UNIVERSITI PUTRA MALAYSIA

KNOWLEDGE MANAGEMENT SYSTEM:
AN IMPLEMENTATION IN A PRIVATE
HIGHER LEARNING INSTUTION

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ABSTRACT

Knowledge management system becomes a common medium to distribute knowledge these days. Internet, intranet, extranet, videoconferencing, teleconferencing, messaging system and other collaboration tools are the enabler tools for everyone to reach for the knowledge, share it with others and used it from anywhere in world at any time. In the higher learning institution sectors, access of knowledge through the collaboration tools explore the opportunity to create, gather, access, organize, distribute and disseminate the higher learning institution knowledge to their community for many purposes.

This paper describes on the concept and approach of knowledge management system that could be implementing in the private higher learning institution. This paper will also shown on how the framework of knowledge management system model is developed. Changing the manual system into the computer-based system will take quite a long period but private higher learning institution must put their effort to grab the chance.

The achievement in conducting this framework of the knowledge management system is an added value for the other higher learning institution when they need to implement the good knowledge management system, which can help them to achieve their aim and mission.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

The knowledge management concept emerged in the mid 1980s from the need to derive knowledge from the pools of information and was mainly used as a business world term. In the 1990s, many industries adopted the term knowledge management in the connection with commercial computer technologies, facilitated by development in areas such as Internet, group support systems, search engines, portals, data and knowledge warehouses, and the application of statistical analysis and AI techniques. The KM implementation and use has rapidly increased since 1990s (Ioana Rus and Mikael Lindvall, 2002).

Knowledge management consists of managerial activities that focus on the development and control of knowledge in an organization to fulfill organizational objectives. It tries to give instruments to direct and manage knowledge optimal.

Knowledge management (KM) involves systematic approaches to find, understand, and use knowledge to achieve organizational objectives. Managing knowledge creates value by reducing the time and expense of trial and error or the reinvention of the wheel. KM creates value when shared knowledge is put to use and reused.

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1.2 PROBLEM DEFINITION

There is much knowledge in the private higher learning institution but the knowledge is scattered and isolated. An effort could be undertaken to make the isolated knowledge into the centered knowledge, which can be used by the organization. Here, the tacit knowledge is more than the explicit knowledge, so we have to convert the tacit knowledge into the explicit knowledge with the assistance of knowledge management system. In the private higher institution, there are many people in and people out every year. Even though the people out, the institution must make sure that their knowledge will be remained. In order to make sure that the knowledge will be remain; we have to come out with the knowledge management system solution. That knowledge will maintain the best practice by the staff of the institution because they can use the knowledge as their reference to do their task efficiently.

1.3 OBJECTIVE

The objectives of this paper are:

1. To identify the concept and approach of knowledge management system that could be implementing in private higher learning institutions.

2. To propose a suitable framework of knowledge management system in private higher learning institutions.

4. To identify issues on implementing of knowledge management system in private higher learning institution.

1.4 PROJECT SCOPE

The paper is intended to assist in focusing on a proper knowledge management system implementation framework for the private higher learning institution. Here, author will propose a framework that can be applied in implementing the knowledge management system in the private higher learning institution.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter, we will first discuss about the data, information and knowledge. Second, the knowledge management, and also several of its model and frameworks are presented. Next, knowledge management system (KMS) are defined and categorized. Finally, a discussion of knowledge management system implementation in the private higher learning environment is presented.

2.2 DATA, INFORMATION AND KNOWLEDGE

Data are the bits and bytes (Slobodan R. Sipcic and Zen Makonnen). It is a set of discrete facts, unorganized, but, the independent numbers, words, sounds and images can easily be structured and captured on machines. Data carry no judgment or interpretation.

Information is data that is organized, patterned, grouped, and/or categorized. Information is derived when someone gives a meaning to the bits and bytes (Slobodan R. Sipcic and Zen Makonnen). Information changes the way a person perceives something by impacting judgment or behavior. In contrast to data, which generally resides in a fixed place called a database, information moves around organizations. In other words, information becomes knowledge when it is actionable.

Knowledge exists when data and information are applied (Slobodan R. Sipcic and Zen Makonnen).

It has been pointed out that data, information and knowledge are not the same and many researchers use the term casually, as is evident from Table 1.

Authors	Data	Information	Knowledge
Wiig		Facts organized to describe a situation or condition	Truth and beliefs, perspectives and concepts, judgments and expectations, methodologies and know how
Nonaka and Takeuchi		A flow of meaningful messages	Commitments and beliefs created from these messages
Spek and Spijkervet	Not yet interpreted symbols	Data with meaning	The ability to asing meaning
Davenport	Simple observations	Data with relevance and purpose	Valuable information from the human mind
Davenport and Prusak	A set of discrete facts	A message meant to change the receiver's perception	Experiences, values, insights, and contextual information.
Quigley and Debons	Text that does not answer questions to particular problem	Text that answer the questions who, when, what, or where.	Text that answers the questions why and how
Choo et.al	Fact and messages	Data vested with meaning	Justified, true belief

Table 1: Definitions of data, information and knowledge

(Adapted from Dick Stenmark, 2002)

Knowledge results when information is combined with experience, context, interpretation and reflections and can therefore be regarded as a high-value form of information that is ready to apply to decisions and actions (T.H.Davenport, D.W. De Long and M.C.Beers, 1997). According to Russell Ackoff, knowledge is the appropriate collection of information; such that, it's intent is to be useful. Knowledge is a deterministic process. When we "memorize" information that we get, then we have amassed knowledge. This knowledge has useful meaning to us, but it does not provide for, in and of itself, integration such as would infer further knowledge. Understanding is an interpolative and probabilistic process. It is cognitive and analytical. It is the process by which we can take knowledge and synthesize new knowledge from the previously held knowledge. Wisdom is the process by which we discern, or judge, between right and wrong, good and bad.

The following diagram represents the transitions from data, to information, to knowledge, and finally to wisdom, and it is understanding that support the transition from each stage to the next (Gene Bellinger, Durval Castro & Anthony Mills).
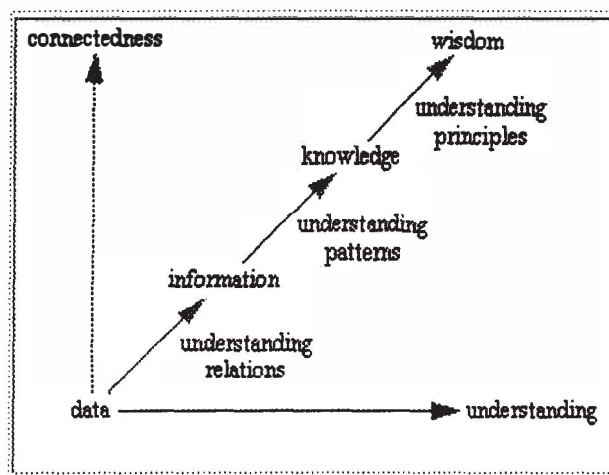

Figure 1: Diagram of transitions from data, to information, to knowledge and finally to wisdom.

(Gene Bellinger, Durval Castro & Anthony Mills)

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We can distinguish knowledge from its type. Knowledge about something is referred to declarative knowledge, knowledge of how something is performed is referred to procedural knowledge , and knowledge dealing with why something occurs is called causal or analytical knowledge (KnudSteiner, Wolfgang Essmayr and Roland Waagner, 2001).

Knowledge resources vary for particular industries and applications, but they generally include manuals, letters, summaries or responses to clients, news, customer information, competitor intelligence, and knowledge derived from work processes (Daniel E. O'Leary, 1998).

Tacit knowledge and explicit knowledge

Nonaka (1994) has identified two typed of knowledge, which is tacit and explicit. Tacit knowledge is defined as knowledge that is implied, but is not actually documented. It is something an individual "knows' from experience, from other people, or from combination of sources (Bipin Junnarkar, 1997). According to Jun Numata, Kunio Hanae and Bangyu Lei and Yukinori Iwashita , tacit knowledge is highly personal and hard to formalize, making it difficult to communicate or to share with others. They believe that knowledge can be amplified by the interaction between tacit knowledge and explicit knowledge. Tacit knowledge is the knowledge that people carry in their minds. It is obscure and difficult to access. It is often not known to others. In fact, most people are not aware of the knowledge they posses or of its value to others. Tacit knowledge is considered more valuable because it provides context for people, places, ideas and experiences. Tacit knowledge is not easily captured as a best practice or a lesson learned. Tacit knowledge generally requires extensive personal contact and trust to share effectively.

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Explicit knowledge refers to knowledge that is articulated in some symbolic form such as spoken or written words, mathematical or chemical formulas. It is externally visible and it is documented tacit knowledge (Bipin Junnarkar, 1997). Explicit knowledge can be expressed in words and numbers, and easily communicated and shared in the term of hard data, scientific formulae, codified procedures, and universal principles (Jun Numata, Kunio Hanae and Bangyu Lei and Yukinori Iwashita). Nonaka and Takeuchi define explicit knowledge or codified knowledge as knowledge that can be articulated and in formal language including grammatical statements, mathematical expressions, specifications and manuals. Such explicit knowledge, they conclude, can be transmitted easily and formally across individuals. Choo suggests that explicit knowledge is knowledge that is made manifest through language, symbols, objects and artifacts. Choo observed that, explicit knowledge can further be object based or rule based. Organizations tend to depend primarily on this sort of explicit and articulated knowledge, written down in memos and illustrated in graphs and used in decision-making processes, or institutionalized.

Here, we conclude that explicit knowledge is the knowledge that can be articulated and in formal language including symbol, formula, procedure, statement, mathematical expressions, artifact and object. It is the documented tacit knowledge which can be easily transmitted. Explicit knowledge can be categorized as either structured or unstructured. Documents, databases, and spreadsheets are examples of structured knowledge. Their individual data elements are organized in a particular way or schema for future retrieval. In contrast, e-mails, images, training courses, and audio and video selections are examples of unstructured knowledge because the information they contain is not referenced for retrieval.

An important implication of the tacit –explicit taxonomy is the degree of ease of knowledge transfer. In general, the higher the degree of tacit ness of the knowledge, the more difficult its transfer. There are two factors that should be considered in determining the degree to which tacit knowledge is to be converted to explicit knowledge. These factors are (1) cost of conversion and (2) the trade-offs between the organizational need to share and transfer knowledge versus the need for protection of significant knowledge items (Alavi, 1999).

Knowledge must be managed whether it is tacit or explicit because it is a key approach to solve current problems such as competitiveness and the need to innovate, which is face by the world today. It also can reduce insufficient waste of time, money, duplicated works and other waste of resources. The other reason is, it is important to have the best of knowledge on the right place and on the right time but for minimal costs as well (Spek, v.d. & Spijkervet, 1995).

Knowledge must be controlled in such way because it is needed to let the organization do their work process most efficiently. To survive in this knowledge era, organizations need to generate and use knowledge to the fullest extent in order. The speed, flexibility and efficiency are important with the application and the development of knowledge. It is important to have the best of knowledge on the right place and on the right time but for minimal costs as well (Spek, v.d. & Spijkervet, 1995).

Knowledge Environment

Knowledge life cycle activities occur in knowledge environments. The knowledge environment included of personal, communities of practices (CoP), inter-/intra organization and society (Antony Satyadas, 2001).

- Personal

  The focus here on speedy research, projects, focused conversations, fast comprehension (summary, structure, notation), and personalization around relevant content, filters, and target writing. This requires infrastructure capabilities such as portals, productivity tools, and CoP single sign-on, and personal virtual workspaces.

- Communities of Practices (CoP)

  Research studies (E.Wenger, 1999) indicate that CoP promote voluntary participating and sharing with no formal reporting relationships.

- Inter-/Intra-Organization and Society

  At the inter/ intra organizational level, requirements point toward knowledge networks that connect multiple CoP, team rooms, intellectual capital management systems and virtual work spaces for problem resolution and projects (U.Harigopal and A. Satyadas, 2001).

2.3 KNOWLEDGE MANAGEMENT

Knowledge management is the systematic, explicit, and deliberate building, renewal, and application of knowledge to maximize an enterprise's knowledge-related effectiveness and returns from its knowledge assets (Karl Wiig). Knowledge Management is a discipline that provides strategy, process and technology to share and leverage information and expertise that will increase our level of understanding to more effectively solve problems and make decision (U.Harigopal and A. Satyadas, 2001).

The objectives of knowledge management are to make the organization act as intelligently as possible to be secured in term of viability and overall process, and to realize the best value of its knowledge assets.

In my conclusion, base on the literature reviewed, knowledge management is comprised with the knowledge management process (create, disseminate, assimilate) with the using of expertise and technology tools or system to maximize the organization understanding and effectively make decision.

Goals of knowledge management

It is necessary for the knowledge management to focus on it processes and structures. Several of the knowledge management goals are (Spijkervet and van der Spek, 1995) :

1. The efficient and effective development of new knowledge and improvement of existing knowledge.

2. The directed distribution of new knowledge to other areas and the sharing of knowledge.

3. Taking care of a sufficient storage of knowledge.

4. The effective and efficient combination of the best available knowledge within a company or network of company's.

According to Gerhard Fischer and Jonathan Ostwald(2001), knowledge management goals is to enable innovative practice at an organizational level by supporting collaboration and communication among knowledge workers in the same domain and across domains.

In other words, the goal of knowledge management is to manage the knowledge, in order to make sure that the knowledge can be used effectively. To manage the knowledge, we must plan what is the sufficient storage, how to distribute, who is responsible to conduct, who will access the knowledge and what is the medium for the collaboration among the organizations.

Knowledge Management Perspective

Knowledge management in the organization must be considered from four main perspectives, which are:

1. Business perspective- Knowledge management focuses on why, where, and to what extent the organization must invest in or exploit knowledge. Which strategies, products and services, alliances, acquisitions, or divestments should be considered from knowledge related points of view.

2. Management perspective- knowledge management focuses on determining, organizing, directing, and monitoring knowledge related activities required to achieve the desired business strategies and objectives.

3. Hands-on-operational perspective- knowledge management focuses on applying the expertise to conduct explicit knowledge-related work and tasks (Karl M. Wiig, 1996).

4. From the Islamic perspective, definition of knowledge is much broader than most talked in the traditional definitions, which have focused on explicit knowledge, tacit knowledge and the technical infrastructure necessary for their integration. Knowledge is considered as social and human behavior rather than a technological setup. It must produce creativity and innovation. The knowledge also must be ethically bounded and it must serve the property rights, privacy and intrusion. The most important thing is, the willing to sharing, learning and teaching in the community. To qualify as an Islamic Environment it should be praiseworthy knowledge. The intellectual knowledge must be guided by the religious knowledge in order to make sure that we will not act against our religion.

Knowledge Management Framework

Our objective in using a framework in this research was primarily to facilitate the structuring and analysis of a set knowledge management initiatives, and to enable me to draw useful comparisons and reach consistent conclusions on which is the suitable framework to be implemented in the private higher learning institution.

(Dimistris Apostolou and Gregory Mentzas, 1999), have distinguished a number of current knowledge management frameworks, into four groups which is ones that focus on knowledge generation, ones that focuses on knowledge processes, ones that focus on technology and those that are holistic.

According to the author, the knowledge spiral, developed by Nonaka and Takeuchi focus on the knowledge generation. This model is related to the individual, which is human/ people and how they learn and share the knowledge, which is the part of the content development. Nonaka's (1994) spiral of organizational knowledge creation begins with sharing of tacit knowledge by groups of individuals and ends with the dissemination of knowledge inside organizations, with customers, and with market participants. Adoption of this framework calls for the understanding of processes influencing the facilitation of knowledge sharing on all levels of organization.

According to Nonaka's Spiral model (1994), organizational knowledge creation results from four modes: socialization (tacit-to-tacit), externalization (tacit-to-explicit), internalization (internalization (explicit-to-tacit) and combination (explicit-to-explicit). The model by Nonaka and Takeuchi didn't touch about the roles and the need of the technology to transfer, disseminate and process the knowledge. The spiral model is presented in Figure 2.
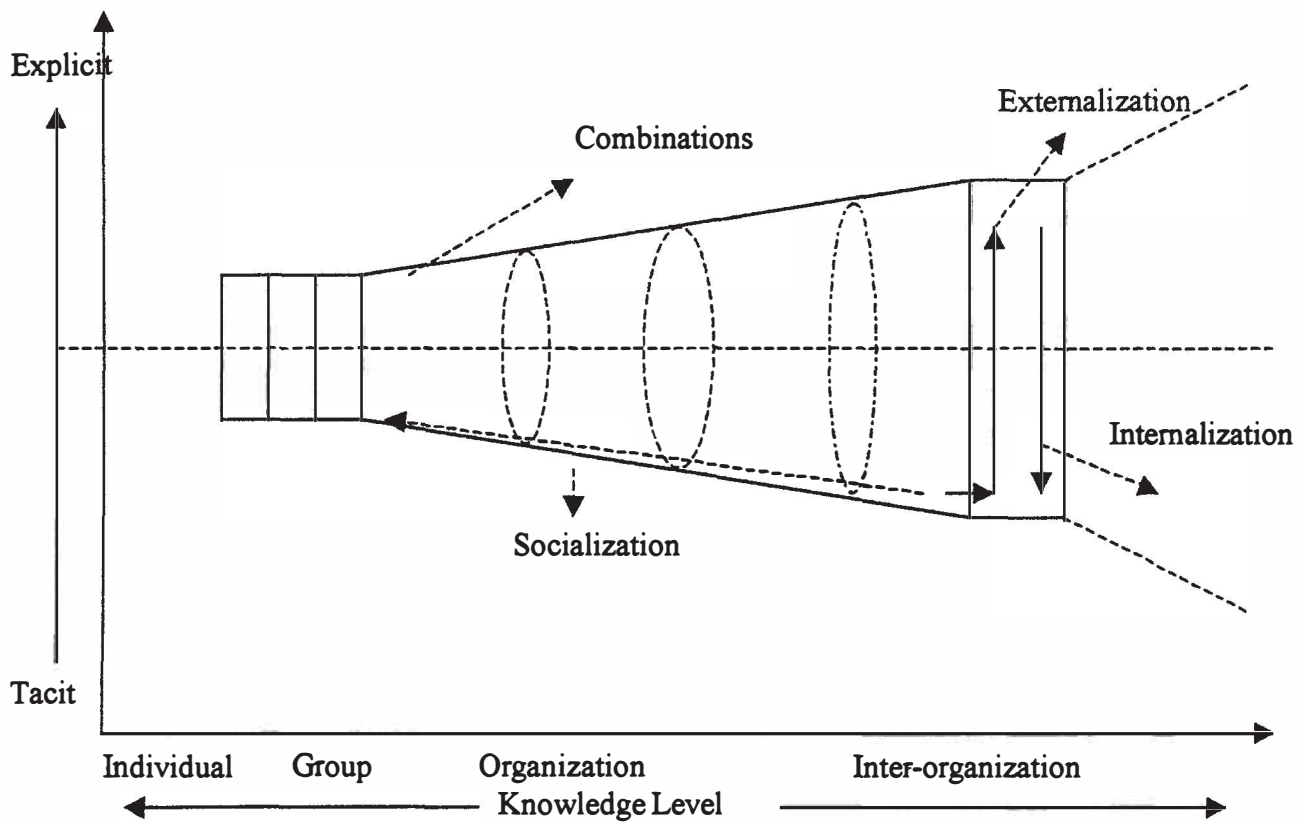
Figure 2. Spiral of Organizational Knowledge Creation
(Adapted from Nonaka, 1994)

C.W.Holsapple and K.D. Joshi (1999), has discussed about 10 knowledge management frameworks and the frameworks can be classified into two categories, which are: broad descriptive framework and specialized descriptive framework. There are five broad descriptive frameworks for knowledge management, which are: framework of knowledge management pillars , framework of core capabilities , model of organizational knowledge management , framework of the knowing organization and the framework of knowledge management stages .The specific frameworks are framework of intangible assets, model of intellectual capital, frameworks of knowledge conversions , model of knowledge transfer and model of knowledge management process .
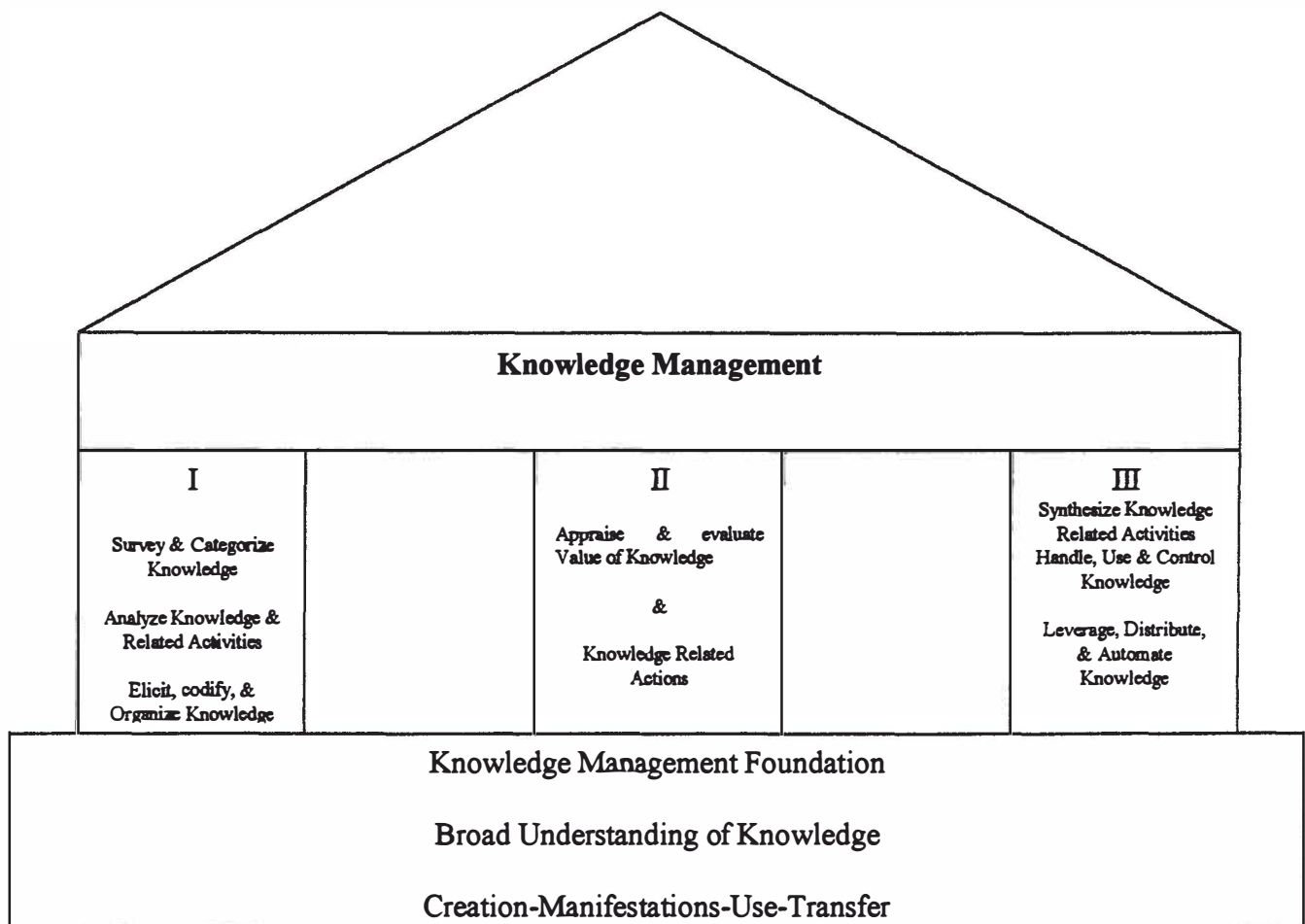
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Figure 3 . Pillar of Knowledge Management
(Adapted from Wiig, 1993)

Wiig's knowledge management framework involves what he calls the three KM pillars. These pillars represent the major functions needed to manage knowledge. As shown in Figure 3, the pillars are based on a broad understanding of knowledge creation, manifestation, use and transfer. Pillar I focus on exploring knowledge and it's adequacy, pillar II, involves appraising and evaluating the value of knowledge and the third pillar focuses on governing knowledge management activities. Wiigs focus on managerial issues that affect the conduct of KM in the organization