for sharing knowledge, updating, and storage of existing knowledge.

The instances mentioned above show some of the challenges and problems that universities need to overcome in order to implement knowledge management and promote a knowledge culture. Nevertheless, it is possible to implement knowledge management in institutions of higher education, and gradually break down the barriers in these organizations in order to provide a renovated management approach for increasing performance.

Table 2 presents a summary of these major challenges that many universities are confronting when implementing knowledge management techniques. The challenges presented in Table 2 seem to suggest that leaders of higher educational institutions must train faculty and staff in knowledge management techniques and at the same time communicate the benefits of such methods and techniques. Leaders also need to promote a culture of knowledge sharing among all members of the university/college. The next section will expand on this issue when dealing with the implementation of knowledge management in universities and colleges.

<table>
<thead>
<tr>
<th>Challenges in Implementing Knowledge Management in Universities</th>
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<tr>
<td>Lack of understanding concerning what knowledge is and how it is different from information</td>
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<tr>
<td>Rigid organizational structure</td>
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<tr>
<td>Insufficient integration of knowledge management techniques in academic and administrative operations</td>
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<td>Lack of planning and slow pace to assimilate societal changes</td>
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<td>Lack of leader involvement and insufficient time for employees to develop knowledge activities</td>
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<tr>
<td>Low willingness of faculty and staff to share knowledge</td>
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<tr>
<td>Employees need more training in knowledge management techniques</td>
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<td>Low awareness of the benefits of knowledge management</td>
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Implementing Knowledge Management

Once colleges desire to implement a knowledge management system, they must take into consideration some actions that will insure the effectiveness of the system. First, they need to have a strategy for developing the knowledge management system (Yeh, 2005). Oosterlinck (n.d.) advises that it is essential to communicate to organizational members that information technology and knowledge management are different. This distinction is important in order to assimilate a knowledge culture and a learning approach within educational institutions.

Another factor to consider is training organizational members regarding the benefits of knowledge management and how it can contribute to improving their performance. Employees need to be conscious that sharing and updating the knowledge they utilize in their daily activities is critical for improving the overall knowledge system (Serefoglu et al., 2008).

It is crucial to define the most important activities that should be integrated into the knowledge management model (Oprea et al., 2008). It is also vital to design the structure of a knowledge management system and conduct a pilot project (Kidwell et al., 2000; Yeh, 2005).

The implementation of knowledge management requires also that universities promote the concept of being a community of practice, since this activity helps them share knowledge and organizational learning. Martin (2006) states that community of practice is based on the assumptions that learning is a social activity, knowledge needs to be united with practice, and employees need to be empowered in order to maximize their learning potential. When organizational members belong to a community of practice, they learn better and organizations can take advantage of this fact. All these actions will work better if higher educational institutions can create a knowledge culture that includes collaboration and the design of devices that allow the knowledge to be accessible to all people in the organization (Huang, as cited in Yeh, 2005).

Conclusion

Knowledge management is contributing in the corporate setting to yield competitive advantage in a world characterized by rapid changes and a huge flow of information. Organizations are aware that knowledge is the intangible asset that can make a great difference in the way they compete and experience higher levels of profitability as well.

In a similar way, knowledge management also appears to be valuable for higher educational institutions. Currently, there are reports of universities, from several countries, using knowledge management techniques. Their reported and expected outcomes appear encouraging.
The main knowledge techniques employed by these universities are, conversational learning tools, conversation cafés, case-based reasoning, data mining, knowledge creation through technology, mapping, self-service intranet portals and networks, community of practices and others. In this regard, the benefits reported by them are improvement of knowledge culture, increase of knowledge creation, knowledge dissemination, better interaction of faculty and students, organizational growth, problem-solving capabilities, and more efficient research process management. Other benefits found in the review of literature include the reduction of the time for designing curriculum, research development, improvement of academic and administrative functions, and the reduction of operating costs and increase of student enrollment and retention.

Despite these positive facts, educational institutions will face challenges in the implementation of knowledge management systems. These challenges may include the lack of staff, leadership, unhelpful organizational cultures, rigid organizational structures, and the inability of members to see the benefits of knowledge management. Perhaps these challenges have retarded the implementation of knowledge management systems as fast as it would have been expected.

Nevertheless, based on the experience of several universities and in spite of the challenges and adjustments required, corporate knowledge management appears to be applicable to higher educational institutions. It seems that knowledge management techniques and tools may ensure better performance and enable these institutions to handle changes in a more successful way.

References


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