

Empirical Analysis: Knowledge Management, the Human Focus and Intellectual Capital for Innovation in Smart/Future Universities

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Abstract: Knowledge management (KM) has been viewed as one of the most important developments in the fields of information studies and management in the modern times. By obtaining, organizing, documenting and sharing knowledge, KM helps complex organizations make better decisions and solve their problems efficiently and effectively. As the highest centres of learning, universities should build information infrastructure and create an atmosphere where academic and non-academic staff, students, researchers, patrons and other stakeholders can take part in various KM sharing actions. The role of knowledge workers in this regard is quite important. By promoting knowledge discovery and use, knowledge workers can bring about changes in the university's organizational cultures and individual behaviors relative to knowledge. Universities can play an important role in the building and unrestricted development of a knowledge-based society by recruiting and developing skilled and competent knowledge workers and empowering them to manage and leveraging the knowledge assets strategically. In this paper we look for the level of understanding of KM within the universities in Saudi Arabia and the current KM practice undergoing, and how they try to improve and identify the barriers preventing them becoming smart/future universities. As the study showed that many agreed on the importance of KM in their establishments, they either do not apply it, or is not supported by higher positions.

Keywords: Knowledge Management, Intellectual Capital, Smart University, Human Focus, Innovation, Higher Education.

I. INTRODUCTION

Information practices and learning strategies known as KM are gaining acceptance in the field of education. Knowledge has become a valuable property and KM has been widely practiced by many higher learning institutions as one of the most promising ways of achieving success in the information age (Mohayidin, et al. -2007). At the most basic level, KM can be described as a set of practices that helps to improve the use and sharing of data, information and knowledge in decision-making.

KM is a discipline that is concerned with the analysis and technical support of practices used in an organization to identify, create, represent, distribute and enable the adoption and leveraging of good practices embedded in collaborative settings and, in particular, in organizational knowledge processes, effective KM is an increasingly important source of competitive advantage, and a key to the success of contemporary organizations, bolstering the collective expertise of its employees and partners (Wang & Kourouklis, 2013). The strategic application and use of ICT to support KM in higher education is currently an emerging challenge and requires a new conceptual approach and research agenda to address new challenges. ICT uses in KM provide us with the potential for greatly enhanced access to knowledge combined with the challenge of how to manage the access. In addition, it promises improvements in the quality, efficiency, and effectiveness of higher education process; and draws solutions from and contributes to multiple disciplines including management, information retrieval, artificial intelligence, and organizational behaviour (Omona et al., 2010). Hence, universities must adopt and adapt good practices that emanate from ICT as a tool to enhance their KM strategy. KM methods and tools enable the universities to share their knowledge, to advance the level of teaching and research collaboration and to make relationships among the staff and students and other stakeholders. To effectively manage KM initiatives in universities,

the management need to wilfully and openly manage the processes accompanied with the creation of their knowledge assets, and to recognise the value of their intellectual capital to their continuing role in society (Mohayidin et al., 2007).

II. BACKGROUND

KM and Intellectual Capital management enable an environment conducive to human creativity and freedom of thought to innovation generation and they are important pre-requisites for this process to succeed (Egbu et al., 2001). KM is becoming gradually more important in university transformation leveraging on their staff's intellectual capital for innovation, effectiveness and efficiency. It is significant for smart and future universities to be not only educational centres CoEs but also innovative and successful organizations driven by KM and IC capabilities. Future Universities have to develop innovative and effective systems. They are seeking to enhance their universities' leadership and competitive edge, benefiting from innovative and effective use of their KM systems and by giving greater emphasis to the acquisition and creation of new knowledge (Chaston, I -2012) as well as new use of existing knowledge. The relationship between the budding body of knowledge referred to as KM and that of innovation enables universities and staff an opportunity to improve both the business performance and the work satisfaction through increased innovative services and methods, and conditions of work (McAdam, R. -2000). Caring about KM at every level of organization enables creating opportunities of organizations' innovation and growth. Moreover, if the university is managed in an intelligent way it will achieve a type of a smart university, through involving all five university contractual determinants in their decision making - people, building, knowledge grid, governance and environment (Owoc, M., & Marciniak, K -2013).

III. PROBLEM STATEMENT

The importance of new ideas and their manifestations as processes, practices or products cannot be overstated in competitive markets and in an era of globalisation. They are at the core of social change. Increasingly, innovation is being recognised as a fundamental agent of organisational change for success. University as an organisation that continually innovate are perceived to have competitive advantage over those that fail to exploit opportunities for innovation. However, the management of innovation is a challenging issue that involves complex understanding. In the recent years, universities need to transform from a normal university to a smart university, to keep up with the new requirements of the era (Ernst & Young, 2012). Innovation leads the university towards a smart university, If they develop a vision of what a smart model might look like, and develop a broad transformation plan. From this, we can find out how are opportunities for innovation can be used to create competitive advantage? What type of management should be implemented to encourage innovation? How does the university become innovative? How can human focus in KM/IC in Smart Universities promote the innovation?

IV. OPERATIONAL DEFINITIONS

The following terms are used in this study and are defined to provide readers with a full understanding of the conducted study:

• **Human Focus:**

KM as a systematic and integrative process of coordinating organization-wide activities of acquiring, creating, storing, sharing, diffusing, developing, and deploying knowledge by individuals and groups in pursuit of major organizational goals. It is the process through which organizations create and use their institutional and collective knowledge.

• **Knowledge Management:**

Knowledge Management (KM) is a procedure or practice of creating, acquiring, capturing, sharing and using knowledge, wherever it resides, to improve learning and performance in organisations (Al-Ghassani et al - 2002). Organisations which apply KM strategy can develop managerial activities which transfers, transmits, stores and applies knowledge, as well as providing the members of the organization with real information to conduct and make the right decisions, in order to achieve the organization's goals (Kanagasabapathy, K & Radhakrishnan, R).

• **Intellectual Capital:**

Intellectual capital is some of knowledge assets that are attributed to an organisation and most crucially contribute to improve competitive position of an organisation by adding value to defined key stakeholders'. Intellectual capital

comprises of all intangible resources that (a) are credited to an organization, and (b) helps to reach the organization's value proposition.

• **Innovation:**

Innovation is the procedure of making changes in the organization whether it is large or small, radical or incremental, to improve the products, processes, and services. Or a new organizational method in business practices that result in the introduction of something new for the organization that adds value to customers and contributes to the knowledge store of the organization.

• **Smart University:**

Smart university manages their department in an intelligent way. That means, during decision making they have to include all five university contractual determinants: human and social capital (called smart people), available physical infrastructure (called smart building), an integrated information infrastructure (called knowledge grid), strategic decision-making processes (called smart governance) and aspects related to the protection of the environment (called smart environment). (Owoc, M., & Marciniak, K-2013).

V. METHODOLOGY

A. Research Design:

This study design is a qualitative approach, uses semi-structured survey questionnaire to collect data which intended to investigate universities lectures' and administrations' perceptions about the relationship between human focus in KM, intellectual capital and the innovation in the universities and how they can lead the university to be a smart university. It was carried out using the survey questionnaire to review the level of KM systems used; and the humane focus in the intellectual capital available at universities, the innovation and smart university. The survey questionnaire was based on key areas of interest in this research including:

- KM strategy in universities.
- The added value that KM brings into the university to improve the innovation.
- Intellectual Capital available at individual and organizational level.
- Innovation, future and smart university development.

A self-developed instrument will be used for the data collection purposes. The population is only universities administrations' and lectures' enrolled in all the disciplines of the university. The collected data from a semi-structured survey questionnaire was analysed to capture how KM and intellectual capital have been used in the university.

B. Population and Sample of the Study:

The study adopted a three sampling groups, to ensure adequate representatives from both administrators staff and lecturers in different areas. Therefore, the study's population is defined upon the staff and the entire major universities that were selected. In the first group, we choose the professors. In the second group, lectures and the staff who have from 10 to 15 years work experience in the university, were chosen, in the third group, a simple random sampling technique was adopted to select the academic staff, who served as new employee in the university.

C. Data Collection:

The survey questionnaire, which was used in this research to record the responses of each respondent, contained mainly closed-ended questions. It has three sections:

- The first section consisted of questions regarding respondents profile, including demographic variables such as age, years of working experience; highest academic level achieved, as well as his/her professional and administrative positions at the faculty and in the university.
- The second section designed to get information about the KM/IC strategy applied in the university.

- The third section was focuses on questions about the Human Factor applied and innovation and how it can improve university's' performance to be a smart university.

The objective of this interview is to determine if the innovation can be affected by the KM strategy and the intellectual capital (IC) in the university, and what is the relationship between all of this and smart university. The data collected from the interview, had gained numerous information such as the application of KM strategy in the university, the challenges facing the universities in recent years to be a smart university and the link between innovation in universities and KM/IC.

VI. DATA ANALYSIS AND EMPIRICAL FINDINGS

The starting point in data analysis was to convert the primary or raw data, recorded in the interview questions, into meaningful information which serve the purpose of the study.

A. Demographic Variables of the Respondents (N=18)

TABLE I: Demographic Variables of the Respondents (N=18)

Demographic Characteristics	Variable	Frequency	Percentage (%)
Gender of Participant	Male	1	5.6%
	Female	17	94.4%
Age of Participant	19-25	1	5.6%
	26-30	2	11.1%
	31-35	2	11.1%
	41-50	8	44.4%
	51-60	5	27.8%
Position	Professor	2	5.6%
	Lecturer (Assoc. Professor)	4	11.1%
	Lecturer	8	11.1%
	Students (Master/PhD)	1	44.4%
	Other	3	27.8%
Field of study	Architecture & Building	1	5.6%
	Arts & Design	3	16.7%
	Biological & Life Sciences	2	11.1%
	Education		
	Health Studies	4	22.2%
	Language	1	5.6%
	Other	5	27.8%
		2	11.1%
Institution type	Public University	15	83.3%
	Private University & University College	3	16.7%
Years in current institution	1-4 years	9	50%
	5-10 years	3	16.7%
	11-15 years	2	11.1%
	more than 15 years	4	22.2%

B. Knowledge Management:

In the second part of the survey questions, we asked a few questions to roughly measure the level of KM in the universities in Saudi Arabia. When asked about what they know about KM 50% of participants said that it is strategic part of academic business, while 28% said that they have never heard of it. In asking about the current status of KM in their institution 50% said that they do not know, 17% said it was in the growth stage, 22% said it was in the introduction stage, and 11% said it was none existent. In the question asking if their institution recognize knowledge as part of their asset

base 61% said yes, while 39% said that they don't know. We also asked what is the attitude of senior management towards KM in their institution, 33% said that they see it as very important but hardly support it while 28% said it is very important and provide full support for it, and 6% Sees it as a waste and hardly bothers in applying it.

C. Human Focus:

The third part of the survey questions consisted of the Human Factor in the establishment, People at all levels recognise knowledge as a key resource to a degree at 33% while only 17% feel very strongly about it. And people in the university are aware of the need to proactively manage knowledge and consider it to be the key strategic asset to a strong degree at 33% and 17% feel very strongly about it. 39% say that recording and sharing knowledge is routine and second nature on less than a third of the time in their institution while only 11% feel very strongly about it. Change in the work life is kind of accepted with 33% of people agreeing to a degree, while 44% agreeing strongly and very strongly. When asked if all employees are co-operative and helpful when asked for some information or advice in their institution 50% said to a degree, 28% strongly agreed. Good KM behaviour like sharing and reusing knowledge is actively promoted on a day to day basis and individuals are visibly rewarded for knowledge sharing and reuse in their institution, 29% of people said it was practiced less than third of the time, while 33% said it was very strongly applicable. Most people said that there is a vision for how KM should integrate into their university. While 39% said that their university hones its skills for generating, acquiring and applying knowledge by learning from other universities' learning processes and that the university systematically assesses its future knowledge requirements and executes plans to meet them in a small degree and 22% does not apply it at all, while 28% use it regularly and 11% use it very often. Many said that there is a Training and development programs in KM behaviour are undertaken from point of recruitment with around 77% ranged from to a degree to very strongly, with only 22% not applicable. When asked if there is any duplication of effort in the University 56% said there is duplication to a degree, while 22% said there is hardly any duplication. 44% said that Information retrieval is effective to a degree, while 39% said it was strongly effective. 56% of people said that internal staff rotation is actively encouraged to spread best practices and ideas to a certain degree, and 39% of people apply it on a regular basis. And 50% of people agree that technology is a key enabler in ensuring that the right information is available to the right people at the right time to a degree, and 44% strongly agree. When asked if individuals are committed to continual improvement and are constantly generating new ideas within the university context, 50% of them said yes to a certain degree and only 11% felt strongly about it. And that ideas for alliances and joint ventures are constantly reviewed and acted on when necessary were made to a certain degree with 44% of the participants and strongly with 38%. In some establishments, 61% said that they highly allocate resources for on-going training and development of individuals, and that 28% do it in a much lower degree. And some universities highly recognises Intellectual assets and legally protect it with 50%, and 28% say they do to a certain degree, while 22% does not apply to them.

In order to become a smart / future university, some people said a change in infrastructure is needed and adding new facilities, while others said having innovative and experienced people is needed. Others made it a point that Good knowledge and communication, change and circulating positions among workers, training and developing skills and activities will be better. Some recommended Doing more research and try new ways of learning and teaching, Intensive training of staff and administrative employees in use of technology to facilitate and ease communication. While some expressed not knowing or having any idea of the matter.

And people gave an opinion on what prevents their institution from becoming a smart university. Some wrote that Routine and lack of changes in all aspects. Positions' Hierarchy and fear of having new blood, Lack of KM, not much of information sharing, and fear of taking risks to develop new ways. Also, not connecting with others especially international universities who have more experience. Others said that the lack of resources, facilities, support, new technology, equipment's, close supervision and conduct training and a high number of weak students prevent in becoming a smart university. Some said that it is because of the lack of time and money. Some reasoned that it's because of Paper work and unhelpful ideas, Presence of few of losers and defeatists and some people who are adamant about change and additional work. Another reason was bureaucracy, Internal Politics and that it was not accepted in the high ministry of education. While some expressed not knowing or having any idea of the matter.

VII. SUGGESTED CONCEPTUAL SOLUTION

We can see in some of the answers given in the questionnaire the lack of interest in KM and that might be due to the lack of knowledge of how important and useful it is. Therefore the researchers suggest a conceptual framework for an

effective KM. First of all we need to do a need assessment that is to assess why do we need this solution? What do we want to solve? What is the problem?

Secondly, we develop a system based on these needs to solve the problems mentioned at the first step. We then provide training for the system, by conducting workshops, explaining the need for KM and how useful it can be when implemented and offering support to those who need it. After implementation of the system, we evaluate the use of it and if it meeting the intended use, if not, we suggest another workshop or training (as shown in Fig 1).

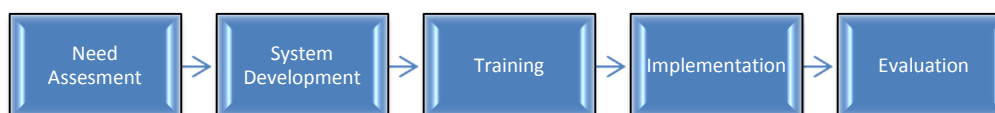


Fig1: Effective Knowledge Management (EKM)

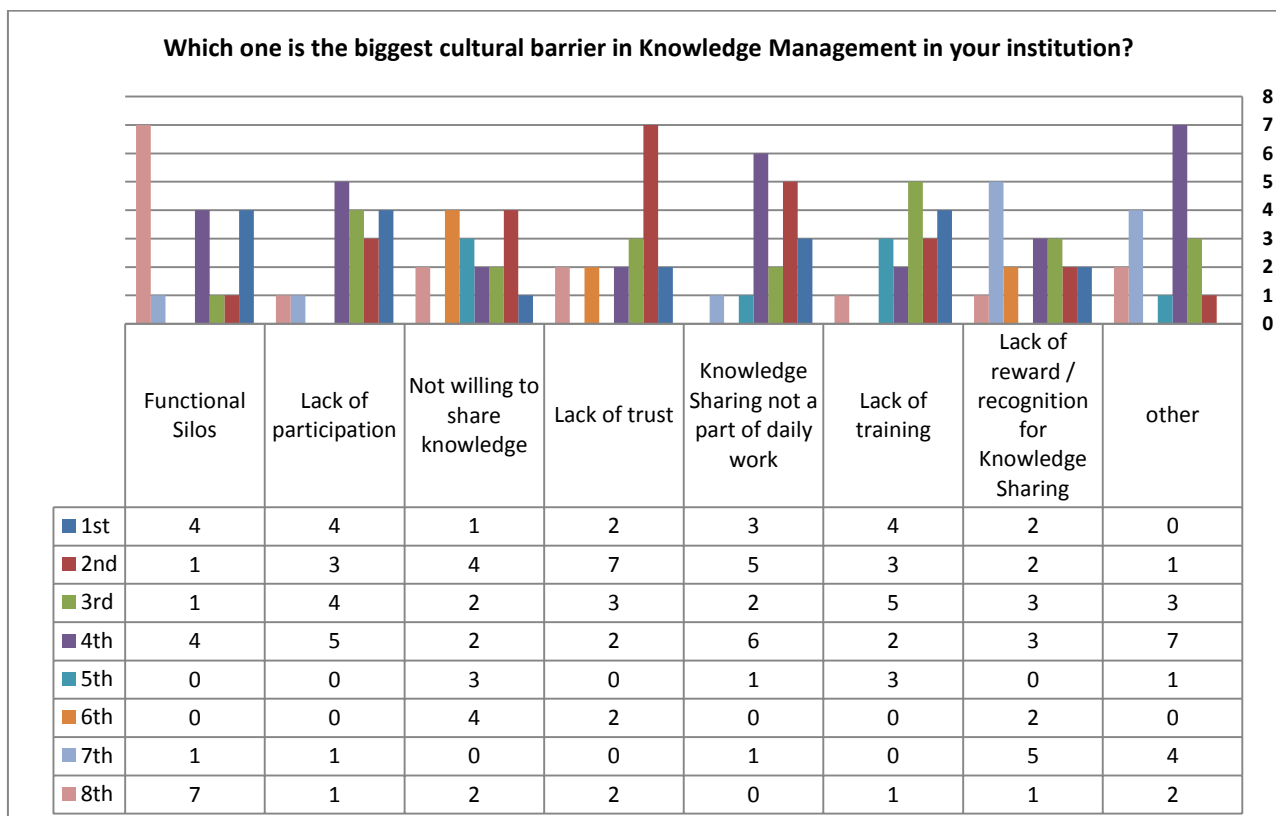
VIII. CONCLUSION AND FUTURE WORK

As we now, Knowledge management is an important part of any university, and the bases of KM are the people who work there. And people in the university hold the intellection capital and innovative ideas. So investing in the people can increase the productivity of the university, making it closer to achieving its goals. And managing and making good use of those resources are a crucial matter in a successful KM.

From this study, we can conclude that most universities who partaken in this survey had some grasp of what KM is, and that most agreed on the importance of KM in their establishments. But at the same time, they either do not apply it, or is not supported by higher positions.

We had a difficulty in getting more people to participate in our survey, due to many questions and lack of distribution. Hopefully in the next study, we will be able to reach a wider audience and get a more accurate result.

TABLE 2: The Biggest Cultural Barrier in KM



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