Full Length Research Paper

Sustainability-based knowledge management performance evaluation system (SKMPES): Linking the higher learning institutes with the bottom billions

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Knowledge has become one of the most invaluable resources to the organizations and their main source of sustainable competitive advantage; hence, more and more knowledge management (KM) systems and approaches are undertaken by organizations. Yet, possessing knowledge management systems and approaches alone will not guarantee organizational success. It is crucial to monitor KM practices and evaluate the performance of KM in the organization and at different levels. The article studies some of the main existing knowledge and KM-related frameworks and highlights their weaknesses. The analysis shows that, existing KM frameworks cannot accommodate the increasing role of organizations toward the society and its sustainable development. Therefore, in line with the scope of the research in the academic setting, the need for considering social responsibility of the institutes of higher learning and universities as part of their knowledge management performance evaluation is emphasized. Moreover, some of the main existing knowledge and KM-related frameworks have been studied and an enhanced comprehensive Sustainability-based Knowledge Management Performance Evaluation System (SKMPES), along with the requirements for its development are introduced. Finally, the way forward and suggestions for future research are provided.

Key words: Knowledge management (KM), knowledge management performance evaluation, management control, sustainability-based knowledge management performance evaluation system (SKMPES), sustainable development, organisational competitiveness.

INTRODUCTION

With the advancement of technology, access to a wide range of customizable services has been provided to the users. This technological shift has brought more competition among organizations of different kinds and has urged them to invest on their core competencies in order to stay ahead of their peers and rivals, retain more users by providing quality services, and benefit from the environment and the opportunities it provides to them (Nejati and Nejati, 2008; Nejati et at., 2009; Nejati, 2010). Traditionally, the core competencies of organisations used to be in capital and labour, however, with the emergence of new technologies and managerial perspectives, the focus of organisations is now more on their knowledge resources and intellectual assets (Chang and Wang, 2009). Nowadays, knowledge has become a main source of power, a strategic property and the major factor for organisational competitiveness and privilege (Alipour et al., 2010; Choi et al., 2008; Pourezzat, Nejati, and Nejati, 2008), as well as a driver of organizational

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excellence (Nejati et al., 2010a). It can create added-values and extra opportunities for the organization and differentiate it from its peers.

With knowledge, organizations can handle their scarce resources more efficiently and effectively, while without it, they are vulnerable to fail (Laudon and Laudon, 2006). That is why in order to build on the competitive advantages and respond to the needs of various organizational stakeholders (Nejati et al., 2010b) the knowledge assets should be effectively utilized and managed. Notably, managing knowledge has become a major determinant for the organisations' survival in today's challenging world (Chang and Wang, 2009).

The purpose of this article is to critically analyze the existing KM frameworks in order to identify the weaknesses which avoid them from being compatible with the growing institutional demands. To that end, first the applications of knowledge resources and the numerous methods for managing knowledge assets are discussed. This is followed by a review of previous KM performance evaluation studies. Finally, the existing KM frameworks are critically reviewed and their lacking components of suitability with the needs of today from the perspective of responsible businesses and sustainable development are identified. In order to meet the public demands and exert organizational efforts in contributing to development, the holistic concept of sustainable development is incorporated in the proposed enhance model of KM performance evaluation. This leads to the introduction of the Sustainability-based Knowledge Management Performance Evaluation System (SKMPES) for the university and higher learning institutes that fill the gaps in the previous frameworks, by providing added value for the traditional knowledge management performance assessment framework in addressing the increasing demands of community from the university.

This study is important, as the investigation of the practices of KM within the context of universities and institutes of higher learning has not been adequately studied before (Arsenijević et al., 2010).

KNOWLEDGE MANAGEMENT

Before looking into KM and its application, it is important to have an overview of knowledge, its definition, types and conversion process. Despite the long history of quest for knowledge which goes back to almost 25 centuries ago at the time of Plato and Aristotle, there is no single agreed definition for it. Some authors label knowledge as enriched information. For instance, Davenport et al. (1998) define knowledge as information combined with experience, context, interpretation, and reflection. Similarly, Turban (1992) describes knowledge as the set of organized and analyzed information to be used for solving a problem or making a decision. Yet, other authors define knowledge more generally as "an under-

stating of why and how something works (Clarke, 1998)."

No matter how knowledge is defined in words, it is widely believed to be formed by the two main components: Information and Data. While data is regarded as raw facts; and information is composed of a set of data, knowledge is considered as meaningful information.

To turn data into useful information, utilize the data and information, and transform them into valuable knowledge is the new challenge for the organizations in order to reach sustainable competitive advantage (Bogdanovicz and Bailey, 2002). To that end, an organization must manage its resources and organize data into categories of understanding and reliable information. The firm must utilize extra resources to come up with approaches and methods to convert information to knowledge, create new knowledge resources, and retain its knowledge assets (Laudon and Laudon, 2006).

There are different types of knowledge, as introduced by various researchers, namely, tacit and explicit knowledge (Choi and Lee, 2002; Nonaka and Takeuchi, 1995; Nonaka et al., 2000; Polanyi, 1966), semi-tacit knowledge (Maiden and Rugg, 1996), semi-explicit knowledge (Al-Hawari and Hasan, 2002), declarative, procedural, causal, conditional and relational knowledge (Zack, 1999), and finally, inert, significant, experiential, and know-how (Paisey, 2002).

Tacit knowledge, of the most common types of knowledge, refers to the knowledge that resides in the minds of people and has not been documented (Laudon and Laudon, 2006). Tacit knowledge is highly personal and difficult to be formalized, hence, making it impossible to be easily communicated or disseminated (Hamel, 1991; Nonaka, 1994; Von Hippel, 1994).

On the contrary, explicit knowledge is the knowledge that has been documented and is available in different formats (Laudon and Laudon, 2006). Explicit knowledge can be retrieved, organized, stored and shared throughout the organization (Balthazard and Cooke, 2004) and can be expressed in a formal language through words or numbers (Gore and Gore, 1999).

These two types of knowledge can be converted to one another. Nonaka and Takeuchi (1995) identified four knowledge conversion processes between tacit and explicit types of knowledge in their SECI model as shown in Figure 1. They included socialization, externalization, combination, and internalization.

The SECI model is a process model which shows the conversion of knowledge between the explicit and tacit forms and highlights how new knowledge will be created by the individuals, specially the knowledge workers (Nonaka and Konno, 1998).

KM has become an important part of organizational process in today's world. Either consciously or unconsciously, KM processes exist and are practiced to some extent in almost any organization. There is no doubt that in the recent knowledge world, knowledge is created in the daily life and through routine communications.
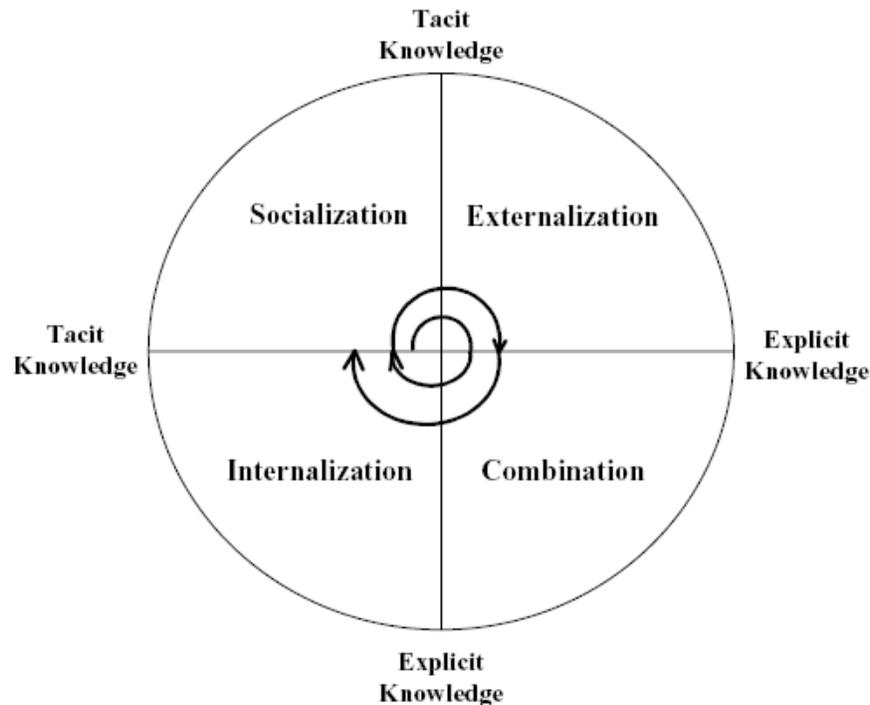
Figure 1. SECI-Model (Nonaka and Takeuchi, 1995).

disseminated continuously. Moreover, the shared knowledge is utilized by individuals and the organization in order to reach specific goals.

Despite the unexpected number of KM implementation failures and doubts that some researchers have raised about what specific advantages KM can provide for the organization (Choi and Lee, 2003; Ford and Chan, 2003), there are many evidences of the positive influence of KM on organisational performance (Carrillo and Gaimon, 2004; Choi and Lee, 2002, 2003; Kalling, 2003; Lee et al., 2005; Lin and Tseng, 2005). It should be noticed that successful implementation of KM projects and initiatives depend on several factors and requirements as suggested by scholars including infrastructure and information systems, discipline and harmony, proper control and measurement system, human coordination, effectiveness of strategic management, top management support and commitment, incentive systems, organization culture, understanding of the cultures of partner stakeholders, etc. (Argote et al., 1990; Ayas, 1996; Balthazard and Cooke, 2004; Davenport et al., 1996; Davenport et al., 2001; Gold et al., 2001; Holsapple and Joshi, 2000; Hull et al., 2000; Lee et al., 2005; Ndlela and du Toit, 2001; O'Dell and Grayson, 1999; Weber et al., 1996).

Many researchers have studied the roles and contribution of knowledge management by different methods (Malhotra and Segars, 2001; Maltz et al., 2003; Ngai and Chan, 2005) and have described knowledge management roles in creating competitive advantages for the organization (Chen et al., 2009; Choi and Lee, 2002; Chuang, 2004; Dutta, 1997; Grant, 1996; Johannessen and Olsen, 2003; Joshi et al., 2007; Liebowitz et al., 2007; Nonaka and Takeuchi, 1995; Sherif and Xing, 2006; Wang and Chang, 2007; Zhuge, 2002).

Some authors consider KM as a strategy in guiding the organization toward its objectives. Accordingly, they define KM as "the process of identifying, capturing, and leveraging knowledge to help the company compete" (O'Dell and Grayson, 1998).

Other authors consider knowledge management to be attached with organizational goals and organizational practices. For instance, Rastogi (2000) defines KM as a process aimed at reaching organizational objectives through a systematic and comprehensive continuum of creation, sharing, dissemination, development and utilization of knowledge by individuals and groups. Similarly, Laudon and Laudon (2006) introduce KM as the set of business processes which has been used in order to enable organizations to create, save, transfer, and use knowledge in its procedures and organizational approaches. Above all, knowledge management research and previous studies related to it can be categorized as in Table 1.

Knowledge management performance evaluation

Previously, the success or failure of organizations' performance was measured only by using financial

Table 1. Overview of previous knowledge management studies (Adapted from Lee et al., 2005; Chen and Chen, 2006).

Category	Implications	Sub-categories (Researchers)
General	Managerial and social issues related to KM are studied.	KM strategy and organizational culture; Specific processes and activities within KM; Review and research agenda;
Learning organization	Firms maintain organizational knowledge to gain a sustainable competitive advantage.	Organizational knowledge; Learning capability and design of leaning organization;
Role of IT	KM should be supported by IT and/or KMS so that KM can contribute to increasing management performance.	Knowledge management system (KMS); Role of IT in KM in general; Role of IT for specific KM activities; Knowledge mining and Decision Support System (DSS) for KM; Strategic use of the Internet;
Success and failure factors	KM success factors should be taken into consideration before implementing a KM strategy and initiative.	KM success factors; Investigation on failure reasons for KM projects;
Evaluation of KM performance	Measuring intangible assets promotes organizational learning and empowers organizational capabilities and competitive advantages.	Intellectual capital; Balanced Score Card; Strategic organizational learning and organizational capabilities; Human resource training; Communities of Practice (CoP); Product and process knowledge assessment; Individual, context, content and process knowledge assessment; Performance-based evaluation; Activity-based evaluation; Plan-do-check-act (PDCA) cycle; KM project management model; Benchmarking; Best practices;

as suggested by Kaplan and Norton (1992) in their Balanced Scorecard model; as well as knowledge perspectives which have been of interest to researchers in the recent years are other important perspectives in evaluating performance of organizations.

In this regard, with the increasing awareness about the importance of managing knowledge resources in organizations, the necessity to control and evaluate the performance of KM practices in the organization has grown. Even Drucker, the father of modern management, has highlighted the importance of measuring progress when he says; "If you can't measure it, you can't manage it." However, measuring intellectual assets is not an easy task. In fact, measuring knowledge and its performance is of the most difficult parts of the KM activities (Ruggles, 1997).

Although, there are several clues for the roles that KM plays in improving organization's performance, it is necessary that the process of implementing and applying KM practices in the organization is controlled and evaluated in order to ensure that it is aligned with the organization's strategic plans and objectives and that the KM performance is meeting the expectations. Therefore, it is necessary that some indicators and measures are defined to assist managers in making decisions about knowledge assets and KM activities and ensure effective knowledge management (Ahn and Chang, 2004; Carrillo and Gaimon, 2004; Ribiere and Sitar, 2003). Apart from that, the evaluation of knowledge management performance can be done at various levels including the strategic and operational levels. In addition, according to Nejati et al. (2009a) evaluating the performance of

knowledge management can be undertaken at different levels of individual, cross-individuals, organizational, and cross-organizational levels.

In the recent decade, several researchers have attempted to measure the contribution of KM and its performance in different ways. These studies can be categorized accordingly:

KM contribution to organizational processes

Some authors have studied the performance of KM and the knowledge application in terms of its contribution to the organizational processes, strategies and decision makings. For instance, Ahn and Chang (2004) developed the KP3 methodology to assess the contribution of knowledge to business performance. Yim et al. (2004) also developed a method of knowledge-based decision making (KBDM) to get to know about various decision alternatives and identify which decision factor has a higher impact on the overall performance of the organi-zation. On the other hand, Hsieh et al. (2009) introduced a knowledge navigator model (KNM) to guide KM implementation. The model defined five KM maturity levels including knowledge chaotic stage, knowledge conscientious stage, KM stage, KM advanced stage, and KM integration stage. In another example, Del-Rey-Chamorro et al. (2003) came up with a framework to assess the contribution of KM solutions of a business toward its corporate objectives. The framework used a set of key performance indicators (KPIs) as lead indicators.

In another research, Fan et al. (2009) investigated a fuzzy multiple attributes decision-making method (FMADM) for evaluating knowledge management capa-bility (KMC) for organisations.

Alternatively, Ngai and Chan (2005) used analytic hierarchy process (AHP) to evaluate knowledge manage-ment tools and select the most appropriate one to support KM.

Chang and Wang (2009) also developed a forecasting framework based on the FMCDM approach to raise awareness of the critical influential factors on the success of KM implementation among organizations, compute the rate of success of KM projects, and determine the prerequisites of initiating a KM project.

KM projects effectiveness

Other studies on KM performance have looked into the effectiveness and impacts of KM projects. For example, Laitamaki and Kordupleski (1997) used a return on investment (ROI) index to evaluate KM projects' performance in customer value added (CVA) products. In another study, Lee, Lee, and Kang (2005) suggested knowledge management performance index (KMPI) for

assessing the performance of a firm in its knowledge management perspective. It consisted of five components (including knowledge creation, knowledge accumulation, knowledge sharing, knowledge utilization, and knowledge internalization) that could be used to form the knowledge circulation process (KCP). They concluded that when KCP efficiency increases, the KMPI will also increase, which as a result enables the organization to become more knowledge-intensive.

Similarly, in the academic setting, there is a growing interest to apply performance management and KM evaluation techniques to enhance the effectiveness, competitiveness and quality of education globally (Nejati et al., 2007).

KM and organizational competitors

Another group of authors have focused on the role of competitors in shaping KM practices and applications. For instance, Huang et al. (2007) in their study pointed out that the single most important task of a KM performance measurement scheme is to compare a company with its main rivals. Therefore, they proposed a methodology for comparing a firm's KM performance with its major rivals using the analytical network process (ANP) method to find out in which direction the company's efforts should be directed to gain or maintain a competitive advantage. They developed a compre-hensive model which incorporated a variety of issues for conducting a comparative KM performance measurement in comparison with company's major rivals.

It is also worth noticing that KM is more than a formalization process, as it helps to facilitate the process of knowledge conversion from tacit to explicit and vice versa. Nowadays, many universities are increasingly trying to enhance the performance of the KM processes and practices (knowledge identification/generation, know-ledge acquisition, knowledge development, knowledge sharing, knowledge utilization, and knowledge retention) which can result in their excellence and provision of more professional quality education, and lead to better overall performance of the university.

In the mean time, universities must be concerned about the society and the communities in which they operate, as part of their social and environmental responsibilities. Nowadays, universities worldwide are changing their mission, vision, and educational practices to cope with the growing concerns about social and environmental issues and to respond to the public demand for a sustainable society. Universities are thus expected to become pioneers in acting toward sustainability and contributing to the betterment of lives of the bottom billions who live in poor conditions. Because, universities have the potential to be leaders not only in education and research arenas, but also in community engagement, institutional arrangements, and contribution to social,
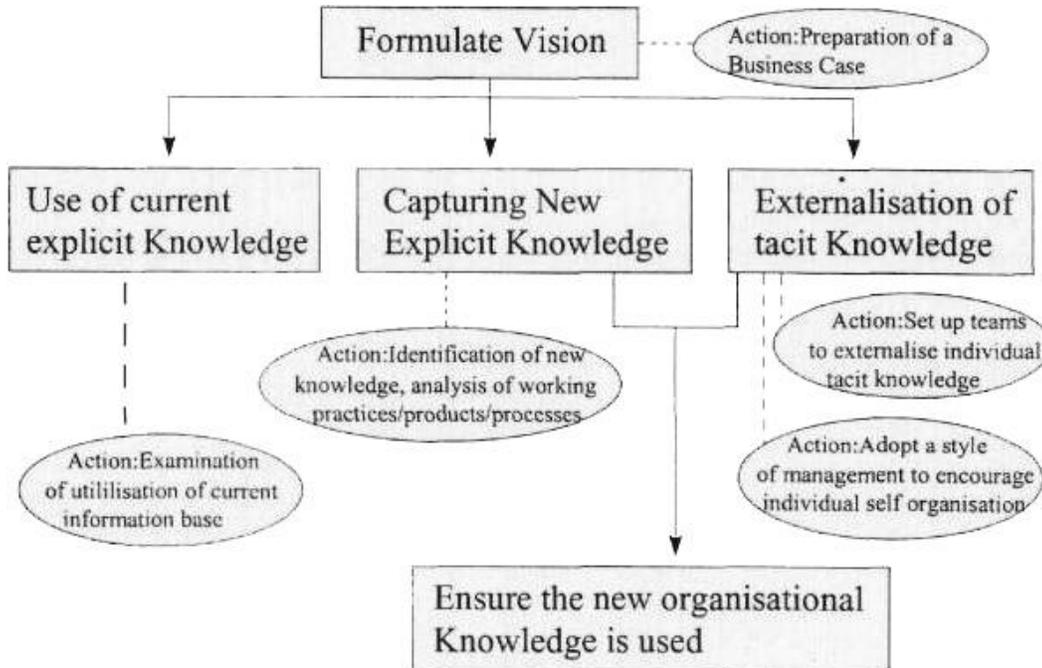
Figure 2. Knowledge management framework (Gore and Gore, 1999).

economical, and environmental improvements (Moore, 2005; Stephens and Graham, 2010). As Nejati and Amran (2009) highlighted, organizations are to improve their social and environmental performance, as part of their responsibility toward the society.

Therefore, in designing a system for evaluation of the knowledge management performance, sustainability responsibilities of the institutes should also be taken into account. This element is one of the key areas that have been neglected in the existing KM frameworks. Next, the current available knowledge management frameworks will be analyzed to identify their major drawbacks and weaknesses. This will enable the authors to tackle those drawbacks and develop a comprehensive Sustainability-based SKMPES that is deemed suitable for academic settings. This system requires close interaction with each of the departments within the organization in order to collect and analyze performance data, and provide monitoring and evaluation reports in a timely manner.

A study of the existing knowledge management frameworks highlights their incompatibility with the growing social demands from organizations. In fact, the KM evaluation frameworks should no longer merely focus on internal aspects of the organization, but also encompass the external factors and the social demands. But before proposing the SKMPES, it is necessary to analyze the existing models to pinpoint where they fall short in meetings the demands of today. Thus, the following paragraphs introduce some of the main knowledge management assessment frameworks and highlight their major drawbacks.

Review of existing models

Gore and Gore (1999) developed a framework which could assist managers to achieve KM and manage changes in their working place accordingly. The framework suggested that at the initial stage, a vision should be formulated by top management for the purpose of knowledge management. Then through use of existing explicit knowledge in the organization, as well as obtaining new explicit knowledge and externalization of tacit knowledge, organization could turn individual knowledge into organizational knowledge (Figure 2). Despite its extensive focus on knowledge creation and knowledge utilization, the framework suggested by Gore and Gore (1999) fails to take into account the important practices of knowledge retention and knowledge sharing. Furthermore, it doesn't discuss how knowledge and different KM functions are going to be evaluated and monitored.

In another study, Probst et al. (2000) developed a KM model on the basis of the Action Research approach. This model, also known as Genf Knowledge Management Model, comprised of six central processes, along with two building blocks of knowledge goals and knowledge evaluation that formed a cycle (Figure 3). As it can be seen in Genf Model, the knowledge evaluation happens only at the end of the loop. This is a major
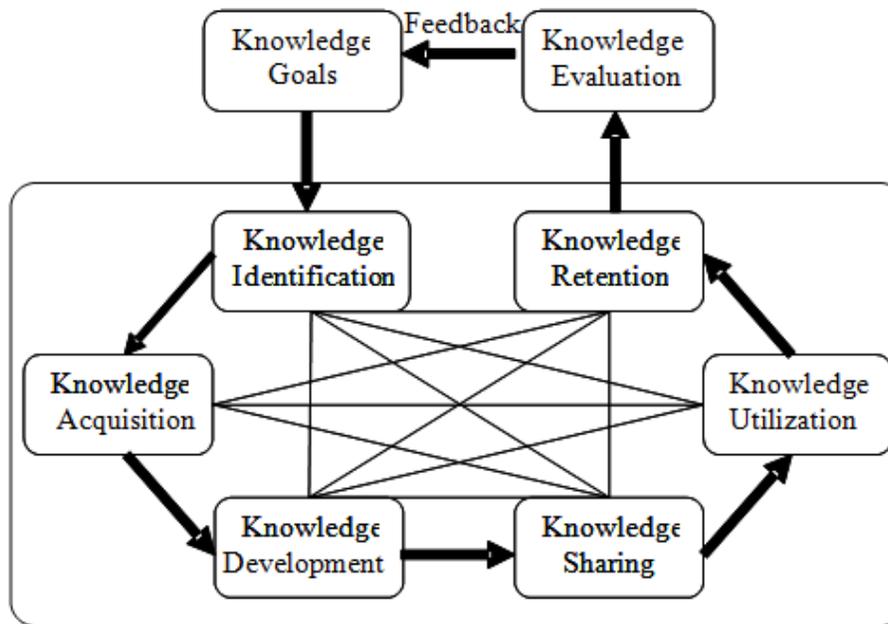
Figure 3. Building blocks of knowledge management (Probst et al., 2000).

drawback of the model, because evaluating knowledge management performance is not a one-time task, but an ongoing monitoring process which should control the performance of KM in each and every single practice (category) of knowledge management, namely knowledge identification, knowledge acquisition, and so forth. Lee and Yang (2000), introduced the Knowledge Value Chain (KVC) model as a framework for KM using Porter's value chain analysis concept (Figure 4). The KVC model suggests that competitive advantage grows out of the way organizations manage and implement different parts in the knowledge value chain.

Yet, one of the drawbacks of this model is in neglecting the importance of social responsibilities of the organization and its roles toward sustainable development. Moreover, an ongoing assessment of the KM components is missing.

Research framework

It has been discussed so far that each of the existing frameworks has their own strengths and weaknesses as highlighted in the previous section. Some of these frameworks have been very general, while others have been more focused. However, none of them have been specifically developed by considering the requirements and characteristics of a university setting. Neither have they taken into account the sustainable development roles of the organization and incorporated it into the models. In other words, lack of attention to sustainable development and failure to act according to its requirements despite its significant role for a balanced

development, has been a major drawback of existing models, especially the ones dealing with academic settings, because, although, the individuals and organizations influence the realization of sustainable development, some entities, namely the universities and higher learning institutes can be considered as the major promoters of sustainability who play a pivotal role in raising awareness on and contributing to a sustainable future (Lukman and Glavič, 2007). Thus, to overcome the weaknesses of the existing frameworks in blending the concept of sustainability into the performance monitoring process and to enhance the process of evaluating knowledge management performance, the SKMPES has been proposed for the university and higher learning institutes. It has been developed based on the review of existing models and modifying them to better fit the characteristics of universities in general and to cover the weaknesses of previous frameworks., Building upon the framework suggested by Nejati et al. (2009b) for evaluating the performance of knowledge management in the universities, SKMPES has been improved and developed upon review by and consultation with experts. This enhanced framework is illustrated in Figure 5.

The proposed Sustainability-based knowledge management performance evaluation Framework consists of different components and building-blocks: The sustainable development approach has formed the core of the framework, because sustainability is considered as a moral responsibility of the organization that needs to be blended into the organizational culture, actions and decision, and should be kept in the organizational mind all the time. This is in line with researchers' emphasis on universities' significant responsibilities toward society as
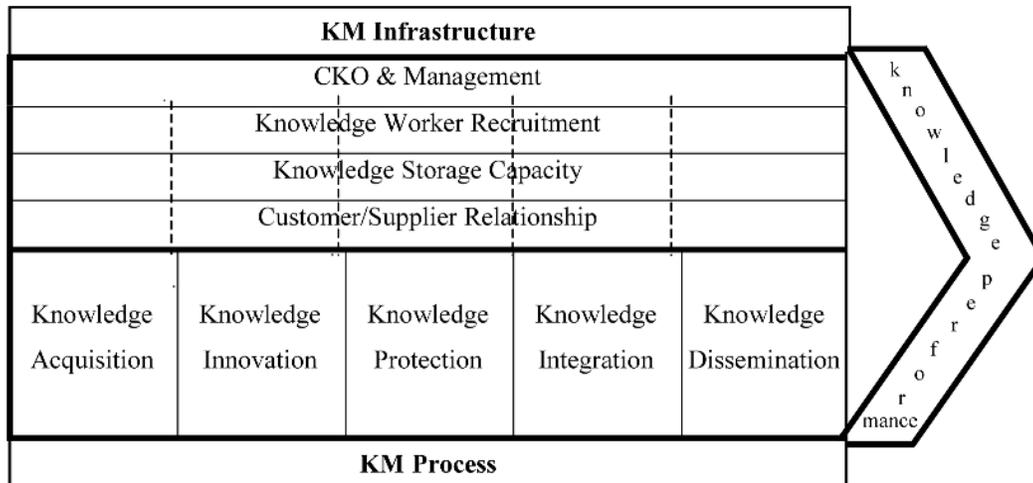
KM Infrastructure				
CKO & Management				
Knowledge Worker Recruitment				
Knowledge Storage Capacity				
Customer/Supplier Relationship				
Knowledge Acquisition	Knowledge Innovation	Knowledge Protection	Knowledge Integration	Knowledge Dissemination
KM Process				

knowledge perfromance

Figure 4. Knowledge value chain model (Lee and Yang, 2000).

Continuous Performance Evaluation

KM Enablers

KM Planning

Knowledge Identification

KM Processes

Knowledge Creation/ Development

Sustainable Development

Knowledge Acquisition/ Updating

Knowledge Protection

Knowledge Sharing/ Dissemination

Knowledge Utilization

Knowledge Management Infrastructures

KM Drivers

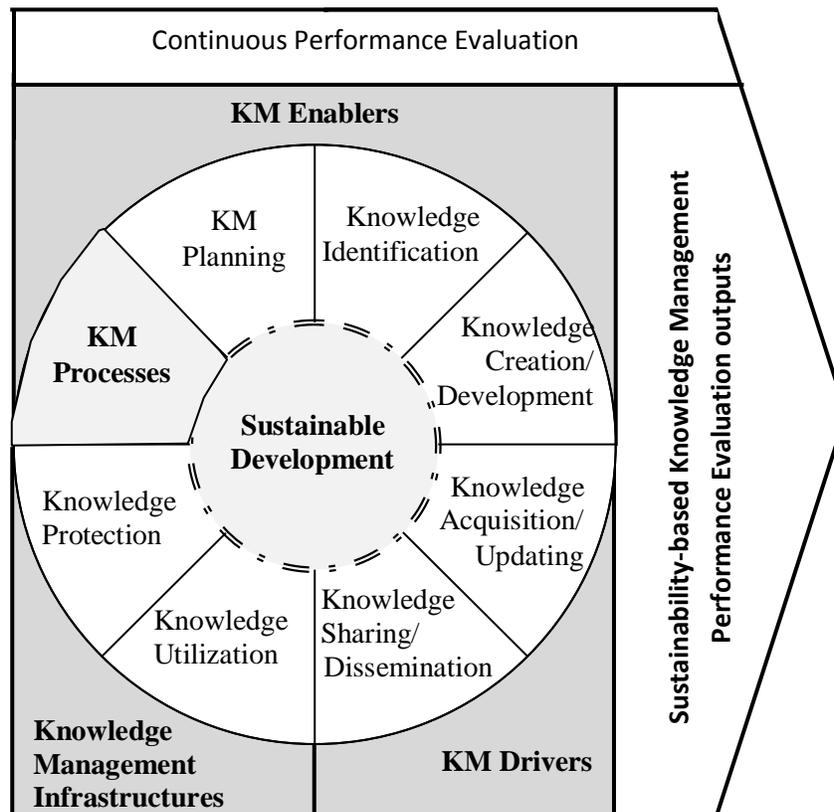Sustainability-based Knowledge Management Performance Evaluation outputs

Figure 5. Sustainability-based knowledge management performance evaluation framework.

pioneers in acting toward sustainable development (Moore, 2005; Wright, 2004) and means of achieving global sustainability (Wright, 2006). Universities have the potential to bring up decision makers and create responsible citizens who actively participate in the transformation of the society and work collaboratively to resolve the problems faced today. Moreover, the knowledge and educational deliverables of the higher learning institutes can influence the lives of the bottom billions and improve their socio-economic welfare.

The KM processes form the second internal layer of the SKMPES, to encompass the practices that require ongoing monitoring and performance evaluation. They consist of 1) KM planning, which refers to determining KM goals and expectations; 2) knowledge identification, which acts as the necessary process for selecting and classifying the knowledge resources both internally and externally to the organization; 3) knowledge creation/development; that refers to the practice of forming new knowledge resources and/or expanding the existing ones; 4) knowledge acquisition/updating, which highlights the process of capturing knowledge resources by both individuals and the organization, and continuously updating knowledge resources; 5) knowledge sharing/dissemination, which focused on the process of sharing knowledge between the individuals and departments; 6) knowledge utilization, that emphasizes the application of knowledge resources in problem-solving, performing activities, or decision making; and finally 7) knowledge protection, which refers to the retention process of the knowledge resources.

The outer layer consists of the framework consist of the following components: 1) KM Enablers, which emphasizes the importance of provision of qualified individuals and human resources who should work with the knowledge resources and contribute to the organizational objectives; 2) KM Infrastructures, that necessitates the provision of appropriate computer systems, programs and other hardware/software tools for archiving and managing knowledge resources, and 3) KM Drivers, which consist of backbone items, namely incentives system, organizational culture, motivational/supportive leadership, etc.

Finally, the continuous performance evaluation of the KM system is an important part of the framework which exists in all stages of the KM process and emphasizes the necessity for continuous performance, monitoring and assessment.

DISCUSSION AND CONCLUSION

Above all, different methods have been used by different researchers to study the knowledge management performance, including Balanced scorecard (Kaplan and Norton, 1992; Lee et al., 2005), Performance-based evaluation (Cavusgil et al., 2003), Activity-based evaluation (Kim et al., 2002), KM project management model (Kasvi et al., 2003) and etc. While previous authors have come up with some general frameworks for the evaluation of KM practices, the characteristics of these frameworks and their design can be extensively different based on the context at which they are applied. For instance, in the academic setting, the knowledge management performance evaluation frameworks are of high significance and necessitate special considerations to be appropriate for the work environment where they

are applied, because universities and higher learning institutes form the main heralds of knowledge creation and knowledge sharing in the society. Higher leaning institutes can be considered as bases where knowledge management processes and practices are implemented either directly and explicitly, or indirectly and implicitly. Nowadays, with the growing competition among research universities to excel their services and educational quality and improve their position in renowned universities' rankings such as Times Higher Education ranking, greater focus has been put on ways to monitor, control and improve universities performance especially in terms of knowledge and research. Yet, it should be noted that KM performance evaluation is not just about improving university's ranking, but developing an enhanced learning organization, fostering knowledge sharing and utilization, and achieving an organization-wide excellence. Especially with the commercialization of university rankings to certain points, excessive referring to such rankings may not be a good reference to judge on the real potentials and competencies of a university.

The purpose of this article has been to analyze the existing knowledge management frameworks and identify their drawbacks that stop them from being suitable to be applied in the recent educational and academic setting. The article has proposed a Sustainability-based Knowledge Management Performance Evaluation Framework that has resolved the drawbacks of previous models and has put a significant focus on the role of universities in contributing to the betterment of lives of bottom billions.

This is particularly important, because universities not only can make individuals aware of the growing sustainability-related social and global problems, but they can also contribute by themselves to a more sustainable world through better and more efficient use of resources, saving scarce resources applying eco-friendly designs inside campus and in the construction activities, feeding people's minds and showing them how to contribute to a sustainable world, running community enhancement projects, and mobilizing the efforts to improve the quality of lives for everyone.

As a working paper and line with the proposed SKMPES, the related KPI and KIP criteria are yet to be identified and provided, so that the performance level of KM practices in the organization can be quantitatively measured and evaluated. Of course, assessing KM performance has its own challenges and difficulties which might be different depending on the context of the study. Some of these most common challenges include the manipulation of real performance data, resistance to report transparently, and lack of or difficult access to required assessment data (Nejati, 2010).

In order to come up with appropriate indicators to assess the knowledge management practices among higher learning institutions with a sustainability-led approach, a comprehensive study is required. Authors are currently working on this project and the findings of

this on-going research are expected to be presented in the future publications.

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