

# A STUDY OF KNOWLEDGE MANAGEMENT AND KNOWLEDGE MANAGEMENT SYSTEM IN SELECTED MALAYSIAN INSTITUTES OF HIGHER LEARNING

BY

RABIAH ELADWIAH ABDUL RAHIM

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

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He is Allah besides Whom there is no god; the Knower of the unseen and the seen; He is the Beneficent, the Merciful. He is Allah, besides Whom there is no god; the King, the Holy, the Giver of peace, the Granter of security, Guardian over all, the Mighty, the Supreme, the Possessor of every greatness, Glory be to Allah from what they set up (with Him). He is Allah the Creator, the Maker, the Fashioner; His are the most excellent names; whatever is in the heavens and the earth declares His glory; and He is the Mighty, the Wise.

(Quran 59: 22-24)

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# RABIAH ELADWIAH ABDUL RAHIM

A thesis submitted in fulfilment of the requirement for the degree of Master of Science in Management Information System

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### **ABSTRACT**

The move towards knowledge-based economy has made the ability to manage knowledge as a matter of competitive survival. This management concept which is aptly known as Knowledge Management (KM) is considered a key part of the strategy to support the constant growth and preservation of organisational knowledge. In the context of Institutes of Higher Learning (IHLs), a search of relevant literature indicates that there is a lack of research on KM and Knowledge Management System (KMS) especially across Malaysian IHLs. Therefore, it becomes crucial to view KM and KMS initiatives in Malaysian IHLs especially those that are formally engaged with this practice. In doing this, a case study of three selected IHLs which have established special centres for KM was carried out, namely Kolej Kejuruteraan and Teknologi Malaysia (KUKTEM), Universiti Putra Malaysia (UPM) and Universiti Teknologi Mara (UiTM). Data were collected through interviews, observations and analysis of formal documents from the selected IHLs. Firstly, the multiple case study approach was used to answer the first and second research objectives. The findings of this study were obtained from both within-case analysis and cross-case analysis. For within-case analysis, the descriptions of the KM initiatives of the cases were described individually. Whereas, the cross-case analysis, the description compared the findings from each of the three organisations selected. KUKTEM, which has implemented KM since its inception, seemed to be in the integration stage. UPM, which launched its KMS recently, is currently concerned with accumulating organisational resources through its KMS and is in the propagation stage. UiTM is identifying its knowledge assets and examining the marketability, is suggested to be in the initiation stage. Secondly, a single case study was carried out to study KMS initiatives, where KUKTEM was chosen as it shows some significant advancement in implementing KMS. Using Davenport's four types of KM objectives, the use of KMS in achieving these objectives were discussed. Finally, this study also suggested the implementation of KMS for publication to facilitate research activity in IHL. To demonstrate the system design proposed, a prototype was created using PHP and MySQL backend. In conclusion, the present study indicates that KM in the selected IHLs is an initiative that has evolved over time. The findings also show that Malaysian IHLs have a significant level of KM maturity since the emergence of the practice in this country. Meanwhile, by highlighting the KMS initiatives of the selected IHLs, this study provides some best practices for IHLs towards effective usage of KMS. In addition, the provision of system design and a prototype of a KMS namely as e-publication have facilitated the management of publication which is one of the important components of organisational knowledge in IHLs.

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# APPROVAL PAGE

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# **DECLARATION**

I hereby declare that this thesis is the result of my own investigations, except where

otherwise stated. I also declare that it has not been	previously or concurrently
submitted as a whole for any other degrees at IIUM or other	ner institutions.
Rabiah Eladwiah Abdul Rahim	
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# LIST OF ABBREVIATIONS

CADe Centre of Academic Development

CFML Cold Fusion Mark up Language

CKO Chief Knowledge Officer

DFD Data Flow Diagram

ER Entity Relationship

GUI Graphical User Interface

HTML Hyper Text Markup Language

HTTP Hyper Text Transfer Protocol

IHLs Institutes of Higher Learning

ICT Information and Communication Technology

IT Information Technology

IS Information Systems

InKA Institute of Knowledge Advancement

ITM Institut Teknologi Mara

KM Knowledge Management

KMC Knowledge Management Centre

KMMM Knowledge Management Maturity Model

KMS Knowledge Management System

KUKTEM Kolej Universiti Kejuruteraan dan Teknologi Malaysia

SQL Structured Query Language

UiTM Universiti Teknologi Mara

UPM Universiti Putra Malaysia

## **CHAPTER ONE**

### INTRODUCTION

### 1.1 INTRODUCTION

Knowledge has become the most crucial component in the struggle for competitiveness especially between large companies. Knowledge is powerful for these companies especially in the ability to generate new products and services. The ability to create knowledge and move it from one part of the organisation to another is the basis of competitive advantage (Mertins, Vorbeck and Heisig, 2001). To enhance this practice, Knowledge Management (KM) is seen as a practical concept to enable knowledge to be constantly created, transferred and shared across the organisation and then become an invaluable asset for the organisation especially in the decision making process.

Major consulting firms have been enthusiastic and early adopters of KM (Sarvary, 1999). This is because they could usually afford the investments and effort required to develop and introduce a new management method (Mertins et al., 2001). There are many reasons for the adoption of the KM concept. First, the industry regards the collective knowledge of the employees, as the factor in producing innovative and competitive services and products. Thus, knowledge in organisation must be tapped, stored, transferred and shared across the organisation. In addition, KM is adopted when there is realisation that knowledge in an organisation has deteriorated over time. Moreover, the existence of the KM approach is largely due to the advent of web technology, where knowledge can be captured, shared and transferred more easily.

Meanwhile, there is an emerging line of systems targets professional and managerial activities by focusing on creating, gathering, organising, and disseminating an organisation's "knowledge" as opposed to "information" or "data" which these systems are referred to as Knowledge Management System (KMS) (Alavi and Leidner, 1999). The popular claims for the results of KMS are high and include the ability of organisations to be flexible and to respond more quickly to changing market conditions, and the ability to be more innovative as well as improve decision making and productivity (Sata, 1997; Harris, 1996 as cited in Alavi and Leidner, 1999).

The importance of KM and KMS was also addressed by Malaysian Prime Minister Abdullah Ahmad Badawi (2005):

Knowledge management is a field of science that is becoming vitally important. We should begin to take a long, hard look at how the effective utilisation and management of knowledge has created wealth in other more advanced countries and, as far as possible, emulate this success. Indeed, in order to be successful in today's world, I would argue that it is not enough to have access to knowledge, but we must also know how to utilise and manage that knowledge so that we may gain as much value from it as possible. Nevertheless, we must recognise that managing knowledge in today's fast-paced, interconnected and globalised world, is not an easy task. The process of managing knowledge has become increasingly difficult and complex given the ever growing body of knowledge in existence as well as the increasingly numerous channels by which knowledge is transmitted. The advent of information and communications technology (ICT) has added to this complexity, but thankfully, it has also provided solutions to manage it....

The systematic processes in knowledge management systems have made them invaluable tools to track and measure the index of human capital-skills, knowledge and output-that are available in an organisation or community. Besides this, knowledge management systems have also made it possible for organisations to keep their institutional memory intact. Documents and records serve as important reminders of an organisation's contribution and legacy. But in all likelihood, these records will remain just mere artefacts unless some effort is made to document and mobilise the information and knowledge within. This can be done through categorising information so that the history of our decision making process remains in current circulation in as many fields of applied or researchable knowledge. When we are

successful at this, only then can we say that we are effectively learning from history (1-4).

A university also seems to be well suited to the adoption of KM practices as its environment puts a lot of emphasis on the exchange of ideas and knowledge sharing (Loh, Tang, Menkhoff, Chay and Evers, 2003). Mikulecka (2000) mentions that a university environment seems to be by its nature especially suitable for the application of KM principles and methods for the following reasons:

- universities usually possess a modern information infrastructure;
- to share their knowledge with others is very natural for professors and teachers in general;
- to acquire knowledge from accessible sources as fast as possible is a natural desire of students;
- there is usually a trustful atmosphere at universities, no one hesitates or is afraid of publishing or disseminating her or his knowledge.

Institutes of Higher Learning (IHLs) concern themselves with knowledge and hence knowledge creation, dissemination and learning are regarded as core activities. These institutions have traditionally been defined by their diversity and their role in relation to knowledge and learning across a range of different, clearly defined academic disciplines. Unfortunately, a lack of focus in some cases and an extremely narrow focus in others make it difficult for higher education institutions to lead in all areas of knowledge and knowledge creation (Steyn, 2004). KM in IHL deals with a set of organisational processes that create and transfer knowledge supporting the attainment of academic and organisational goals (Towney, 2003).

To be successful in managing knowledge, IHLs have to manage knowledge assets like all other facets. One of the tools that could assist IHLs to manage its

knowledge is the KMS. KMS have already met with significant success in the business sector and are spreading to other sectors, including education (Marshall and Rossett, 2000). There are three important goals of the KMS in the IHL which are to serve the community, faculty, and administration of the IHLs (Rusli, Shamsul, Rose Alinda and Mohd Hasan, 2003). A description of each of the goals are given in the following section:

- 1. Community: One of the most important objectives is to support interaction between the IHLs and local community. Both individuals and community-based organisations may want to investigate an issue, drawing upon the expertise of IHL's faculty and staff. IHL involvement includes diverse activities such as public presentations, guidance, research project, and educational outreach. The use of the Internet is an obvious deployment strategy for the community and any underlying database design should support intuitive browsing and topic-based search capabilities. In fact, the Internet can extend the notion of "local" community to include a geographically dispersed intellectual community interested in the research and educational materials generated by IHLs.
- 2. Faculty and staff: The IHL's faculty and staff have a somewhat different set of objectives. The IHLs is developing its research presence through graduate education, grants and funding, technology transfer, and scholarly publications. In a very real sense, this mirrors some of the requirements that face organisations such as consulting companies and industrial research laboratories. The IHLs institution researchers have to find collaborators, facilities, and grant proposals that might support new projects. The Internet

- is allowing professional societies and other academic organisations to build online intellectual communities.
- 3. Administration: From an administrative perspective, the IHLs would like to promote community involvement and research activity. While these activities are not completely aligned, a KMS could enable key administrators to gain insights with regard to ongoing activities. Administrative capabilities should support the development of policies that encourage new projects and activities in line with the strategic directions set for the university. For example, community contacts and project outcomes could be collected and used to foster new community outreach initiatives.

#### 1.2 STATEMENT OF THE PROBLEM

While most of the studies have focused on KM in corporate firms, it is observed that KM activities in government organisations, particularly in IHLs, have also increased over the years. The use of KM techniques and technologies in higher education can lead to better decision-making capabilities, reduce "product" development cycle, such as curriculum development and research, improve academic and administrative services, and reduce costs (Kidwell et al., 2001).

Several studies have been found to explore KM in the context of Malaysian IHLs are Kumar and Azizan (2003), Ndubisi (2004), Krishnasamy and Nair (2004), Maizatul Akmar and Chua (2005) and Haryani and Noor Zaidi (2005). However, it is found that no study has been done to study KM practices across Malaysian IHLs that are formally engaged with KM implementation. As a result, the insight of KM in Malaysian IHLs has yet to be determined which brings uncertainty on the current situation of KM in Malaysian IHLs.

In addition, a search of the literature indicates that there is a lack of research on addressing the role of KMS in achieving KM objectives. Therefore, it becomes crucial to view KMS initiatives in Malaysian IHLs especially those who have made a significant advancement in KMS.

Moreover, Ericsson (2003) proposes that one of the requirements to ensure the acceptance of KMS is user involvement. Thus, there is a need to involve users to determine the KMS requirement in education settings and demonstrate the application as the result of the involvement.

#### 1.3 OBJECTIVES OF STUDY

The objective of this research is to study the KM and KMS in selected Malaysian IHLs, especially those that have formally embarked into this practice. Specifically, the objectives of this study within the cases studied are defined as follows:

- 1. To explore KM initiatives in IHLs that are formally engaged with KM practice.
- 2. To identify the current stage of KM of the selected IHLs using a KM maturity model.
- 3. To understand the KMS initiatives of a selected IHL in achieving KM objectives.
- 4. To provide a system design and develop a prototype of a KMS for publication.

### 1.4 CONTEXT OF STUDY

The context within which KM is studied is IHLs, a sector which is well suited to the adoption of KM practices as its environment puts a lot of emphasis on the exchange of ideas and knowledge sharing (Loh et al., 2004). To excel in future, IHLs have to manage explicitly, systematically and comprehensively from a knowledge perspective (Steyn, 2004). The cases in this study are universities that have established centres dedicated to KM development in their institutions, which shows that the institutions have officially engaged in this practice.

#### 1.5 SIGNIFICANCE OF STUDY

One of the distinctive contributions of this study is the exploration of KM practices in the context of Malaysian IHLs. The identification of initiatives which have been put in place within the selected IHLs deepens current understanding of the approaches taken in these institutions. Such findings are a necessary foundation for the eventual development of effective KM practices for IHLs. The findings also point out the level of KM maturity in Malaysian IHLs since the emergence of the practice in this country. Another contribution of this study is the exploration of KMS in IHLs settings. The developed prototype of KMS for publication would demonstrate another potential KMS to be adopted by IHLs to manage its organisational knowledge.

### 1.6 ORGANISATION OF THESIS

This thesis has been divided into seven chapters, with each discussing specific areas.

They are as follows:

Chapter 1: Introduction. This chapter gives the background of the study, definition of problems, identification of objectives and significance of the study.

Chapter 2: Literature Review. This chapter explains the basic concepts for knowledge and KM and covers the definition of knowledge and its categorisation, definitions, evolutions and objectives of KM. Literature related to the objectives of the study such as KM maturity models and KMS is also reviewed. Finally, as the context of the study is IHL, the KM initiatives of the university's worldwide will also be presented.

Chapter 3: Research Methodology. The methods used in accessing the cases are described in this chapter. The chapter also gives an overview of qualitative research followed by the description of qualitative research approaches in information system research and the case study methodology. Explanations on the step-by-step process for data collection and analysis are also discussed in this part. The methodology used for the prototype development is also explained.

Chapter 4: Findings and Discussion. The findings of the study will be discussed in this chapter. The findings are presented in accord with the four objectives of this study. Each finding is followed by its analysis and appropriate conclusion.

Chapter 5: System Design. The process modelling in order to improve current processes of managing organisational publication is presented. The data modelling which defines the way data items are organised and related is described in this chapter.

Chapter 6: The Prototype. This chapter gives the details of the used development tools and describes the advantages of choosing them. The modules provided for the system users and several user interfaces are also explained.

Chapter 7: Conclusion and Recommendations. This chapter presents the conclusion, limitations and recommendations for further research in KM and KMS in the context of IHLs.