Knowledge Management as Innovation: Organizational Cultural Factors Affecting Knowledge Management Practices in Malaysian Higher Educational Administration

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Abstract

Knowledge management implementation has been widely argued as a way to enhance organizational performance. This thesis focuses on an unexplored area of knowledge management practices related to higher educational administration. Even though the concept of knowledge management was introduced in Malaysia about a decade ago, literature reveals that knowledge management implementation in Malaysia is still considered to be at the developmental stage. This study aims to investigate the organizational cultural factors affecting knowledge management practices in higher education administrative departments in Malaysia. The study was conducted by using a mixed research methodology combining both qualitative and quantitative phases of data collection. Key informant interviews were conducted involving participants from Higher Education Administration in Malaysian Universities. Based on the literature studies and the findings from the key informant interviews, a conceptual model is developed for further investigation on the affect of seven cultural factors on knowledge management practices in the higher education administration – knowledge sharing, cooperation, involvement and participation, trust, problem seeking and solving, adaptability to change, and sense of vision and mission. Using Partial Least Squares method the study identifies the contribution and influence of these cultural factors in affecting the knowledge management practices in higher educational administration. The result of the study shows that the existing knowledge management practices in Malaysian Higher Educational Administrative Departments are not as might have been expected from the existing literature.

Student Declaration

I, *Roshayu Mohamad*, declare that the PhD thesis entitled *Knowledge Management as Innovation: Organizational Cultural Factors Affecting Knowledge Management Practices in Malaysian Higher Educational Administration* is no more than 100,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree of diploma. Except where otherwise indicated, this thesis is my own work.

Signature: 

Date: 1/9/2012

Note:

Academic references to Malaysian names are potentially confusing to non-Malaysian authors and readers. For example, Abdullah Hassan would generally be referred to as 'Hassan, A.' in a Western academic journal. However, the last name refers to the father of Abdullah, not Abdullah himself. In addition, Malaysian names may comprise compound names such as Abdul Sani Said, which refers to 'Abdul Sani' son of 'Said' and not 'Abdul' son of 'Sani'. Many Malaysian journals prefer to give the full name rather than a surname followed by abbreviation. To avoid confusion, I followed this norm to refer to Malaysian authors. I hope this is acceptable.

Acknowledgements

In order to complete this study, I have had important support from various people. Therefore I would like to express my sincere thanks to the following individuals for their help and support that made completing this study a success.

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List of Publications

1. Roshayu Mohamad, & Tatnall, A. (2011, March 29-31,). *Investigating Organizational Cultural Factors Affecting Knowledge Management Practices in Higher Education Administration in Malaysia.* Paper presented at the International Conference on Knowledge Management, Bangkok, Thailand.

2. Roshayu Mohamad, Manning, K., & Tatnall, A. (2012). *Knowledge Management in University Administration in Malaysia.* - paper accepted for The Tenth IFIP International Working Conference on Information Technology in Educational Management, Bremen, Germany, 5th - 10th August 2012.

3. Roshayu Mohamad, Manning, K., & Tatnall, A. (2012). *Knowledge Management in University Administration in Malaysia – A Result of Partial Least Square Evaluation.* – paper accepted for The International Conference on Statistics in Science, Business and Engineering 2012, 10-12 September 2012, Kedah, Malaysia.

Glossary of Terms

CBSEM – Covariance-Based Structural Equation Modeling

HE – Higher Education

HEI – Higher Educational Institution

KM – Knowledge Management

SEM – Structural Equation Modeling

PLS – Partial Least Squares

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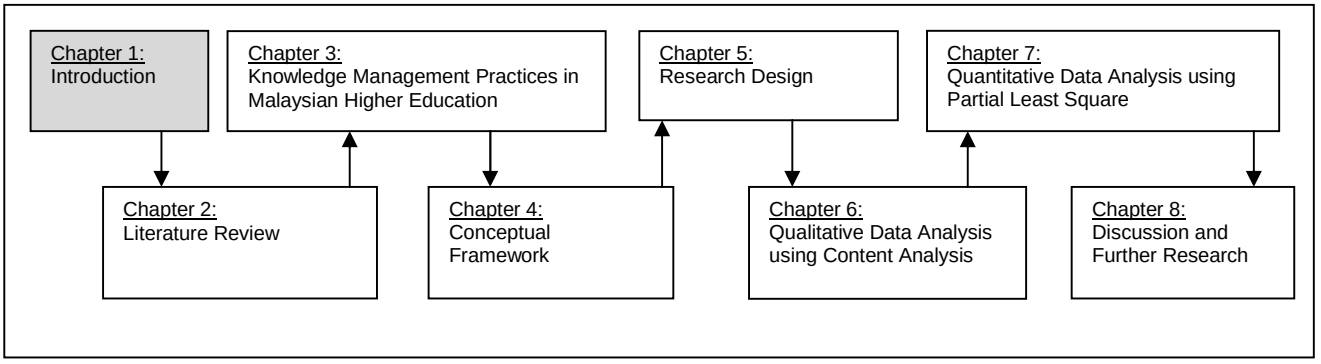
1 Introduction

The beginning of knowledge is the discovery of something we do not understand
Frank Herbert (1920-1986)



1-1 Overview

This research is about investigating cultural factors that affect knowledge management in higher education administrative departments. The research intends to identify cultural factors in higher education, which positively or negatively facilitate and restrain the managers and staff from the administrative department to practice knowledge management effectively.

This research adopts a mixed research approach conducted in the public higher educational institutions in Malaysia. It starts with a qualitative study to investigate the existing cultures towards knowledge management implementation in higher education administrative departments, followed by a quantitative survey to further investigate the relationships between these cultural factors with the existing knowledge management practices in the institutions.

This chapter will explain the background of the study, which led to this research, the aim of the research and the overall structure of this thesis.

1-2 Background of Study and Research Gaps

The concept of Knowledge Management (KM) has become an important area in organizations today. Knowledge Management has eventually been one type of innovation that is adopted in the operation of the organization. Higher Education, as institutions whose operations deal with knowledge must also adapt to this type of

innovation not only to accommodate their academic purposes, but also for administration purposes of the institution. Administration is an important function of the higher educational institutions as academics and students communicate regularly with various administrative departments in getting their needs attended. The research problems were drawn from a study of the previous literature in Knowledge Management, Innovation, Higher Education and Organizational Culture disciplines.

Based on the literature reviews, several gaps were identified as to why this research is needed. First, the literature review conducted on knowledge management in higher education shows that KM practices focused in Administrative Departments of Higher Education is an unexplored area of research. Research on KM implementation in Higher Education (HE) in the South East Asia region has also been found to be limited (Sharimllah Devi, Chong, & Ismail, 2009; Sohail & Daud, 2009).

Second, the integration of the knowledge management and innovation disciplines is found to be a newly emerging area in current research trends. Researchers have many different perspectives on viewing the relationship between knowledge management and innovation. Studies which investigate the linkage of KM in HE with innovation in Malaysian context is yet to be found.

Third, there have also been extensive studies done to investigate the ties of employee relationships in organizations in order to promote innovation (knowledge management in this context). However, the extent to which, and ways that, culture (i.e. the common belief and shared opinion) in an organization can stifle innovation, has scarcely been looked at (Dasgupta & Gupta, 2009). Janz and Prasarnphanich (2003) also indicated that there has been little research done on knowledge-centered culture in organizations in the knowledge management context.

Fourth, observing that much of the previous research on organizational culture is using either qualitative or quantitative methods only, this research will use a combination of qualitative and quantitative methods in order to understand how the subject is viewed, and find how the cultural factors affect the KM practices.

Using higher educational institutions as the focus of this study, and narrowing down the focus to organizational cultural aspects, this study intends to investigate the adoption of knowledge management practices by higher educational administrative departments from an organizational culture perspective. Organizations today adopt a mixture of organizational culture types and styles (Deshpande and Farley, 2004).

However, patterns of the shared values and beliefs is found to be different in different countries (Denison, Haaland, & Goelzer, 2004; Deshpande & Farley, 2004). Since this study is to be conducted in an Asian country, the cultural factors from Asian country perspectives, particularly Malaysia will be explored in the following thesis chapters.

Another aspect that is important in the conduct of this study is to understand the unique culture of an academic environment. Sporn (1996) has indicated that universities have a distinctive set of characteristics which will have a strong impact on the culture of the institutions. Sporn further developed a typology of different types of university culture in order to investigate the impact of culture in academia. Since this study will be conducted in public higher educational institutions in Malaysia, the internal culture of higher educational institutions in Malaysia will also be explored, with specific attention to the knowledge management practices among the administrative staff in the public university environment.

1-3 Research Aim and Scope

The aim of this research is to study how innovative cultural factors positively and negatively affect the innovation of Knowledge Management (KM) practices in Higher Education Administration in Malaysia. The study will also attempt to develop a knowledge management cultural framework to apply to the Higher Educational Institution (HEI) Administrative environment.

Unlike other research in Knowledge Management for Higher Education that focused on academic and managerial issues, the scope of this research focused on the administrative departments in public higher educational institutions in Malaysia. The purpose of this study was then two-fold:

1. To develop a conceptual framework of the cultural factors affecting knowledge management practices in higher education administration; and
2. To empirically test the existence of these cultural factors in the higher education administrative environment.

1-4 Thesis Structure

This thesis comprises eight chapters, followed by references and appendices. Chapter 1 provides an overview of this research. It addresses the research background, research aims and scope, and the structure of this thesis.

The next two chapters of the thesis will examine literature on all the related concepts used in this thesis. Chapter 2 explores the multidisciplinary nature of knowledge management related to innovation, higher education and organizational culture. This chapter reviews all models that have been suggested and used based on the existing literature. Chapter 3 introduces the reader to Malaysia, the country where the research took place and explores some history and the current scenario of higher educational institutions in Malaysia. The chapter further explains the relationship of culture and knowledge management practices in Higher Education in Malaysia.

Based on Chapter 2 and 3, Chapter 4 develops the conceptual framework for innovative culture in the context of knowledge management practices in higher education administration in Malaysia. Chapter 5 further discusses the research design of this study, which adopts a mixed methodology approach. Chapter 6 provides detail on the qualitative data analysis using content analysis, while Chapter 7 provides details on the quantitative data analysis using a partial least squares method.

Discussion of the results, conclusion and future research opportunities is described in Chapter 8. The outline of the thesis is shown in Figure 1.1.

1-5 Chapter Summary

This chapter provides an introduction to this doctoral study. The main target of this research was to find the cultural factors that can affect knowledge management practices in the administrative departments of higher educational institutions in Malaysia, and further develop a cultural framework for knowledge management implementation in HEI. An empirical study to test the existence of the cultural factors was then conducted using the partial least square method. This chapter provided the background of why this research is undertaken, followed by the research aim and scope. The chapter further explains the structure of the thesis and how the subsequent chapters are arranged.

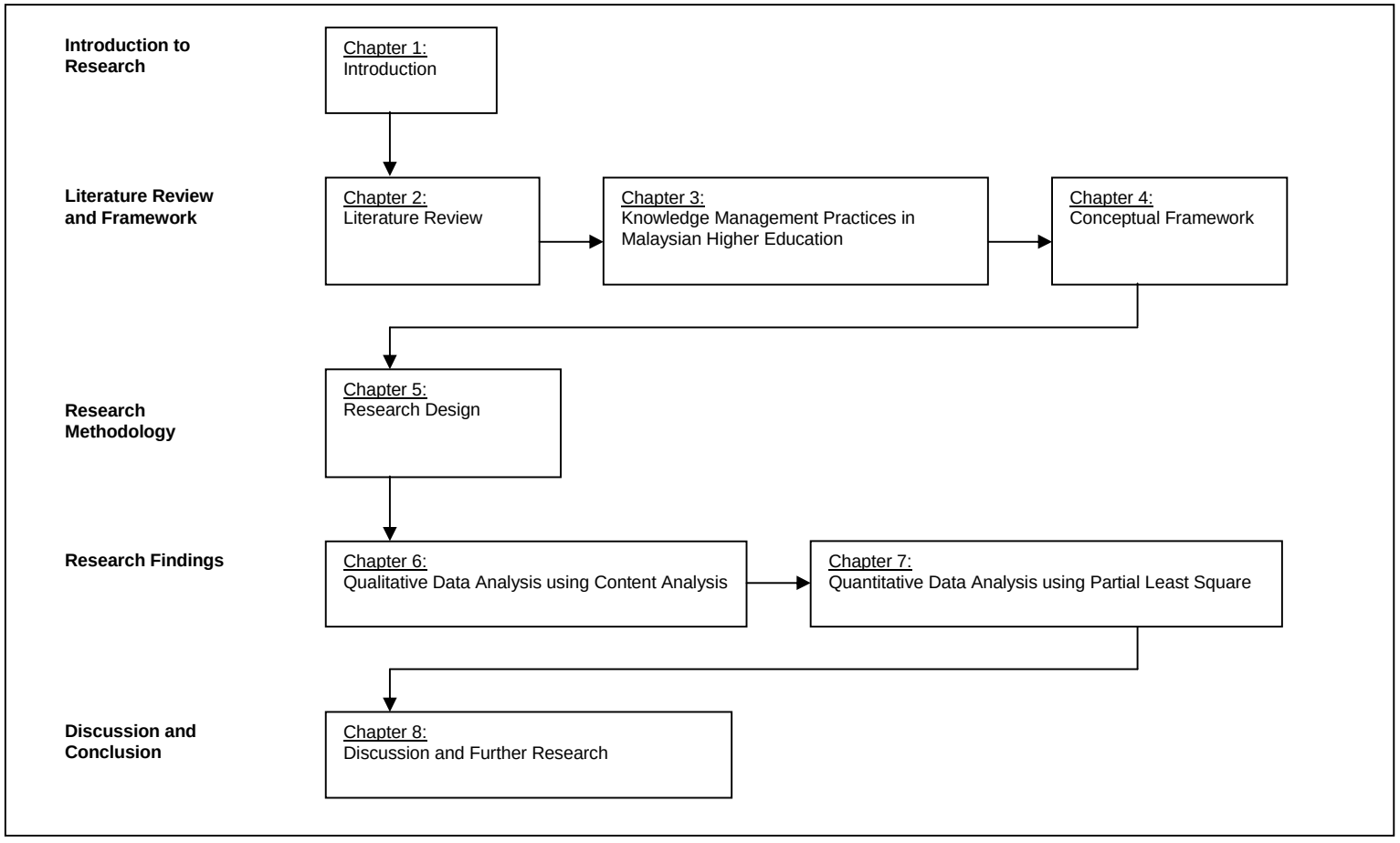
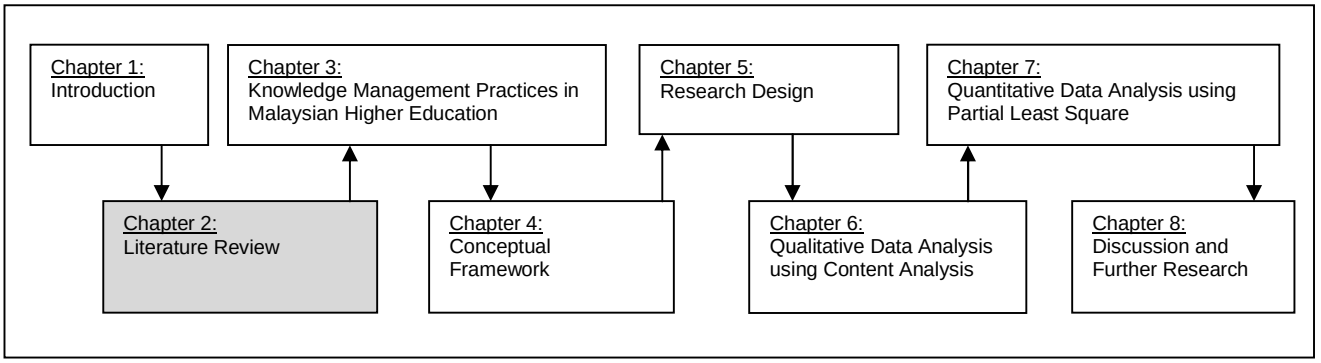


Figure 1.1: Structure of the thesis

2 Literature Review

Knowledge is of two kinds.
We know a subject ourselves, or we know where we can find information on it.
Samuel Johnson (1709-1784)



2-1 Introduction

This thesis involves a discussion of multidisciplinary concepts of knowledge management implementations in organizations. The purpose of this chapter is to enhance the reader's understanding of the concept of knowledge management implementation in organizations from an innovation perspective. The readers will also be exposed to a deeper understanding of the organizational cultural issues in knowledge management practices in the higher education environment.

Throughout this chapter, the meaning of data, information and knowledge will be introduced, and different types of knowledge will be identified. This further leads to the discussion of knowledge management concepts, and knowledge management processes. A few known models of knowledge management related to this study are also reviewed.

This chapter will further explain the concepts of innovation and link them to how innovation processes are related to knowledge management implementation. The chapter further explores knowledge management practices in higher education as well as reviewing knowledge management frameworks in a higher education context. Finally the notion of organizational culture will be discussed in relation to how the organizational concept is related to this study.

2-2 Knowledge Management

Competitive advantage can be obtained from knowing how to do things and further progressing into the ability to rapidly develop new knowledge. Therefore, in today's modern organizations, knowledge has become the main sustainable competitive advantage for organizations. It provides organizations with the ability to innovate and sustain the use of their assets and capabilities. The full utilization of the firm's knowledge base, coupled with potential individual skills, competencies, thoughts, innovation and ideas will enable a company to compete more effectively in the future.

The knowledge management concept has become popular since the early 1990s'. During this time, the effort of practitioners has been supported by many academic publications expressed in journals, conferences and numerous influential books. Nowadays, knowledge management has been viewed as a necessity in organizations due to changes in the organizational environment such as the increasing globalization of competition and the speed of information and knowledge aging. Knowledge management includes all the activities that utilize knowledge in order to accomplish organizational objectives in facing environmental challenges and staying competitive in the market place.

2.2.1 Data, Information and Knowledge

Data , information and knowledge

Most authors in the knowledge management field define knowledge by differentiating the meaning between data, information and knowledge. Data widely refers to the raw facts and numbers (Alavi & Leidner, 2001; Bhatt, 2001), while information is looked upon as data put into context or processed data (Alavi & Leidner, 2001; Bollinger & Smith, 2001) that can reside within computers. Bhatt (2001) regards knowledge as an organized set of data. Information that is combined with experience and judgment will then become knowledge.

Knowledge is authenticated information (Alavi & Leidner, 2001) and refers to the understanding, awareness or familiarity acquired through study, investigation, observation or experience over time (Bollinger & Smith, 2001) and acts as a basic foundation of the information a person needs to perform a task (Bartol & Srivastava, 2002). According to Alavi and Leidner (2001), knowledge is also personalized information that is related to facts, procedures, concepts, interpretations, ideas, observation and judgment that is possessed in the mind of individuals. McMurray

(2002) defines knowledge as the mixture of experience, values, expert and contextual information that helps people or organizations in the evolution and absorption of new experience.

Relationship between data, information and knowledge

In the information systems field, there are two main views of the relationship between data, information and knowledge. First, the dominant conventional view (Alavi & Leidner, 2001) views data as simple facts that become information, and information as the combination of data into meaningful structures. These meaningful structures of information that are put into an appropriate context will then become knowledge. This view assumes that data precedes information, and information precedes knowledge in a linear order.

Second, the iconoclastic view (Tuomi, 1999) is directly the opposite of the conventional view. The iconoclastic view of the relationship between data, information and knowledge asserts that data emerges last, only after there is knowledge and information. Tuomi argues that there are no isolated pieces of simple facts, unless someone has created them, using his or her knowledge.

Okunoye and Bada (2005) have come up with another alternative view of the relationship between data, information and knowledge. They see the relationship within these three concepts as cyclical, relative to each other and context dependent. They argue that each of these concepts recreates itself, meaning that we can generate data from data, information can be extracted from information and knowledge could also produce knowledge. This cyclical representation is represented in Figure 2.1.

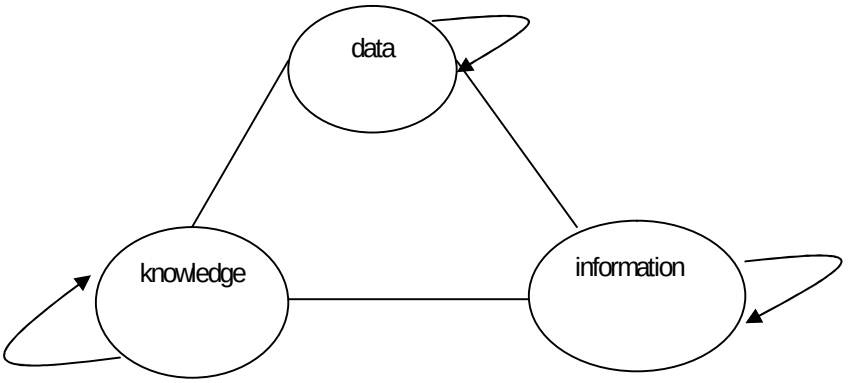


Figure 2.1: Cyclical representation of data, information and knowledge (Adapted from Okunoye & Bada (2005))

Wisdom

Some scholars also extend the definition of knowledge to the next level, called wisdom or intelligence. Wisdom is acquired as the organization gains new knowledge through the transformation of collective experiences and expertise. Igonor's (2002) explanation of the concept of wisdom, knowledge, information and data can be represented by Figure 2.2. Igonor (2002) explains that:

- Information relates to description, definition or perspective (what, who, when, where)
- Knowledge comprises strategy, practice, method or approach (how)
- Wisdom embodies principle, insight, moral or archetype (why)

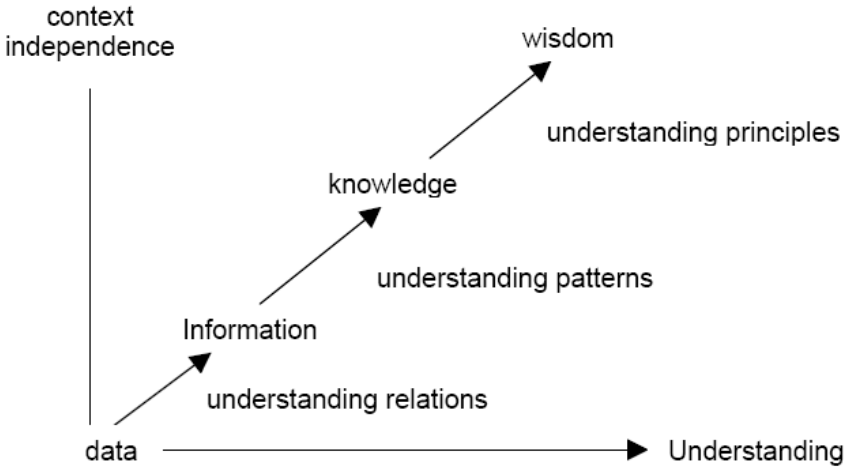


Figure 2.2: Relationship data-information-knowledge-wisdom (Igonor, 2002)

Knowledge concept

In the literature of knowledge and knowledge management, most referred definitions of knowledge are based on the work of Davenport and Prusak (1998). Davenport and Prusak define knowledge as a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information.

Alavi and Leidner (2001), and Bollinger and Smith (2001) agreed that information is converted to knowledge once it is processed in the mind of individuals and knowledge becomes information once it is articulated and presented in the form of text, graphics, words and other symbolic form. This view implies that for someone to understand significant data or information they must share certain knowledge.

Small and Sage (2005/2006) indicate that Miller and Morris (1999) define knowledge as the intersection of information, experience and theory. Miller and Morris (1999) suggest that knowledge is gained when theory, information and experience are integrated, and that wisdom refers to successfully applied knowledge. Miller and Morris's (1999) concept is shown in Figure 2.3.

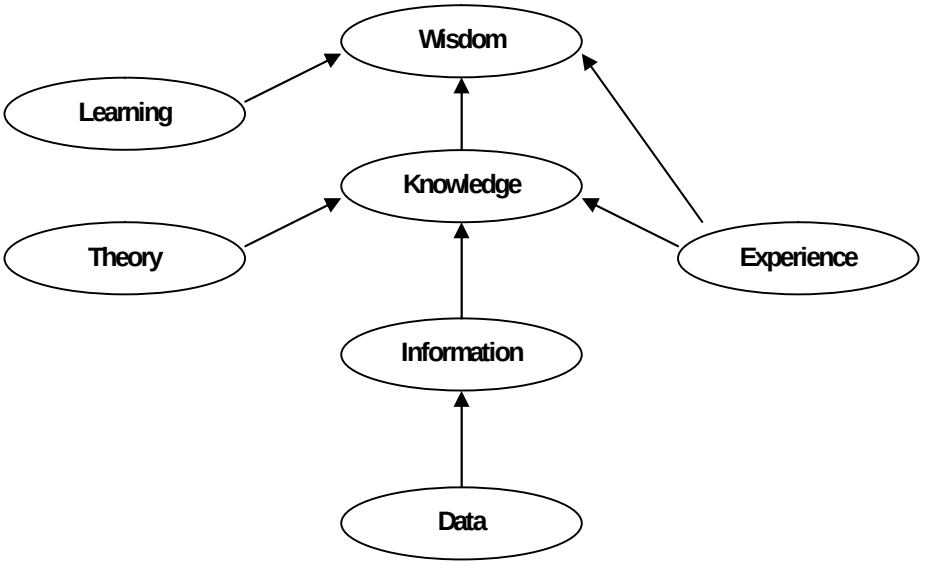


Figure 2.3: Knowledge - a derivative of theory, information and experience (Adapted from Small & Sage (2005/2006))

All various definitions of knowledge represent the perspectives of organizations and management in viewing knowledge concepts. Alavi & Leidner (2001) summarize these views into five perspectives: 1) State of mind perspectives which consider knowledge as a state of knowing and understanding; 2) Object perspectives which define knowledge as an object which can be explicated, stored and manipulated; 3) Process perspectives that view knowledge as a process of applying expertise; 4) Access to information perspectives focus on the condition of access to information; and 5) Capability perspectives view knowledge as a potential to influence action.

2.2.2 Categorization of Knowledge

Knowledge, tacit and explicit

Knowledge is rooted in philosophy, which traditionally distinguishes three types of knowledge: 'knowing how' refers to the skills one develops and, most of the time, is tacit in nature; 'knowing that' resembles information since it is de-contextualized; and 'knowing things' refers to the knowledge of acquaintance (Asimakou, 2009). Knowledge is also categorized as declarative, procedural, causal, conditional and relational knowledge (Alavi & Leidner, 2001). However, the most commonly used taxonomies in literature are Polanyi's (1962, 1967) and Nonaka's (1994) dimensions of tacit and explicit knowledge. Nonaka (1994) and Nonaka & Takeuchi (1995) argued that knowledge is created through conversion between tacit and explicit knowledge through the process of socialization, externalization, internalization and combination (SECI). This knowledge concept comprises an epistemological and ontological dimension.

Epistemological dimension

The epistemological dimension involves two different kinds of knowledge: tacit and explicit. The tacit component is deeply rooted in the human mind and interconnected with other aspects of organizations like processes and social context. It refers to the unarticulated knowledge that resides inside a person's head and is normally difficult to describe and transfer (Bollinger & Smith, 2001). Tacit knowledge is acquired primarily through experience, direct observation, imitation and practice. In contrast, explicit knowledge can be clearly formulated or defined and expressed without ambiguity. It can be codified and communicated in a symbolic form, and a formal and specific language (Alavi & Leidner, 2001; Bollinger & Smith, 2001). Explicit knowledge can be written down, processed by information systems, codified or recorded, archived and protected by organizations (Yaying, 2005).

Ontological dimension

The other dimension of knowledge, ontological, on the other hand classifies knowledge in the following four categories:

- Individual, which refers to the process of generating knowledge by a person;
- Group, which refers to the process of creating knowledge through the interaction of a specific group of employees in organizations;
- Organizational, which refers to the process involving the total body of knowledge created in an organization; and
- Inter-organizational, that is when two or more organizations share knowledge to create new knowledge.

Categorization of knowledge

Johannessen (2008) distinguished knowledge into 2 main categories: 1) knowledge that can be easily communicated to others; and 2) knowledge that is difficult to be communicated to others. These distinctions are shown in Figure 2.4 and further explanation of each category is provided in Table 2.1.

All the types of knowledge discussed are mutually complementary. Meta-knowledge and explicit knowledge are learned and shared in the formal education system; tacit knowledge is learned by using and doing and can be shared by brainstorming; hidden knowledge is learned by socialization and could be shared in the business world by focusing upon its existence and focus groups; and relationship knowledge is learned by interaction and could be shared by systematic work in teams (Johannessen, 2008).

Knowledge Categorization	**Description of knowledge category**
Meta knowledge	Refers to the knowledgebase that structures explicit knowledge (know-why). This knowledge is about knowing how we know, that appears when reflections are made based on the normative basis. It is divided into process knowledge and product knowledge. Maturana and Varela (1987, p. 24) expressed process knowledge as a reflection of knowing how we know, and product knowledge as knowledge on how we think.
Explicit knowledge	Refers to the knowledge that can be easily communicated to others as information (know-what). This type of knowledge can be objective or inter-subjective.

Tacit knowledge	Refers to a form of skill, ability or technique (Polanyi, 1962) which is difficult to communicate to others (know-how). This knowledge is regarded by Polanyi (1962) as connoisseurship.
Hidden knowledge	Refers to knowing how we know, is the premises, prerequisites and motives influencing our thoughts and action positions. This kind of knowledge influences the way we think and act, as a sort of personal paradigm, or the technical-economic paradigm in the business world that leads our way of thinking and acting when expressing new ideas (Johannessen, 2008). This type of knowledge can be divided into two parts: disposition to think and disposition to act, which is linked to company-specific norms.
Relationship knowledge	Refers to knowing who is involved, as the social capability to establish relationships with specialized groups in order to draw upon their expertise (Johannessen, 2008).

Table 2.1: Explanation of knowledge categorization discussed by Johannessen (2008)

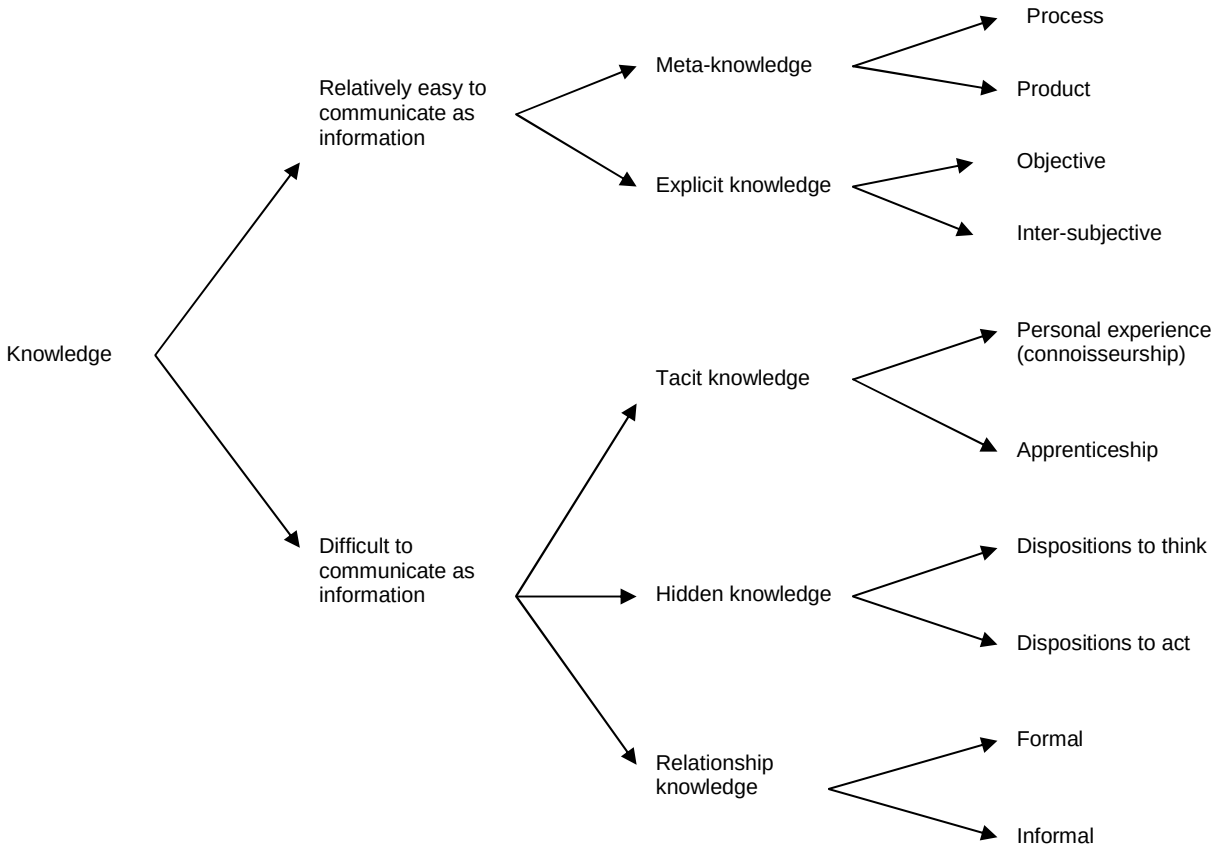


Figure 2.4: Categorization of knowledge (Adapted from Johannessen (2008))

Perceptual, conceptual and affectual

Yang et al. (2009), based on a holistic learning theory, define knowledge as a construct of three different perspectives – perceptual knowledge, conceptual knowledge and affectual knowledge. Perceptual knowledge is referred to as personal kinesthetic understanding of the world through direct experience and involvement in a particular situation. Conceptual knowledge is referred to as a scheme of interrelated concepts, which can be transferred across situations. Affectual concept is referred to as individual sentiment attached to a certain object. The holistic theory viewed knowledge as *human being's awareness and understanding about reality gained through personal familiarity, cognitive and mental processing and emotional affection* (Yang, et al., 2009). Yang et al. also associate these perspectives of knowledge with 3 facets of organizational knowledge called technical knowledge, practical knowledge and critical knowledge. Technical knowledge is institutionalized conceptual knowledge and manifested by organizations' rules, policies, procedures as well as formal communication channels in organizations. Practical knowledge on the other hand is manifested as perceptual knowledge, which has not been incorporated into the formal organizational systems. This knowledge includes shared experiences and understanding, social norms, insight, intuition and technical know-how. The third facet of this knowledge, critical knowledge is based on the organizational value and mission and defined as the affectual knowledge of organizations' members. The critical type of knowledge is manifested in mission awareness, managerial policies, organizational politics and power distribution, economic gain as well as ethical and moral standards in the workplace.

Embrained, embodied, codified and encultured

Originating from Polanyi's theory, Collins (1993) discussed three variations of knowledge – embrained, embodied and codified types of knowledge. Embrained or cognitive knowledge, and embodied or competences knowledge lie in the individual, while codified knowledge refers to impersonal and lies in the physical environment (codified knowledge is also widely referred to as explicit knowledge in literature). Collins (1993) also adds a new side of knowledge called encultured or society knowledge. Society knowledge refers to the *cultural knowledge that dictates rules on how to perform certain actions successfully* in a socially accepted manner.

There are many reasons that make it difficult for people to describe what they know. These are closely related to the theory of situated learning coined by Lave and Wenger (1991). Lave and Wenger (1991) seen learning as a process of participation where the situation impacts the process significantly. Participation involved *'doing'*

the knowledge that one's acquires, and through which knowledge is the product of the activity. Therefore people can effectively describe what they know through an active participation within the community in daily activities which might involve practical use of the knowledge as well as the opportunities to apply the knowledge in authentic situations (Cheng, 2012). The relationship between different types of knowledge gained through participation plays an important role in order to form the core-competencies of the organization and offers them their sustainable advantage.

2.2.3 Knowledge Management – Definitions and Perspectives

In organizations, knowledge resides in many different places such as databases, knowledge bases, filing cabinets and people's heads and distributed right across the enterprise. Too often one part of an enterprise repeats work of another part simply because it is impossible to keep track of, and make use of, knowledge in other parts of the organization. Organizations need to know what their knowledge assets are, and how to manage and make use of these assets in order to get a maximum return. This is where knowledge management concepts play an important role in organizations.

Knowledge in organizations is the collections of expertise, experience and information that employees use during the execution of their tasks. It is either produced or stored in the human mind or documented in organizational processes, services or systems (Renshaw & Krishnaswamy, 2009). Knowledge management is a concept that refers to the function of managing these types of knowledge, which involve creating or locating knowledge, managing the flow of knowledge and ensuring that this knowledge is used effectively and efficiently for the long-term benefit of the organization (Darroch & McNaughton, 2002). There are no consensus definitions of knowledge management prevalent in the literature. However, there are several widely accepted definitions, defined from various perspectives.

It is important to understand that Knowledge Management is a multi-disciplinary field. Knowledge management originates from the concepts of knowledge contributed by Polanyi (1967) and involves an amalgamation of concepts evolved from various research areas such as cognitive science, information design, interpersonal communication, organizational dynamics, library science (Demarest, 1997), human resource management and organizational behavior (Liebowitz & Beckman, 1998).

Different ways of looking at knowledge concepts lead to different perspectives of knowledge management. Some perspectives of knowledge management include the:

Knowledge management perspectives

- IT perspective which refers to the use of various technologies to acquire or store knowledge resources (Rezgui, 2007).
- Socialization perspective which refers to understanding the organizational nature of knowledge management focusing on how to support the process of sharing, creating and disseminating knowledge (Rezgui, 2007).
- Information system perspective which focuses on both IT and organizational capability and enhancing the use of knowledge management systems (Rezgui, 2007).
- Socio-technical perspective which highlights the interweaving of social and technical factors in the way people work, and understanding of the social relationships in the organization in which knowledge is embedded (Mohd Ghazali Mohayidin, Nor Azirawani, Man Norfaryanti Kamaruddin, & Mar Idawati Margono, 2007).

Since knowledge management has multiple interpretations, the way it can be defined depends on the context where it is applied. When applied in information technology context, KM is about managing hardware and software. In the business context, concentration is given to social aspects such as organizational theory, leadership or other human management issues (Mum Wai & Dominic, 2008). Table 2.2 lists some various useful definitions of Knowledge Management.

What knowledge management does

It can be concluded that knowledge management is concerned with the exploitation and development of the knowledge assets of an organization with a view to furthering the organization's objective. Knowledge management is about identifying and harnessing the collective knowledge of the organization gained through experience and competencies (Bollinger & Smith, 2001). It refers to changing the corporate culture and business procedures to make sharing of information possible (Bhatt, 2001). Effective handling of knowledge processes helps to achieve the main aim of knowledge management, which is to improve organizational performance (Ahn & Chang, 2004; Alavi & Leidner, 2001; A. King & Zeithaml, 2003; Mertins, Heisig, & Vorbeck, 2003; Okunoye & Bertaux, 2008) and all other benefits of knowledge management such as helping companies to be more efficient or more innovative (Barney, 1991). APQC (1996) regards knowledge management as a strategy to get

the right knowledge, to the right people, at the right time, and therefore help people to share and put information into action.

Author/s	Definition of Knowledge Management
Chase (1997)	Knowledge management refers to the encouragement of people to share knowledge and ideas to create value adding product and services.
Bollinger and Smith (2001)	Knowledge management refers to the identification and communication of explicit and tacit knowledge residing within processes, people, products and services.
Pan & Scarbrough (1999)	Knowledge management refers to the capacity or processes within an organization to maintain or improve organizational performance based on experience and knowledge.
Jennex (2005)	KM is the practice of selectively applying knowledge from previous experiences of decision-making to current and future decision-making activities with the express purpose of improving organizational effectiveness.
Mertins, Heisig & Vorbeck (2003)	KM includes all methods, instruments and tools that contribute to the promotion of an integrated core knowledge process with the minimum of at least four activities, i.e. to generate knowledge, to store knowledge, to distribute knowledge and to apply knowledge in all areas and levels of the organization to enhance organizational performance.
APQC (1996)	Knowledge management refers to the systematic strategies and processes of identifying, capturing, transferring, and leveraging information and knowledge from people and organizations in order to create innovation, compete, and improve productivity.
Larrabure (2007)	Knowledge management is defined as the systematic processes, or range of practices, used by organizations to identify, capture, store, create, update, represent, and distribute knowledge for use, awareness and learning across the organization.
O'dell and Grayson (1998)	Knowledge management is a conscious strategy of getting the right knowledge to the right people at the right time and helping people share and put information into action in ways that will strive to improve organizational performance.
Keramati & Azadeh (2007)	Knowledge management is the collective management of knowledge assets through collaborative processes and culture in line with the business processes to build, market, and support intellectual capital.
Magnier-Watanabe & Senoo (2008)	Knowledge management is defined as the process for acquiring. storing/sharing, diffusing, and implementing both tacit and explicit knowledge inside and outside the organization's boundaries with the purpose of achieving corporate objectives in the most efficient manner.

Table 2.2: Definitions of Knowledge Management

Knowledge management for value creation

Wiig (1997b) stated that the purpose of knowledge management is to maximize the enterprise's knowledge-related effectiveness and returns from its knowledge assets and to renew them constantly. Wiig (1997b) further indicates that the objective of knowledge management is to make an organization act as intelligently as possible to secure its viability and overall success, and therefore realize the best value of its knowledge assets. The ultimate aim of knowledge management is to create value (APO, 2008, p. 4). Actions to create value are organized through business processes or work processes (APO, 2008, p. 4) (refer to Figure 2.5 below). Knowledge management enables and enhances the capabilities to perform such processes, including sourcing and deployment of the right knowledge assets in order to achieve the desired results (APO, 2008, p. 4).

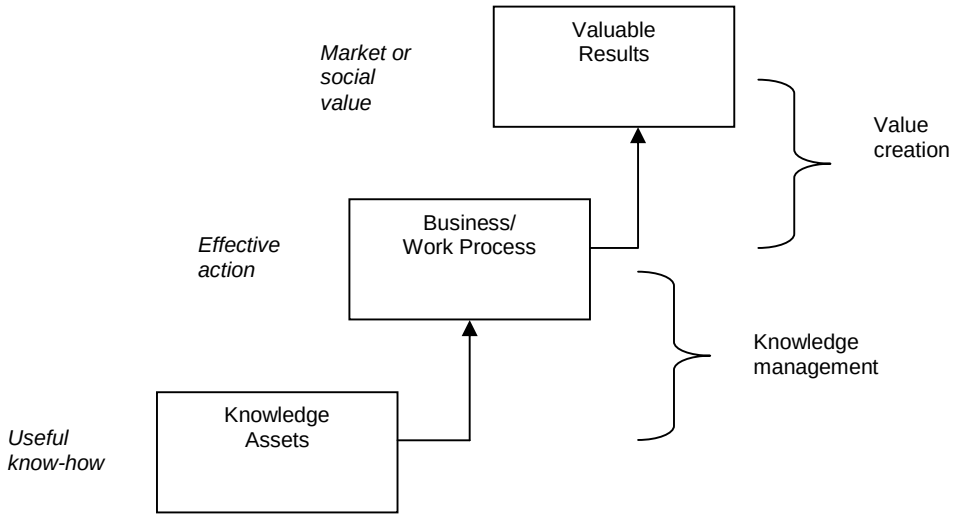


Figure 2.5: KM and organizational goal (APO, 2008, p. 4)

It is also argued that knowledge management involves the combination of human resource management and information management, and thus is related to processes such as identification, acquisition, creation, distribution and the use of both information and knowledge (Iivonen & Huotari (2000) as quoted in Politis (2003)). In order to achieve the above-mentioned objectives, organizations should be capable of building, transforming, organizing, deploying and using their knowledge assets effectively. It becomes a necessity to practice knowledge management to accomplish organizational objectives in order to face environmental challenges and stay competitive in the market place.

The central task that knowledge management is concerned with is to determine the best ways to cultivate, nurture and exploit knowledge at individual and organizational levels. In other words it needs to ensure the delivery of the right knowledge to the right people just in time. To be competitive and successful over the long haul, an organization therefore must ensure that a supportive culture will encourage and facilitate the sharing of the tacit knowledge as well as ensure a good system is in use to manage the explicit knowledge.

2.2.4 Knowledge Management Models and Processes

A large portion of the past literature in knowledge management models focuses on knowledge management processes. Knowledge management (KM) is regarded as a process that involves various activities. There are many variations of knowledge processes explained in the literature, which can be further divided into many sub activities. These processes allow the organization to learn, reflect, unlearn and relearn, and is usually considered essential for building, maintaining and replenishing core-competencies. Without claiming to provide a comprehensive view of knowledge management theories, the analysis of the literature of KM models has resulted in the identification of the following:

Knowledge management models

- Three-Pillar Model (K M Wiig, 1993). Wiig proposed the three-pillar model emphasizing knowledge creation, manifestation, use and transfer.
- Organizational Knowledge Management Model (Andersen, 1996). Andersen considers that knowledge management is a process, which includes seven steps: identify, collect, adapt, organize, apply, share and create. This model also includes four knowledge management enablers, which are leadership, culture, technology and measurement.
- Stage model of Knowledge Management. Van Der Spek & Spijkervet (1977) proposed a four-stage model of knowledge management. This model views knowledge management as a problem solving approach and has four stages i.e. conceptualize, reflect, act, and retrospect.
- Spiral Model of Organizational Knowledge Creation. Nonaka (1994) introduced the Spiral model. He identified four kinds of “knowledge conversion” that drive knowledge creation: socialization, externalization, internalization and

combination. This model is also known as the Knowledge Creation Model in Nonaka and Takeuchi (1995).

- An Integrative Knowledge Management Model. Chai (1998) proposed an integrative knowledge model comprising five stages in a knowledge cycle, i.e. create, capture, store, disseminate and obsolete.
- Holistic Knowledge Management Model. Yang et al. (2009) proposed nine knowledge management processes in the realm of epistemological dimensions: socialization, systematization, transformation, formalization, routinization, evaluation, orientation, deliberation and realization.

Knowledge management processes

Knowledge management processes can comprise many activities. To ease understanding, a knowledge management process model from Davenport & Prusak (1998), Pentland (1995) Bhatt (2001), Alavi (1997), Magnier-Watanabe & Senoo (2008) and Mum Wai & Dominic (2008) is presented here. Bhatt (2001) regards knowledge management processes as knowledge creation, validation, presentation, distribution and application. A model by Alavi (1997) outlines six processes of knowledge management: acquisition (comprising knowledge creation and development), indexing, filtering, linking, distributing and application. Davenport & Prusak (1998) and Pentland (1995) have agreed that there are 4 processes of knowledge management which can be categorized as 1) knowledge creation and generation; 2) knowledge codification and retrieval; 3) knowledge transfer; and 4) knowledge application. In recent resources Magnier-Watanabe & Senoo (2008) indicate knowledge management as comprising acquiring, storing, sharing and implementation processes, while Mum Wai & Dominic (2008) refer to KM as an approach of identifying, acquiring, applying, sharing, creating, developing, preserving and measuring knowledge in the organization. King, Chung and Haney (2008) have produced a life cycle model of knowledge management as shown in Figure 2.6.

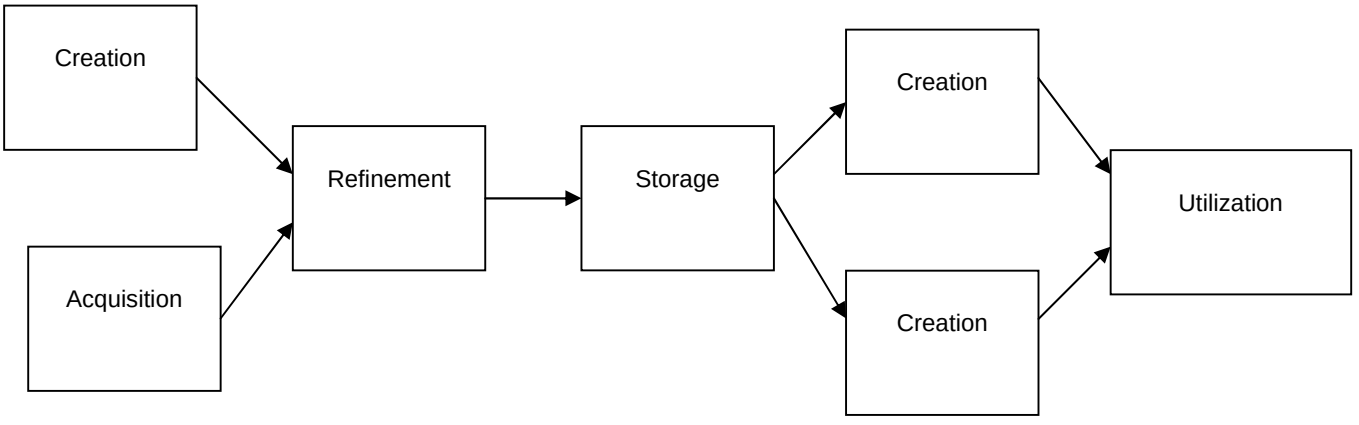


Figure 2.6 : Knowledge management cycle model (Adapted from King et al. (2008))

The similarities in all these knowledge management processes can be viewed as presented in Table 2.3. Based on these KM processes, this thesis identifies KM processes as comprising five main activities as follows:

1. Knowledge Acquisition – comprises the activities to identify the type of knowledge required and the entry of new knowledge into the systems such as creation, generation, development, identification, discovery, capture and harvest.
2. Knowledge Retention – includes the activities of codification of knowledge and holding the knowledge in a repository. This is the stage where knowledge will be preserved and allowed to remain in the system once it is introduced, and will be retrieved later by knowledge seekers. These activities include codification, storage, organization, packaging, classification and retrieval.
3. Knowledge Presentation – refers to the ways knowledge is displayed to the organizational members based on the procedures and format that their knowledge base is able to support. This includes activities such as formatting, standards, indexing, filtering and linking.
4. Knowledge Distribution – refers to the activities associated with the flow of knowledge from one party to another. The knowledge will be transferred to other people in the organization, who will later share the knowledge with others. Sharing, transfer, authorization, navigation, dissemination, delivery, translation and rendering are included in these types of activity.
5. Knowledge Application - includes such activities and events whereby knowledge will be applied in the business process. This is where the knowledge obtained will be applied in appropriate combination with other knowledge for further learning and for the use of problem solving. This refers to the activities such as utilization, implementation and combination.

Figure 2.7 below explains the cycles of the knowledge process. It can be interpreted that, after being distributed, knowledge can further be used for a creation of other knowledge. This explains that the goal to capture knowledge is not to ensure that everyone has the same knowledge, but to combine various knowledge and present levels of expertise to create new organizational knowledge (Bollinger & Smith, 2001).

2.2.5 Summary

Handling knowledge is not new to organizations. However, in order to achieve organizational goals, a more systematic handling of knowledge is needed. The

importance of knowledge management lies in the organization's realization of the need to deliver the available knowledge to the right person at the right time in order to make the right decisions. To be competitive and successful, an organization must create and sustain organizational knowledge, and integrate the goal to manage the knowledge with effective knowledge processes. It is also important to remember that the organization's competitive advantage does not depend on the existing knowledge in the organization, but on the ability to apply the existing knowledge to effectively create new knowledge for organizations (Dasgupta & Gupta, 2009).

Resources	Knowledge management processes
Davenport & Prusak (1998) and Pentland (1995)	Creation and generation → Codify, retrieval and retention → Sharing and transfer → Utilization and use
Bhatt (2001)	Creation → Validation → Formatting (presentation) → Distribution → Application
Alavi (1997)	Acquisition (creation and development) → Indexing, filtering, linking → Distribution → Application
Magnier-Watanabe & Senoo (2008)	Acquiring → Storing → Sharing and diffusion → Implementing
Mum Wai & Dominic (2008)	Identifying/acquiring/ creating/developing → Preserving → Sharing → Applying

Table 2.3: Knowledge Management Processes from selected resources

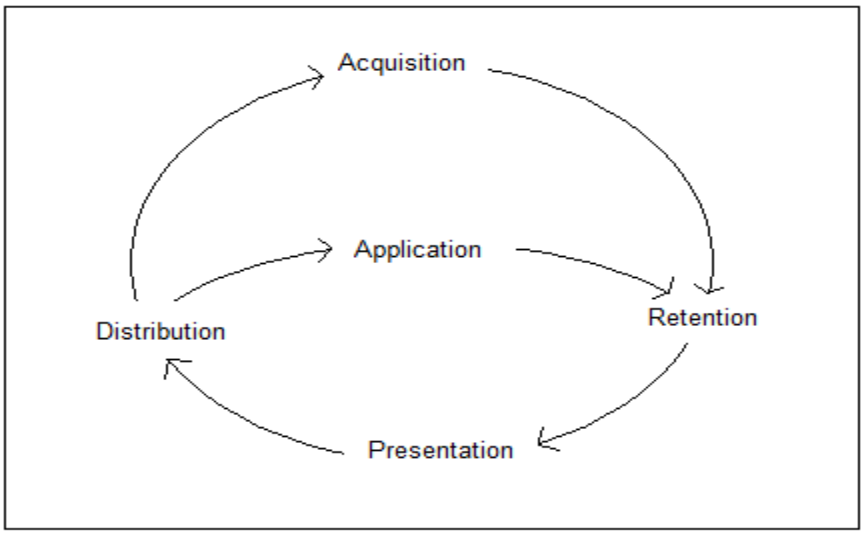


Figure 2.7: Knowledge management processes

2-3 Innovation

Innovation refers to the bringing of change in an organization and is seen as the mainstay of organizations and very important for their survival and growth. Innovation is a concept that plays a central role in creating value and sustaining the competitive advantage of organizations. The organization's ability to absorb and integrate new knowledge with existing knowledge will lead to the creation of new knowledge, as evidenced by the development of new process and services in organizations, and thus leads to improvement and further innovations.

Since the late 1950s there has been a growing interest in organizational innovation i.e. innovation within, and by organizations (Slappendel, 1996). Knowledge management in this case, is seen as a way for organizations to generate competitive advantage on the basis of innovation. This section is intended to explore the various perspectives of innovation in literature and, the relationship between knowledge management practices in organizations and innovation theory. The following subsections will discuss innovation definitions and perspectives, innovation processes and further elaborate on relationship between knowledge management and innovation.

2.3.1 Innovation Perspectives

Themes in innovation studies

Innovation is a vast multi-disciplinary research area. The innovation literature is diverse and has emanated from many fields of knowledge including management, psychology, economics, sociology and science. Inconsistency arises because researchers study different things under the same name (Asimakou, 2009). To clarify the field of innovation, Wolfe (1994) suggests three main themes by which the research in innovation investigates: 1) the diffusion of innovation, which studies the patterns of diffusion over time and space of potential adopter organizations; 2) the organizational innovativeness which studies the determinants of innovativeness and 3) the process theory which studies the processes of innovation within organizations. In relation to organizational innovation, Slappendel (1996) categorized the themes into three perspectives: 1) individual perspective, which emphasizes the entrepreneurial side of innovation; 2) structuralist perspective which examines the structural characteristics of the organization; and 3) integrative perspective which suggests an integration of the two perspectives.

Perspective on innovation

Tzeng's (2009) review of some of the innovation perspectives in literature is summarized in Table 2.4. Tzeng (2009) focused his discussion by juxtaposing economic, sociological and cultural perspectives on innovation based on the Schumpeterian schools of innovation. Based on his discussion, Schumpeterian schools of innovation can be divided into three: 1) the capability school, which looks at the economic perspective of innovation that is characterized by technological change and decisions on whether to innovate or not; 2) the corporate entrepreneurial school that emphasizes improvisation in action by individuals at the operational level of organizations; and 3) the cultural school which refers to innovation as associated with a shared culture of beliefs and trust.

Innovation perspectives/schools	**Descriptions**
Configuration school	Derived from a Weberian tradition, which provides ways to help classify innovative organizations by using taxonomies and topologies.
Knowledge management school	Explores the conversion process between tacit and explicit knowledge based on Polanyi's theory of personal knowledge.

Cluster school	Studies how geographical proximities between firms and their suppliers, customers and competitors lead to more innovative products.
Complexity adaptive systems school	Originating from physical science, it aims to better understand the innovative agent and its environment.
Population ecology school	Built on biological science, it researches the process of variation, selection and retention to calculate the survival rate of firms in the evolution of technological innovation.
Scumpeterian school	Concentrates on technological forces, social relations and culture of an innovative organization.

Table 2.4 : Innovation perspective summarized from Tzeng (2009)

Mainstream of innovation

Asimakou (2009) indicates two mainstream approaches to innovation analysis – those who see innovation as a rational planning process and those who see it as a cultural issue. According to Asimakou, innovation as rational planning suggests that *innovation is an entrepreneurship function essential for the survival of small and bigger organizations*, aims at the development of new products that result from controllable processes and measurable stages. Innovation as culture on the other hand *takes into account how cultural variables, biased decision-making strategies and managerial procedures mediate the processes of creating and sharing knowledge within and across institutions.* This approach suggests that the right organizational environment will lead to the desired performance and outcomes.

Taking the stance from viewing innovation from the intersection between the cultural perspective and the knowledge management perspective, this thesis will address knowledge management as innovation from two aspects: one, to investigate the adoption of knowledge management in Malaysian higher education administrative departments; and two, to identify the cultural factors which determine the innovativeness of knowledge management practices in higher education administrative departments.

2.3.2 Definition of Innovation

Definitions

As discussed before, innovation is a multidisciplinary research area. Many practitioners and researchers from different disciplines give different definitions that

suit their area of interests. It is common to all definitions that innovation refers to something new or novel. Most definitions share a common theme, which indicates the use of knowledge, which will later be turned into new products, processes and services in order to improve competitive advantage and meet the customer's changing needs. One of the earliest straightforward definitions given on innovation is provided by Thompson (1965) who indicates that innovation is the generation, acceptance and implementation of new ideas, processes, product or services. Damanpour & Evan (1984) defined innovation as the adoption of an idea or behavior new to the adopting organization. Another definition was given by West and Anderson (1996) and was quoted recently by Baregheh et al. (2009) as defining innovation as the effective application of processes and products new to an organization and designed to benefit the organization and its stakeholders. Rogers (2003) also defines innovation as an idea, practice, or object that is perceived as new by the individual or unit of adoption, while Hargadon and Fanelli (2002) identified innovation as the adaptation of existing knowledge into new activities, whereby the existing knowledge serves as the base for building new ideas or reconfiguring existing ones.

Van de Ven (1986) indicates that as long as the idea is perceived as new to the people involved, it is referred to as innovation, even though it may appear to others as an imitation of something that exists elsewhere. Herkema (2003) writes that innovation is the process whereby knowledge is acquired, shared and assimilated with the aim to create new knowledge.

Another detailed definition which is frequently cited in the literature was provided by Damanpour (1996). Damanpour (1996) associates the definition of innovation with changes in an organization, in which it *"encompasses a range of types, including new product, or service, new process technology, new organizational structure or administrative systems, or new plans or programs pertaining to organization members".* A knowledge management focused definition was recently proposed by Du Plessis (2007), by indicating that innovation is *"the creation of new knowledge and ideas to facilitate new business outcomes, aimed at improving internal business processes and structures".*

Another variation of innovation definitions also includes improvement or alteration to ideas as a concept of innovation. Dasgupta & Gupta (2009) state that innovation is understood as the successful introduction of something new and useful, such as new

methods, techniques, practices or new altered products or services. They also see innovation as a learning process where valuable ideas are transformed into new forms of added value for organizations and their stakeholders.

Innovation dimensions

Innovation is a complex process and by itself has a multidimensional character. An extensive literature review by Camison et al. (2004) identifies four different dimensions of innovation concepts:

1) The stages of innovation viewing the organization as either the generator of the innovation, or the adopter of the innovation;
2) The level of analysis relating to innovation adoption is divided into industry level, the whole organization or departmental unit;
3) The types of innovation comprising technical-administrative innovation, product-process innovation and radical-incremental innovation; and
4) The scope of innovation whereby the organization either adopts one innovation or multiple innovations.

Regardless of the type of innovation, whether it is technological, administrative, process systems (or any other categorizations which may exist) innovation can be regarded as uncertain, fragile, political and imperialistic (Asimakou, 2009). It is also suggested that innovation should flourish in the conditions that allow flexibility, quick action and intensive care, coalition formation and connectedness. This includes the environment which supports appropriate structure, culture and possible actions. This thesis therefore further investigates the management of knowledge in organizations as an innovation from a cultural perspective and further determines the cultural factors as determinants of the innovativeness in organizations.

2.3.3 Innovation Processes

Innovation processes

The process of innovation is described as consisting of four essential steps, starting with the conception of an idea, the proposal, followed by the decision to adopt, and finally, the implementation of the innovation (Daft, 1978). Kanter (1988) distinguishes four stages of innovation processes: 1) ideas generation and activation where individuals are seen as driving forces; 2) coalition building and acquisition of power to move ideas into reality; 3) idea realization and innovation production where ideas are implemented; and 4) transfer or diffusion of the innovation which refers to the commercialization stage of the innovation. In an article published recently, Desouza et al. (2009) have also reviewed the most commonly referred to innovation processes

in the literature as generation and mobilization, advocacy and screening, experimentation, commercialization, diffusion and implementation. The explanation of these processes is provided in table 2.5 below.

Innovation Process	Description
Idea generation	The process whereby new ideas are created either through redefinition of concepts, changes in processes, creation of new components of service, or development of new services ((Von Krogh, Ichijo, & Nonaka, 2000) as quoted in Desouza et al. (2009)).
Mobilization	The process whereby the modifications to any existing products, processes, services or framework of thought lead to the movement of ideas from one location (either physical or logical) to another ((Argote & Ingram, 2000) as quoted in Desouza et al. (2009)).
Advocacy and screening	The process of identifying the potential benefits and problems present at a particular time. It encompasses evaluation of potential opportunities for ideas within a particular organization's context (Desouza, et al., 2009).
Experimentation	Tests to evaluate the suitability of the idea for a particular organization in terms of time and capacity (Desouza, et al., 2009).
Commercialization	The process to make the idea appealing to the intended audience, creating internal and external market values, creating parameters within which value can be expressed or shared in a coherent fashion (Desouza, et al., 2009).
Diffusion	The process of generating buy-in and acceptance for the new innovation (Desouza, et al., 2009).
Implementation	The process of setting up the structures, maintenance and resources to allow the innovation to develop and be utilized (Desouza, et al., 2009).

Table 2.5: Innovation Process summarized based on Desouza et al. (2009)

Rogers (2003, p. 169), a famous author in innovation theory, presented a model on the Innovation-Decision Process comprising five main processes as explained below:

1. *Knowledge*, which occurs in individual or decision-making units, whenever they are exposed to an innovation's existence and gain understanding of how it should function.
2. *Persuasion*, where the individual or decision-making unit forms a favorable or unfavorable attitude towards the innovation.
3. *Decision*, which takes place when the individual or decision-making unit engages in activities that lead to a choice to adopt or reject the innovation.
4. *Implementation*, which occurs when the individual or decision-making unit puts a new idea into use.

5. *Confirmation*, which takes place when an individual seeks reinforcement of an innovation-decision already made.

Since the focus of this thesis is on the adoption of knowledge management practices in organizations (particularly higher education), it views the innovation process in relation to adopting knowledge management in higher education as comprising the following steps:

1. Knowledge acquisition, where the higher education management realizes and understands the importance of embarking on a journey towards implementing knowledge management practices. This includes the process of gaining information on the potential benefits and opportunities that knowledge management can bring to higher education.
2. Persuasion and decision to adopt, whereby the higher education management needs to promote the adoption of knowledge management practices in universities' functional units and departments.
3. Development, where the structures, maintenance and resources needed for the innovation to occur are developed and made available for every party to utilize.
4. Implementation and diffusion, where the actual practice of such innovation is implemented in the university. As the implementation could not occur in the whole organization all at once, the diffusion functions as promoting the innovation for use in other departmental units of the university.

2.3.4 Knowledge Management and Innovation

This thesis regards knowledge management as an innovation adopted by an organization. Knowledge management is recognized as a vehicle through which innovation and improved business performance is possible (Kamara, Anumba, & Carrillo, 2002). Nonaka and Takeuchi (1995) have elaborated that knowledge management creates new knowledge, disseminates it throughout the organization and embodies it in products, services and systems.

Knowledge Management supports innovation in two ways (Maqsood & Finegan, 2009). First, it helps organizations locate innovative knowledge in the outside world, brings that knowledge inside the organization and effectively incorporates it into work practices. Second, Knowledge Management supports innovation by helping

organizations to perform more productively. This can be accomplished through KM processes, which help organizations to obtain, assimilate and use external innovative knowledge.

Van de Ven and Engleman (2004) have noted that there are four basic issues in the studies of KM and innovation. The first is the human issue concerning people's focus on making organizations more innovative by exploring new knowledge rather than exploiting existing knowledge. The second is the process issue of how to develop a process that manages and implements ideas. The third refers to a structural problem of building an infrastructure across organizational boundaries for absorbing and learning knowledge as well as facilitating, supporting, and promoting innovation activities. The final issues address the leadership concerns on the creation and management of a context that is appropriate for innovation.
These four issues have been examined by investigating internal and external factors that influence knowledge management and innovation strategies. These internal factors include organizational structures, control and coordination mechanisms, communication channels, and organizational cultures while the external factors mainly refer to the governmental role and functions in technological change and R&D activities, as well as on network factors which allow knowledge to be transmitted across the organizations.

Organizational cultures are important indicators for organizational life and activities (Morgan, 1986). This thesis will explore organizational culture issues that influence knowledge management innovation in higher education. Investigating the soft issues affecting people factors and behaviour is difficult; however it is expected to provide great benefit to organizations.

2.3.5 Summary

Innovation involves the introduction of something new into the organization. In this thesis, knowledge management is regarded as one type of innovation being implemented by the higher educational institution for the purpose of improving the performance or service provided by institutions. Approaching the theory of innovation from a cultural perspective allows the researcher to investigate how cultural factors affect the practices of knowledge management in higher education and identifies those cultures that bring positive impact as well as identifying those cultures that

bring negative impact to the success of knowledge management practices in higher educational institutions.

2-4 Knowledge Management in Higher Education

Higher educational institutions are the main instruments of society for the constant pursuit of knowledge (Yaying, 2005) and have traditionally been utilized as transfer mechanisms to provide students with a knowledge base that will enable them to function (Keramati & Azadeh, 2007). Knowledge and educational institutions are related in two ways: one, the education system itself is about the production and dissemination of knowledge; and two, whatever happens within the system is in itself knowledge-based (Oakley, 2003). While knowledge is considered as the primary source of competitive advantage critical to the long term sustainability and success of organizations, knowledge management refers to the processes by which knowledge is created, shared and used in organizations. Knowledge management is about making noticeable changes to the way everyone in the organization works. Creating a knowledge environment requires changing the organizational values and culture, changing people's behaviors and work patterns, and providing people with essential tools that facilitate easy access to each other and to relevant information resources.

Knowledge management (KM) concepts are gaining acceptance in the field of education (Petrides & Nodine, 2003). As in business concerns, Higher Educational Institutions (HEI) have also realized the need to gain competitive advantage due to stiff competition and pressure to face globalization. With the growing interest of KM in Education, numerous studies have been conducted to examine KM issues in a wider context. Research in KM implementation for HEI has just recently attracted the attention of researchers (Leitner, 2002), and has been rather limited especially in the South East Asian region (Sharimllah Devi, Chong, & Ismail Hishamuddin, 2009; Sohail M Sadiq & Salina Daud, 2009). Most studies on KM in HEI literature focus on the following topics:

- knowledge sharing (Sohail M Sadiq & Salina Daud, 2009)
- KM practices for teaching and learning purposes (Chen & Burstein, 2006; Sharimllah Devi, et al., 2009; Wedman & Wang, 2005)
- KM for problem-solving processes (Hoveida, Shams, & Hooshmand, 2008)

- KM practices to improve university research output (Moss, Kubacki, Hersh, & Gunn, 2007)
- roles and effect of KM technologies in education (Kebao & Junxun, 2008)

Many studies that discussed KM implementation in higher education have also made comparison and discussed the KM practice in relation to a consulting organization (Cronin, 2001; Rowley, 2000). This might be due to the consulting firms being among the first businesses to make heavy investments in the management of their core assets – the knowledge (Mentzas, Apostolou, Young, & Abecker, 2001).

The following sections discuss the objective of knowledge management projects and the concept of knowledge management in the higher educational context and review knowledge management models and frameworks that have been discussed in the implementation of knowledge management practices in organizations particularly in HEIs.

2.4.1 Knowledge Management Objectives in Higher Education

A study conducted by Davenport, DeLong, & Beers (1998) of 31 knowledge management projects across 24 companies, identified four types of objectives for knowledge management practices in organizations. These objectives have been widely referred to in the literature of KM implementation for higher education such as in Rowley (2000) and Thorn (2001). These four broad objectives are described below:

1. *To create knowledge repositories*, which store both knowledge and information, often in documentary form. These include, external knowledge such as competitive intelligence, market data, surveys etc; structured internal knowledge like reports, market materials, techniques and methods; informal internal knowledge like discussion databases of know-how or lessons-learned.

   In an educational setting curriculum aids and plans might be thought of as repositories where standards, learning goals and lesson plans can be stored in the system and shared with others electronically to provide a knowledge base for a wider audience.

2. *To improve knowledge access*, or to provide access to knowledge or to facilitate its transfer amongst individuals with emphasis on connectivity, access and transfer, and with technologies such as video conferencing systems, document scanning and sharing tools as well as telecommunications networks.

   One way to apply this in education is for the use of research to link researchers, research institution and the sponsor together. It is through this link that the researchers can find funding for research and by which the sponsor can find qualified researchers.

3. *To enhance the knowledge environment*, so that the environment is conducive to more effective knowledge creation, transfers and use. This involves tackling knowledge-related organizational norms and values. A range of different initiatives might fall into this category such as increasing the awareness of the knowledge embedded in clients' relationships and engagements; assessing whether employees are applying knowledge in key decisions; and any other activities to improve organizational structures and culture.

4. *To manage knowledge as an asset*, and to recognize the value of knowledge to an organization. This usually refers to an attempt made to measure the contribution of knowledge to bottom line success. Evaluation and measurement is made to oversee whether the initiatives benefited the organization or not in terms of cost in order to make sure that the scope and cost are in line with the resources the companies have.

These four different categories of objectives identify four different perspectives of knowledge management taken by organizations. It is important to remember at this point that KM is a complex process that will be understood differently in different contexts. The following section of this chapter will explore the definition and meaning of knowledge management from an educational context.

2.4.2 Knowledge Management in an Education Context

The most widely used definition to explain 'what is KM' is taken from Davenport and Prusak (1998, p. 5). They relate that, *"knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for*

evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices and norms."

Sharimllah Devi et al. (2009) refer to Joseph (2001) who opines that KM is a process where institutions formulate ways to attempt to recognize and archive assets derived from employees and academics of various departments or faculties, or even from other institutions/organizations, which share the same interest. In this regard, HEIs do not only provide knowledge to students, but are also engaged in managing and collaborating the existing knowledge for future reference (Goud, Venugopal, & Anitha, 2006; Maizatul Akmar Ismail & Chua, 2005). In addition to this, Chen and Burstein (2006) state that knowledge management is not only about managing knowledge, but also managing the processes that act upon the knowledge. These processes include developing knowledge, preserving knowledge, using knowledge and sharing knowledge.

All these given definitions cover the management of documented knowledge (explicit) and subjective knowledge (tacit), and the processes associated with the identification, sharing and creation of knowledge. This supports the definition by Jashapara (2004) that knowledge management is a *learning process associated with exploration, exploitation and sharing of human knowledge (tacit and explicit)* in order to enhance an organization's intellectual capital and performance. In addition to this, studies by Zmud in 1982 indicated that an organization as a unit is represented by a technical core and an administrative core. The technical core is responsible for producing the product or services that justify the existence of the unit, while the administrative core is responsible for planning, controlling and coordinating unit functioning and linking the unit with the remainder of the organization. In relation to higher educational institutions, Zmud's ideas clearly distinguish two functions of HEI, the academic part which focuses on providing knowledge and conducting research in universities, and the administrative part which focuses on other infrastructure and support of the HEI.

The next section of this chapter explores the knowledge management practices for educational administration of HEI and reviews the KM models and frameworks that have been discussed in the literature with regard to knowledge management

practices' implementation in higher education. The suitability of these models and frameworks to be applied in this thesis will be explored in a later discussion.

2.4.3 Knowledge Management in Higher Education Administration

Knowledge in universities

There are two types of knowledge involved in higher educational settings: academic knowledge and organizational knowledge. Academic knowledge is the primary purpose of higher education, while organizational knowledge refers to knowledge of the overall business of an institution, its strengths and weaknesses, the market it serves and the factors critical to organizational success (Coukos-Semmel, 2003).

University governance concept

The above types of knowledge that exist in higher education are also related to the concept of university governance. Based on the university governance concept, universities can be divided into 3 structures: the leadership which refers to the responsibility of managing the institution, the faculty which refers to the core business of higher education to provide teaching and research, and the administration that is the process of implementing and handling the support services in the institution. This thesis will focus on the organizational knowledge and educational administration of higher education.

Educational administration

Administration refers to the structure and processes by which the institution is led and managed. In contrast to leaders, who actually form the management team of an institution, administrators, on the other hand, are employed by the institution for a specific job such as marketing manager or enrolment officer for which they receive a yearly budget, personnel and support (Forest & Altbach, 2006). Administrators report to university leaders and are accountable for their results. Academics are indeed important and make universities great, however, administrators are needed for the infrastructure and support of universities.

The study of the literature shows research scarcity in the area of knowledge management for higher education administration. Most researchers concentrate on how knowledge management can help academics and faculty enhance performance for teaching and learning as well as research and development purposes. However, it is necessary to note that academics and students communicate with various administrative departments within the universities in getting their needs attended. Therefore KM practice in HE administrative departments cannot be left out as most of the KM systems and repositories have actually been used by the higher education

staff members in performing their daily job. Knowledge management practices are also used to support educational administration and will in turn support teaching and learning in universities (Petrides & Nodine, 2003). This study will investigate how cultural factors affect the innovation of knowledge management practices in the administrative departments in higher education.

2.4.4 Knowledge Management Models and Frameworks in Higher Education

Knowledge management framework

Several attempts have been made in order to describe and analyze existing knowledge management frameworks. Frameworks can be classified as either prescriptive, descriptive or a combination of the two. Prescriptive frameworks provide direction on type of KM procedure (Rusli Abdullah et al., 2008) with focus on the people, technology, culture and content component (Ali A. Zahrawi & Yazrina Yahya, 2009). Prescriptive frameworks also prescribe methodologies to be followed in conducting knowledge management. Descriptive frameworks, on the other hand characterized or describe KM (Rusli Abdullah, et al., 2008) and are normally focused on providing components of a KM strategy (Ali A. Zahrawi & Yazrina Yahya, 2009). Descriptive frameworks attempt to characterize the nature of knowledge management, either the whole phenomena of knowledge management or addressing a specific phenomena. Frameworks with the combinations of both prescriptive and descriptive frameworks combine the physical implementation as well as the strategy aspects of KM development (Ali A. Zahrawi & Yazrina Yahya, 2009).

This thesis uses the classification that has been discussed by Handzic (2001) which classified KM frameworks into descriptive frameworks and prescriptive frameworks. Handzic (2001) also brings together a different perspective of knowledge management and proposes a unifying research framework through the interpretation and synthesis of existing approaches. Handzic's model is depicted in Figure 2.8 and presents the concepts of working knowledge, knowledge processes and knowledge enablers as three inter-related model components.

The core of this framework is the concept of working knowledge, which is defined as knowledge that an organization should possess and utilize to sustain success. This includes the tacit and explicit knowledge with the know-what and the know-how dimension. Another component of the framework consists of three generic types of

knowledge processes – generate, transfer and apply. The framework further proposes two groups of socio-technological factors as knowledge enablers. These include organizational environment and technological infrastructure, which cover factors such as organizational structure, leadership and culture, as well as a wide range of information and communication technologies and systems that provides the platform for knowledge support.

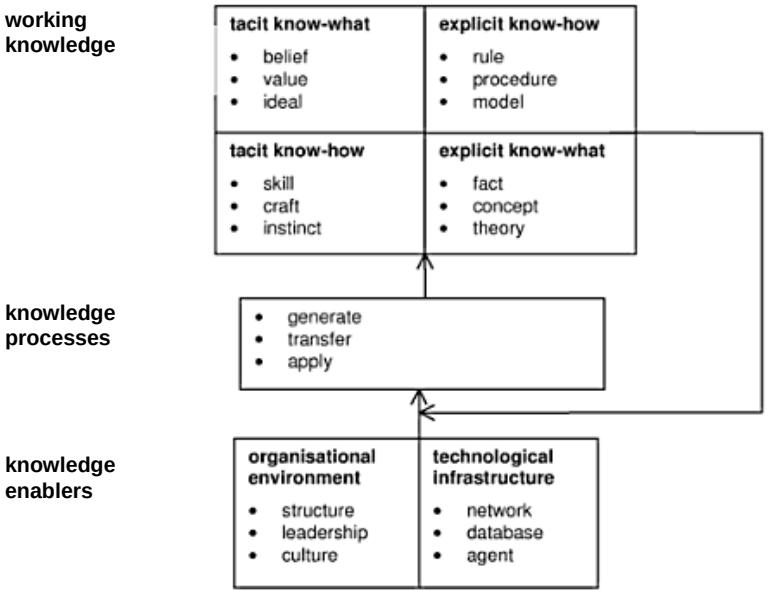


Figure 2.8: A unifying knowledge management research framework (Handzic, 2001)

Based on Handzic's framework, Maizatul Akmar & Chua (2005) proposed a framework to be deployed in an environment specific to higher educational institutions. This framework is presented in Figure 2.9. In this framework, three environments have been specified as inputs to the KM system i.e. social environment, globalization environment and technological environment. These inputs cover the attitude, willingness and behavior of people involved, method of how the knowledge can be captured and the tools available to capture the knowledge. These inputs will be used by the KM elements in the system i.e. knowledge distribution & segregation and knowledge transformation. Through higher management enforcement, knowledge strategies and approaches will be applied to the institution's strategic planning process to generate results such as knowledge cases, knowledge assets and knowledge content, which later will be used as inputs in order to develop knowledge organizations. Finally, the knowledge system structure is developed to form a knowledge portal for higher educational institutions.

Another model for knowledge management development for higher educational institutions has been developed by Chen and Burstein (2006). Their model includes six knowledge management activities, i.e. capturing, storing, sharing, learning, exploring and exploiting. This model is aligned with appropriate technologies, policies and processes in order to lead to successful KM implementation. This model is shown in Figure 2.10. Based on Chen and Burstein (2006), people are the factor that decides everything in KM projects; policies foster an appropriate culture to implement KM successfully; and technologies facilitate the KM activities.

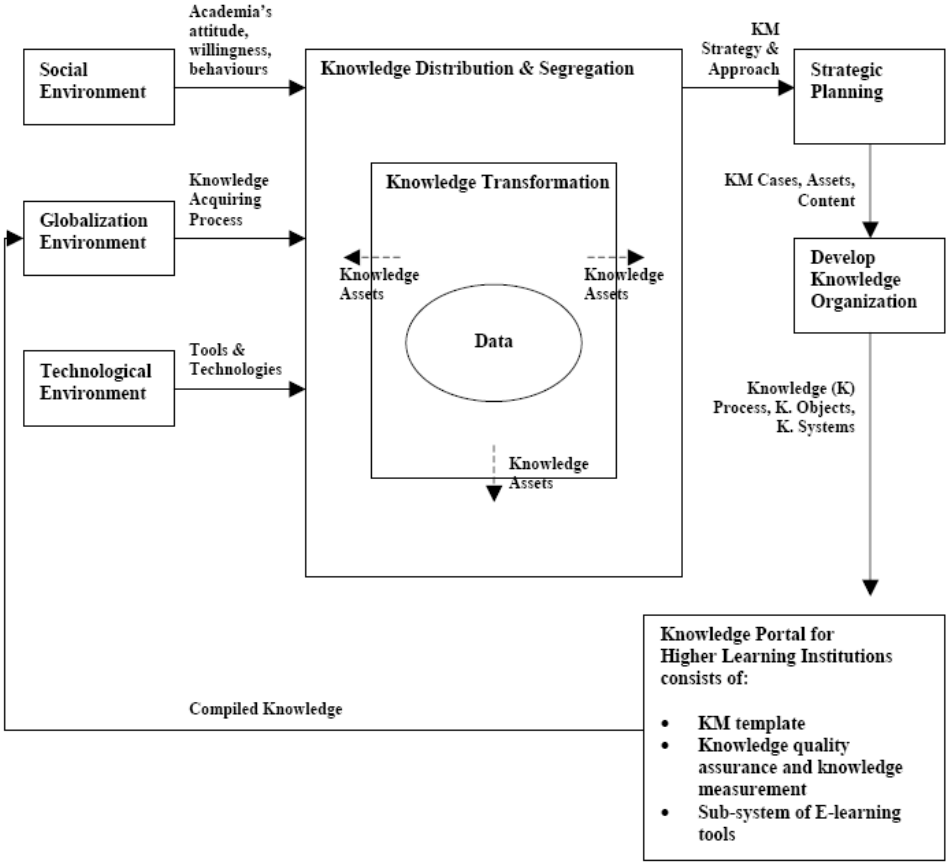


Figure 2.9: Knowledge Management Framework for Higher Learning Institution (Maizatul Akmar Ismail & Chua, 2005)

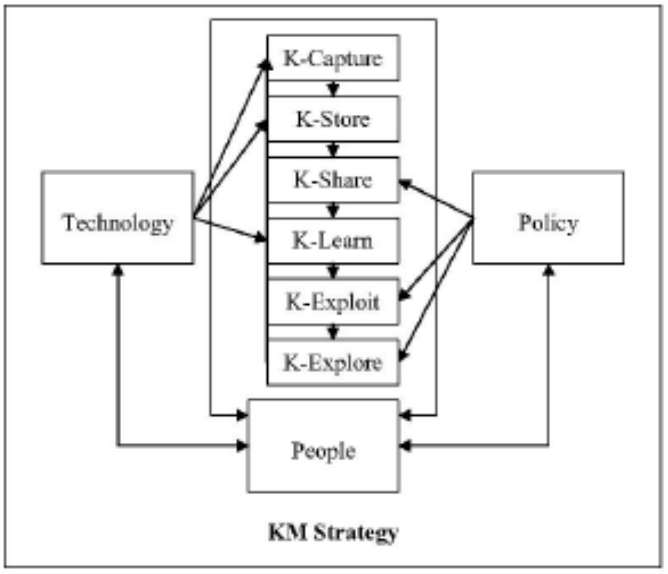


Figure 2.10: A dynamic model of knowledge management (Chen & Burstein, 2006)

Hoveida et al. (2008) have also introduced another model for KM practices in Higher Education. Their model is based on the framework advanced by Gray and Chan (2000) which integrates the KM practice into a model that views the problem-solving process as a vehicle to connect knowledge and performance in organizations. They agreed that by using this model, knowledge could generate economic values when it is used to solve problems, explore opportunities and make decisions.

Gray and Chan's (2000) model forms a typology that groups organizational knowledge management practices into four categories (see Figure 2.11). The top two cells (1 and 4) represent organizational practices designed to raise individual awareness of problems and opportunities. The bottom two cells (2 and 3) deal with organizational practices that assist individuals who are aware of a problem or opportunity and are actively attempting to find or develop solutions. The pair or cells on the left (1 and 2) correspond to knowledge creation practices as employees discover and resolve new problems or opportunities. Finally, the pair on the right (3 and 4) encapsulates knowledge sharing practices used to generate awareness of and propagate knowledge about previously solved problems or issues.

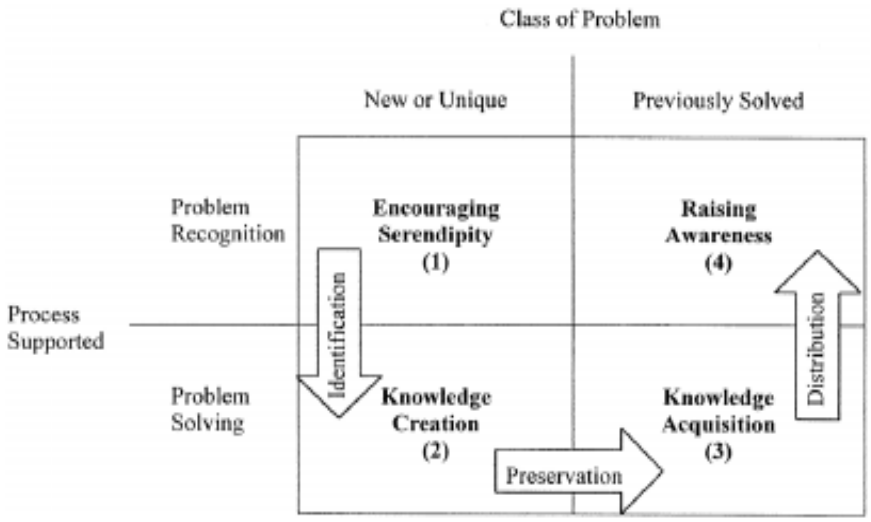


Figure 2.11: Gray and Chan's model of knowledge management practices

Gray and Chan (2000) also hypothesize three processes that connect these four cells. First, the identification process manages the flow of recognized opportunities and problems from cell 1 to cell 2; next, the preservation process creates value by recording newly created knowledge in the organizational memory; and last, the distribution process involves sharing knowledge that has been recorded in the organizational memory (cell 3) with appropriate individuals who are likely to benefit from that knowledge but are not aware of any specific need (cell 4).

Rusli Abdullah et al. (2005) also proposed a framework for collaborative environments in higher learning institutions. This framework consists of five components, which include functionality and system architecture to support the KM process, psychological and cultural aspects as well as knowledge strategies for measurement and auditing. Infrastructure and technologies exist as enabler tools while processes are viewed as a set of activities to manage knowledge and repositories. The psychological and cultural aspect as well as knowledge audit support the ideas that the knowledge management system could act as a catalyst to the workers involved in higher learning institutions. The relationship of these components is shown in Figure 2.12.

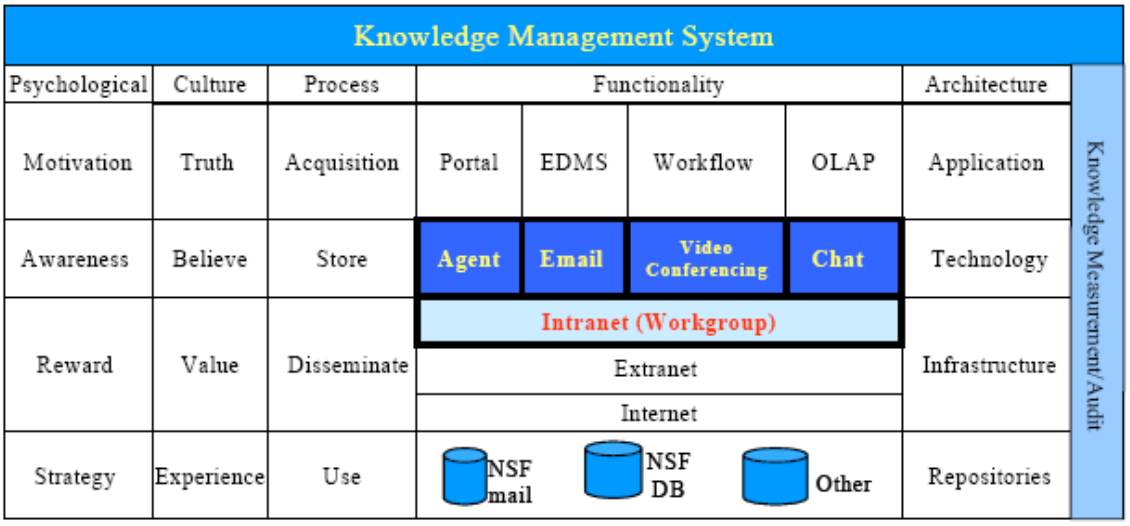


Figure 2.12: Knowledge Management Framework proposed by Rusli Abdullah et al. (2005)

The next section presents another view of knowledge management practice in higher education. It will also explore various knowledge management applications that exist in the higher education environment.

2.4.5 Educational Practice Hemisphere

At their most basic, modern universities comprise two cultural hemispheres: an academic hemisphere and a managerial hemisphere (Cronin, 2001). These two hemispheres are populated respectively, by academics and managers. Lyman (2000) suggests that it is important to distinguish between management and administration. He states that the core of academic culture is the belief that higher education should be administered, not managed. The word administration here brought a connotation of: to minister, serve, steward and act as a guardian or custodian. He argues that these tasks have an implication for KM, since the process of knowledge discovery is something that cannot be managed.

Figure 2.13 below illustrates KM applications in HE that are associated with these two hemispheres. Some of these are already well-established KM practices in some HEIs. Two main sets of practice under the academic hemisphere are curricular activities and research matters. The sharing of experience and best practices under the academic area is achieved by performing some of these activities (Cronin, 2001):

- Building repositories for course syllabi, which can benefit both the students and faculty;
- Providing pointers to the evaluation of pedagogic styles and practices;
- Highlighting the lessons learnt from distance education; and
- The creation of communities of practice for the exchange of tacit knowledge (Wenger, 1999) and on-the-job experiences.

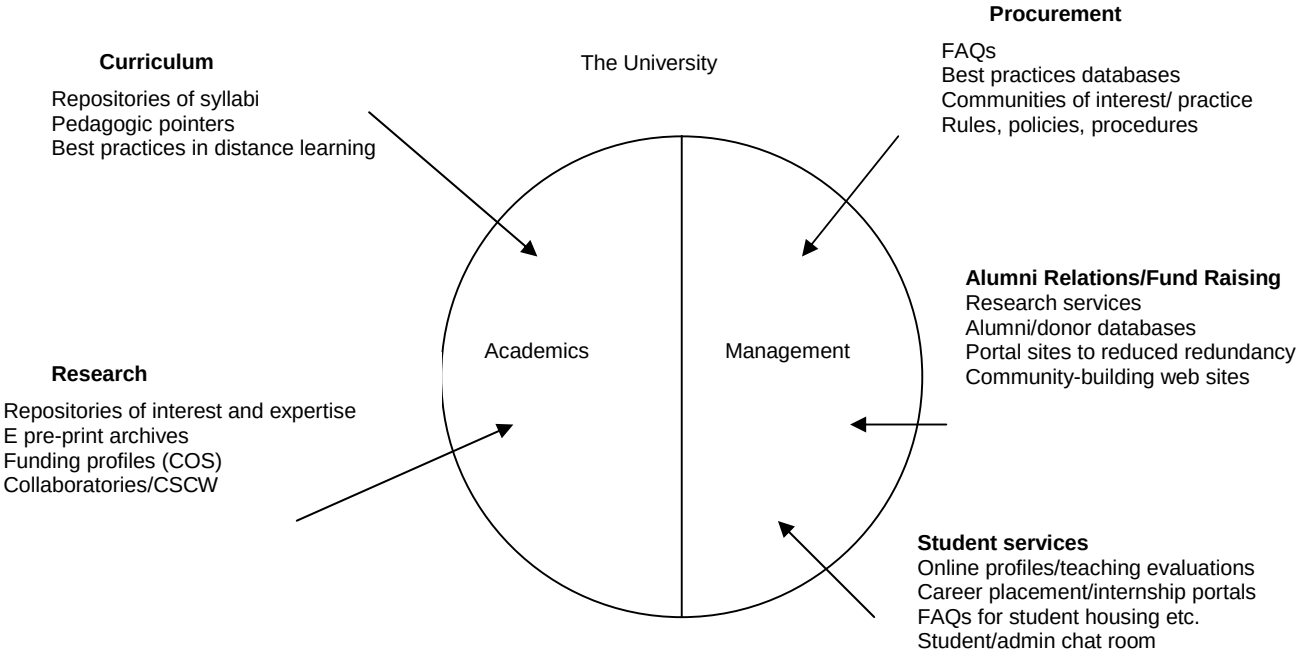


Figure 2.13: Academic and managerial hemispheres of a university (Cronin, 2001)

Figure 2.13 also lists a selection of KM applications launched in the management hemisphere, grouped under three broad headings: procurement, alumni relations/fund raising and student services. Some of the applications used by universities for management activities are listed in the figure.

KM practices for HEI should also include marketing and admission activities. Kidwell et al. (2001) stated that knowledge management should support every part of the universities' missions. This function should include the area of research process, curriculum development process, student and alumni services, administrative services as well as strategic planning (Kidwell, et al., 2001). These include using the KM application for repositories and portal applications.

Another study by Luan (2002) was conducted to discuss the potential applications of data mining in higher education. This study focused on the explicit components of knowledge that exist in higher education. In the context of higher education, the data mining application is particularly used for alumni management (for example to identify those who are most likely to donate or participate in activities), institutional effectiveness (to find information like how students learn best, what courses are taken together or what learning experiences contribute to the overall learning outcomes), marketing (to find information such as who else the institution has not reached, or who might be interested in the information in a particular program area) and enrolment management activities (to identify the prospective students as well as to pin-point the time of drop out of students).

2.4.6 Summary

Since universities are 'knowledge-intensive and reflexive organizations (Cronin, 2001), it is compelling to say that the KM principles and practices being used in other business organizations can also be applied to the higher education sector. It is impossible to imagine that a university on a large scale would not apply a sophisticated business practice to manage their infrastructural activities, marketing and advertising, capital investment etc.

Other universities with the same number of faculties, expenditures or enrolment may not be equally successful in their ranking. The difference is often an intangible value that is added by an effective KM practice. As indicated by Microsoft (May 2000), organizations that reward collaboration and information sharing are outperforming companies that discourage these practices. This thesis will therefore investigate the practice of KM process in HEI in Malaysia.

2-5 Organization Culture

Based on the intersection between the knowledge management perspective and the cultural perspective of innovation, this thesis views knowledge management as a way by which organizations could generate competitive advantage on the basis of innovation. Organizational culture is an important aspect of the organization indicating that the organization must be driven by vision and associated with a shared culture of beliefs and practices. The focus of this research is to view the

higher educational institutions as organizations, and to use this as the base for a unit of analysis.

Organizational culture has been identified as a critical success factor for knowledge management, however, there is little research conducted to understand how organizational culture contributes to knowledge management practices (J. H. Gray & Densten, 2005). This research focuses on the organizational cultural aspects and intends to investigate the adoption of knowledge management practices in higher educational administrative departments from the organizational culture perspective. It is therefore important to understand the unique culture of an academic environment. Sporn (1996) has indicated that universities have a distinctive set of characteristics which will have a strong impact on the culture of the institutions and has developed a typology of different types of university culture in order to investigate the impact of culture in academia.

Organizations may also adopt a mixture of organizational culture types and styles (Deshpande & Farley, 2004). However, the patterns of the shared values and beliefs is found to be different in different countries (D. Denison, Haaland, & Goelzer, 2004; Deshpande & Farley, 2004). The sections that follow will explore the definition of organizational culture, cultural types and dimensions discussed in the literature, the culture in an academic environment, as well as the cultural factors from the Asian perspective. The following sections will further discuss the innovation culture in the context of knowledge management practices in organizations.

2.5.1 Definitions

In many ways organizational cultures relate to human decisions and actions, and act as important indicators for organizational life (Morgan, 2006). It is also vital to practice an in-depth understanding of the relationship between organizations and its culture (Morgan, 2006) in order to create value to leverage organization's knowledge assets and as a source for the organization's competitive advantage. The concept of organizational culture evolved in the 1980s out of an interest to better understand corporations (Sporn, 1996). However, the concern for culture in the workplace starts as early as the 1930s and 1940s. As cited in Hoy (1990), Barnard (1938) and Mayo (1945) were stressing the significance or norms, sentiments, values, and emergent interactions in the workplace. The notion of organizational culture serves as an

attempt to capture the feel, sense, character or ideology of the organization (Hoy,1990).

What is culture

Culture is a complex and multi-faceted term, and can be looked upon in many ways. Cited in Bali, Wickramasinghe & Lehaney (2009), the definition that culture has always been referred to as *"the way we do things around here",* originates from Bower (1966) and guides the day-to-day behavior shaping a future course of action. Most definitions suggest that culture refers to the pattern of behavior adopted by a group (e.g. organization) as the accepted way of solving problems. Hofstede (1980) defines culture as a collective phenomenon that is partly shared with people who have lived within the same social environment where it was learned (quoted in Magnier-Watanabe and Senoo (2010)). Schein (1992) has described three levels of culture, which includes artefacts, shared values and basic assumptions. The first level, *artefacts*, referred to as visible, audible and collective manifestations of underlying cultural assumptions, includes basic premises about the nature of relationships and human nature and reality, such as behavior patterns, ritual, physical environment, dress codes, stories and myths (Hoy, 1990; Young, 2000). At the second level, culture is defined as *shared values* which referred to the espoused reasons why things should be as they are, such as norms, codes of ethics and company value statements (Young, 2000). These values reflect the basic assumptions of the culture that define what the members should do for the organization to be successful (Hoy, 1990). Thus, member's action becomes infused with values such as openness, trustworthiness, cooperation and teamwork (Hoy, 1990). At the third level, *basic assumptions* are used as the basic shared orientations of culture. They comprise identifiable reasons why group members perceive, think and feel the way they do about external survival and internal operational issues, such as mission, means of problem solving, relationship, time and space (Young, 2000).

Organizational culture

Extending the notion of culture leads into the definition of organizational culture. Organizational culture is defined as the components of routine behavior, norms, values, philosophy, work system and feelings shared by personnel in organizations (Dasgupta & Gupta, 2009; Janz & Prasarnphanich, 2003; Martins & Terblanche, 2003; Rivera-Vazquez, Ortiz-Fournier, & Flores, 2009). Claver and Llopis (1998), as cited in Jantan et al. (2003), defined organizational culture as a set of values, symbols and rituals shared by members of certain firms, describing the way things are done within the organization when solving internal managerial problems. It is an interdependent set of values and ways of behaving that is common to a community

and tends to perpetuate them, sometimes over a long period of time (Kotter & Heskett, 1992). Wilkins and Dyer (1988) suggest that culture in an organization is composed of the values, competencies, and beliefs of groups of people that strongly influences whether or how the organizational strategies are implemented. Discussion of organizational culture in Peterson and Spencer (1991) focused on the deeply embedded patterns of organizational behavior and the shared values, assumptions, beliefs or ideologies that members have about their organization or its work (Bartell, 2003; Sporn, 1996).

In relation to universities, culture is viewed as how values and beliefs are associated within the universities (including departments and their respective staff), developed and conveyed by the use of language and symbols (Bartell, 2003). These shared assumptions and understanding can be identified through stories, language and norms that emerge from individual and organizational behavior (Bartell, 2003; Cameron & Freeman, 1991; Sporn, 1996). Kuh and Whitt (2000, p. 162) defined university culture *as the collective, mutually shaping patterns of norms, values, practices, beliefs, and assumptions that guide the behavior of individuals and groups in an institute of higher education and provide a frame of reference within which to interpret the meaning of events and actions on and off campus.* University culture can also be distinguished into academic culture and administrative culture (Sporn, 1996).

Culture can also be thought of as having two components: 1) explicit culture which represents the typical patterns of behavior by the people and the distinctive artefacts that they live within; and 2) implicit culture which refers to values, beliefs, norms and premises which underline and determine the observed pattern of behavior (Ahmed, 1998). Culture can also be looked at in terms of cultural norms. O'Reilly (1989) is quoted in Ahmed (1998) indicating that cultures vary along 2 dimensions:

1) *The intensity* which refers to the amount of approval or disapproval of the group (for example when everyone understands what the organization wants, the intensity refers to the degree of approval or disapproval among the parties involved such as individuals or departments); and
2) *Crystallization*, which refers to the prevalence of which the culture is shared (for example if a culture is valued in one department, but not the other, crystallization does not exist).

Since culture can affect people's behaviour, it may help organizations to improve their organizational practices (such as knowledge management implementation). It is therefore important to understand how cultures can be nurtured to achieve the organizational benefit of introducing such innovation into organizations. This thesis therefore studies how knowledge innovative culture affects knowledge management practice in higher education administrative departments.

2.5.2 Organizational Culture: Functions, Types and Dimensions

Culture plays various functions in organizations. It serves as a boundary to differentiate one organization and another. It also conveys the sense of identity of the organization members. Cultures may also facilitate a commitment that is larger than one's self-interest. Culture can enhance social stability and act as a control mechanism that guides and shapes the attitude and behavior of employees (Robbins, Millet, Cacioppe, & Waters-Marsh, 2001).

Goffee and Jones (1998) categorized organizational culture into two dimensions namely, sociability and solidarity. Sociability measures the friendliness in organizational practice where high sociability means people do things for one another without expecting something in return and relate to each other in a friendly way (Goffee & Jones, 1998; Robbins, et al., 2001). On the other hand, solidarity measures task orientation with high solidarity meaning people can overlook personal biases, and focus on common interests and goals (Goffee & Jones, 1998; Robbins, et al., 2001). These dimensions create four distinct culture types as depicted in Figure 2.14. The description of each culture is described in Table 2.6.

There are various other studies that have discussed the different types of organizational culture that exists in organizations. Among the most popular cited in most articles and books on organizational culture are Hofstede (1980, 1983) on power-distance, the avoidance of uncertainty, individualism versus collectivism, and masculinity versus femininity. Another variation of classification of culture is elaborated by Cameron & Freeman (1991) on clan, market, hierarchy and adhocracy culture. These two variations of culture type are discussed in section 2.5.3 and 2.5.4 with relation to culture in higher education below.

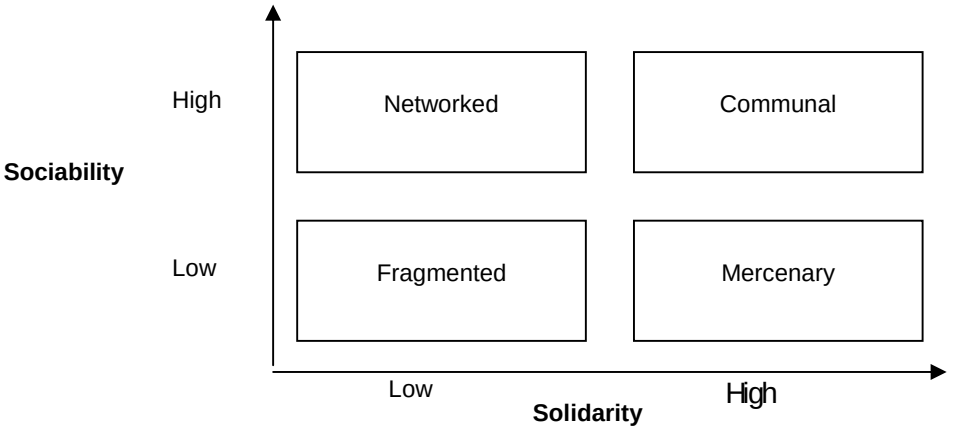


Figure 2.14: Solidarity vs Sociability Cultural Dimensions

Culture type	Characteristics
Networked culture (high sociability, low solidarity)	• View organizational members and friends as family • People in these organizations know and like each other • Members are willing to give assistance and share information openly with others
Mercenary culture (low sociability, high solidarity)	• Members are goal-focused • People tend to get things done quickly • Focused on winning and destroying enemies
Communal culture (high sociability, high solidarity)	• Organizational members value both friendship and performance • People have a feeling of belonging but still focus on goal achievement • The leaders are inspirational and charismatic with clear vision of organizational future
Fragmented culture (low sociability, low solidarity)	• Organizations made up of individualists • Commitments are focused to individual member and job task • Employees are judged based on their productivity and quality of their work

Table 2.6: Solidarity versus Sociability: Culture Characteristics

2.5.3 Higher Education and Culture

Studies conducted by Cameron and Freeman (1991), Sporn (1996), Smart and St John (1996) and Bartell (2003) associated higher education culture with the four types of organizational culture – clan, market, hierarchy and adhocracy. These four types of culture were found important to determine organizational effectiveness (Cameron & Freeman, 1991; Smart & St. John, 1996) and performance (Deshpande & Farley, 2004). The importance of understanding organizational culture of higher education is also widely discussed in the literature with relation to organizational change (Kezar & Eckel, 2002), decision making (Tierney, 1988), management approaches (Sporn, 1996) and internalisation (Bartell, 2003).

Quinn (1988, 1984) presented a framework called Competing Values Framework which clarifies the nature of organizational culture according to two dimensions i.e. internal/external focus and stability/flexibility structure. These dimensions were further aligned with the four types of culture mentioned above (the clan, market, hierarchy and adhocracy) (Cameron & Quinn, 1999). Figure 2.15 provides the representation of the Competing Values Framework.

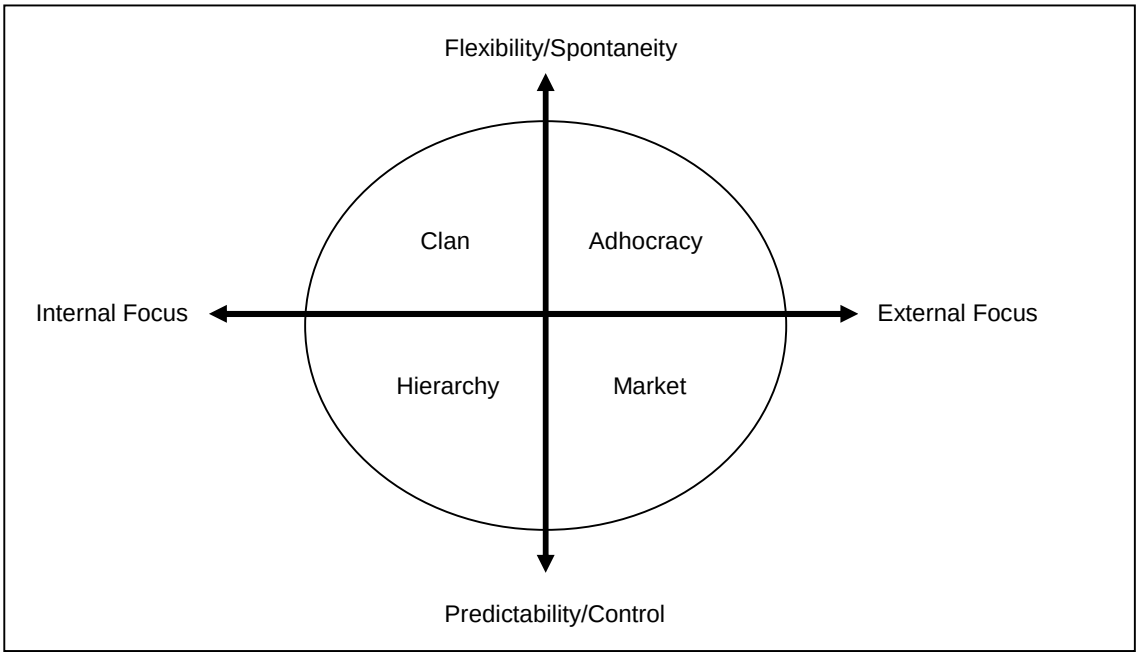


Figure 2.15: Competing Values Framework (Adapted from Quinn (1988))

Based on the above figure, the clan culture (upper left quadrant) is characterized by flexibility and an internal focus. This type of culture emphasizes information sharing and participative decision-making (Gray & Densten, 2005). Members of the

organization are bonded together through the development of a sense of affiliation and belonging (Gray & Densten, 2005) as well as loyalty, tradition and internal maintenance (Cameron & Freeman, 1991; Deshpande & Farley, 2004; Smart & St. John, 1996). Other characteristics of this type of culture include:

- individuality and spontaneity (Smart & St. John, 1996)
- mentor or facilitator leadership style (Cameron & Freeman, 1991; Smart & St. John, 1996)
- focus on human resource and cohesion strategic approach (Cameron & Freeman, 1991; Smart & St. John, 1996)
- short term time frame and focus on smoothing activities (Smart & St. John, 1996)

The adhocracy culture (upper right quadrant) is characterized by flexibility and an external focus. The adhocracies organization emphasizes innovation, creativity, adaptation, growth, external support and acquisition of new resources (Cameron & Freeman, 1991; Gray & Densten, 2005; Smart & St. John, 1996). Members of the organization are bonded through being inspired and challenged (Gray & Densten, 2005). Other resources indicate that the adhocracies organizations:

- have an entrepreneur leadership style with emphasis on innovation and risk-taking (Cameron & Freeman, 1991; Deshpande & Farley, 2004; Smart & St. John, 1996)
- focus on external positioning, long-term time frame and achievement oriented activities (Smart & St. John, 1996)

The market culture (lower right quadrant) is characterized by predictability and an external focus. These organizations value productivity, goal clarity, efficiency and accomplishment (Gray & Densten, 2005) and emphasize competitive action and achievement as well as market superiority (Cameron & Freeman, 1991; Deshpande & Farley, 2004; Smart & St. John, 1996). Members are bonded together through their goal orientation and competition (Gray & Densten, 2005) and achievement oriented activities (Smart & St. John, 1996). These organizations are also:

- valuing stability, control and predictability (Smart & St. John, 1996)
- production oriented with producer or hard-driver leadership style (Cameron & Freeman, 1991; Smart & St. John, 1996)

The hierarchy culture (lower left quadrant) is characterized by predictability and internal focus. These organizations emphasize information management, documentation, stability, routinization, centralization, continuity and control (Cameron & Freeman, 1991; J. H. Gray & Densten, 2005; Smart & St. John, 1996). Organization members are bonded through internal controls that maintain rules, policies and procedures (Cameron & Freeman, 1991; Deshpande & Farley, 2004). Other quoted characteristics include:

- practicing coordinator or organizer leadership style (Cameron & Freeman, 1991; Smart & St. John, 1996)
- having an internal emphasis with short term orientation and smoothing activities (Smart & St. John, 1996)

2.5.4 Asian Organizational Culture

Since this study was conducted in the South-East Asia region, it is deemed necessary to give an overview of the organizational culture from a national perspective. Countries' independence from British rulers is marked by a passive management culture borrowed from the British colonial era (Khilji (2001) as quoted in Saeed et al. (2010)). Saeed et al. (2010) also quote that Khilji (2002) identifies public sector organizations of these countries as bureaucratic, centralized and non-responsive to customer need.

Fontaine and Richardson (2003) reviewed four studies on cultures of nations. The four studies they mentioned were Hofstede (1980), Maznevski et al. (1993), Trompenaars (1993) and Schwartz (1994). Fontaine and Richardson (2003) found that very few attempts at studying Malaysian national culture have been made using other studies apart from Hofstede (1980).

Hofstede (1980, 1983) deduced different dimensions of national cultures: power-distance, the avoidance of uncertainty, individualism versus collectivism, and masculinity versus feminity. Table 2.7 elaborates these four types of cultural dimensions. Even though many studies confirmed the validity of Hofstede's cultural dimensions, these studies have neglected knowledge management and focused their studies on the relationship of culture with other management issues (Magnier-Watanabe & Senoo, 2010). However, Magnier-Watanabe & Senoo (Magnier-Watanabe & Senoo, 2010) also commented that recently there are a few studies

which give attention to the influence of culture on KM processes and knowledge sharing behavior in Eastern culture, particularly in Chinese and Japanese firms.

Power distance	*A measure of the extent to which the society accepts power hierarchy and inequality (Aycan, Kanungo, & Sinha, 1999).*
Uncertainty avoidance	*The extent to which society feels threatened by uncertain and ambiguous situations and tries to avoid them (Robbins et al., 2001).*
Individualism vs collectivism	*Individualism: refers to social framework whereby individuals, when in need, depend on their own resources (Aycan et al., 1999).* *Collectivism: the extent to which individuals feel loyal to their communities and compelled to fulfill their obligation toward in-group members (Aycan et al., 1999).*
Masculinity vs feminity	*Masculinity: the extent to which the society is characterized by assertiveness, achievement and acquisition of money and other material possessions are emphasized (Aycan et al., 1999).* *Feminity: the extent to which the society values interpersonal harmony, quality of relationships and caring for others (Aycan et al., 1999).*

Table 2.7: Hofstede national culture dimensions

There are a few other studies that have been conducted in Asian countries in order to analyze the type of organizational culture adopted. These include Deshpande and Farley (2004) and Hofstede (1980, 1983) who have conducted an analysis to investigate the type of organizational culture (whether it is market, adhocracy, hierarchy or clan culture) adopted by a few countries including Japan. Deshpande and Farley's (2004) results indicated that organizations may have a mixture of these culture types, in which the importance of each will depend on the attributes of the respective national culture.

Hofstede (1980) argues that the organization's culture is nested within a national culture and therefore the national culture influences human resource practices and organizational behavior (Rivera-Vazquez, et al., 2009). However, studies by Magnier-Watanabe & Senoo (2010) show that organizational characteristics are factors that affect knowledge management practices in organizations more strongly than national

culture. Based on this argument the focus of this thesis is on the culture from an organizational characteristics perspective and not in terms of the national culture.

2.5.5 Summary

In the context of this thesis, the studies of culture in organizations focus on how the current beliefs, perceptions, thought and feeling of the organizational members reflect the implementation of knowledge management in higher education administrative departments. It is observed that these studies were undertaken and discussed mostly by western authors and possibly from a westernized perspective. The studies of how these cultures are incorporated in Malaysia particularly in the higher educational settings are yet to be found. However, studies on organizational culture in Malaysia show that since higher educational institutions in Malaysia are under the control of the Ministry of Higher Education, the national culture does not affect the higher educational institution. Thid thesis will identify the positive and negative culture as it affects the KM practices and how the positive culture can be nurtured to ensure the success of the KM practices in HE administrations.

2-6 Knowledge Innovation Culture in Higher Education

Innovative culture

Organizational culture has become a powerful determinant of innovative potential in order to sustain an innovative culture (Ahmed, 1998; Wan Ismail & Abd Majid, 2007). Organizational culture is also found to be a critical factor to enable knowledge flow in organizations (Md Zahidul Islam, Hanif Mahtab, & Zainal Ariffin Ahmad, 2008) as it allows organizational members to create, acquire, share and manage knowledge. Even though the innovation concepts have been around for many years, the concept of innovation culture is still in its infancy (Wan Ismail & Abd Majid, 2007) and is rarely discussed in the literature. In order to nurture the innovation culture, organizations need to develop a conducive environment where members feel free to contribute (Beck, 2004). It is important in this context to understand what is meant by innovativeness in organizations. Firm innovativeness is defined as an openness to new ideas as an aspect of a firm's culture (Hurley & Hult, 1998). It is conceptualised from two perspectives: 1) viewing it as a behavioural variable which refers to the rate of adoption of innovations by the firm; and 2) viewing it as an organization's willingness to change (Hurt et al. (1977) as quoted in Calantone et al. (2002)). It is therefore important to note that a creative environment backs up the organizational

attitude and action that people are comfortable with (Abdul Razak, Ali, Sivadasan, & Ahmad Vazehi, 2009), which constitutes the cultural element of the organization.

Organizational climate

Culture has been closely allied to the term climate. However, it is important to highlight that they are distinct but interrelated (Glisson & James, 2002; Moran & Volkwein, 1992; Sarros, Cooper, & Santora, 2008). The climate of the organization refers to shared perceptions and the way employees understand the impact of work practices and procedures in the environment they work in on themselves (Ahmed, 1998; Glisson & James, 2002; Helfrich, Weiner, McKinney, & Minasian, 2007). Being human, employees are observers of the environment they live in and they shape the environment, and are also shaped by the environment in which they exist and from which they infer organizational priorities (Ahmed, 1998).

In relation to innovation (which in this context refers to knowledge management practices), organizational climate is viewed as a shared perception in which innovation implementation is a major organizational priority promoted, supported and rewarded by the organization (Klein, Conn, & Sorra, 2001). In this sense, culture operates at a deeper level. While climate is observable in the practice and policies of the organization, the beliefs and values of culture are not visible but govern the behavior and actions that stimulate the organizational environment (Ahmed, 1998).

Organizational culture

Organizational culture underpins knowledge management by influencing how members learn and share knowledge (Gray & Densten, 2005). Ruggles (1998) states that the main barriers to implementing knowledge management in organizations are people related. These are related to the culture that inhibits knowledge sharing, lack of top management leadership and a poor understanding of the processes involved with knowledge management. Jaskyte (2004) has indicated the need to understand the cultural perspective in order to understand innovation. Culture has been viewed as an important factor or a backbone in an effort to manage knowledge in innovation and the management of knowledge in organizations (Dasgupta & Gupta, 2009; Tushman & O'Reily, 1997).

Knowledge management and culture

Culture appears to be one common enabler of knowledge management in several studies (Anantatmula & Kanungo, 2010). Knowledge management focuses on utilizing culture to develop knowledge as well as promoting collaboration and sharing of knowledge within organizations (Anantatmula & Kanungo, 2010). Koupoulus from the Delphi group summarizes the need for culture change in organizations with a

statement that says “no knowledge management system can work without an organization undergoing a significant cultural change” (Greengard, 1998c). The success of knowledge management innovation depends on how a company can effectively manage its employees. Therefore knowledge management innovation requires changes in the organizational culture (Greengard, 1998a). Karlsen and Gottschalk (2004) suggest that culture shapes assumptions about what knowledge is worth exchanging, and defines the relationships between individual and organizational knowledge. They further suggest that culture also creates a context for social interaction, which determines how knowledge can be shared to shape the process by which knowledge is created, legitimated, and distributed in the organization.

De Long and Fahey (2000) stated that a framework to align culture with the knowledge management goals of the organization is needed in order to create a behavior that will support their knowledge management objectives. De Long and Fahey (2000) also outline four ways by which organizational culture can influence knowledge processes in organizations:

- culture and subculture that shape our assumptions about what knowledge is, and which knowledge is worth managing
- culture that mediates the relationship between individuals and organizational knowledge
- culture that creates the context for social interaction that ultimately determines how effective an organization can be at creating, sharing and applying knowledge.
- Culture that shapes the processes by which new organizational knowledge is created, legitimated and distributed.

Cultural barriers

Problems might occur that hinder the practice of knowledge management in organizations. Greengard (1998b) has identified three cultural barriers related to knowledge management adoption in organization as follows:

1. where people do not like to share their ideas;
2. where people do not like to use other people’s ideas; and
3. where people do not like to consider themselves as experts and prefer not to collaborate with others.

Cultural factors

Dasgupta and Gupta (2009) have conducted a study to review the role of organizational learning in organizations. Their study has identified that culture is one

factor that promotes knowledge management practices in organizations. They have reviewed the following cultural factors as giving impact to knowledge management implementation:

- Willingness to share knowledge (Lin & Kuo, 2007) which includes enjoyment to help others and knowledge self efficacy;
- Sense of confidence and competence (Lin & Kuo, 2007);
- Participatory culture (Rezgui, 2007) which includes open communication channels, encouragement of participation, involvement in decision making and encouragement for sharing information;
- Organizational relationship (Krogh, 1998) which includes mutual trust, active empathy, access to help from other team members, lenient judgment towards participants on team and courage;
- Cross-functional communication and cooperation (Calabrese, 1999) that makes people involved in every part of the business process;
- Human resource factors (Lundvall & Nielsen, 2007; Nederlof, Pacitte, Gomes, & Pearson, 2002) which includes a learning culture that promotes innovation such as job rotation, interdivisional teams, delegation of responsibility and employees satisfaction; and
- Shared vision (Liao, 2006).

In addition to the above factors, Conley & Zheng (2009) and Zheng (2005) have indicated that the following organizational culture factors are conducive to knowledge management processes: prioritization of knowledge, attitude towards existing knowledge, trust, care, openness, proactiveness, innovativeness, entrepreneurship, warmth, support, risk and reward. Jantan et al. (2003) have also identified that learning and development, participative decision making, and support and collaborations are other cultural factors that affect organizational innovativeness.

Knowledge sharing, cooperation and collaboration

In many research studies, organizational culture is viewed as an enabler of knowledge management processes such as in knowledge transfer (Goh, 2002) and knowledge sharing (Despres & Chauvel, 2000; Heng, 2005; Liebowitz & Beckman, 1998). Goh (2002) argued that co-operation and collaboration is one cultural dimension that is critical to knowledge transfer in organizations. The same factors are also indicated in Calabrese (1999) and Tiwana (2000, p. 93). It requires the willingness of a group or individual to work with others and share knowledge for their benefit. However, the knowledge sharing culture can only work out in organizations if

the culture of the organization promotes it (Stoddart, 2001). A high-level co-operative behavior will help enhance the support for knowledge management innovation in organizations.

Trust

Another dimension of culture that helps knowledge transfer in organizations is the need for a high-level of trust within the organization (Goh, 2002) and among employees (Dasgupta & Gupta, 2009). The study of trust in organizations has been approached from many different viewpoints. The approach implemented by this thesis refers to trust that positively affects knowledge sharing within and across teams in organizations (Mooradian, Renzl, & Matzler, 2005). The more the employees trust each other, the greater the possibility that they would interact and share knowledge with others. Previous research has also identified trust as the enabler for the knowledge management processes (Al-Hawamdeh, 2003; Guzman & Wilson, 2005; Krogh, 1998; Tiwana, 2000, p. 93; Wan Ismail & Abd Majid, 2007; Zheng, 2005). Trust in organizations also refers to the culture where openness is valued, decisions can be made openly, information is widely available and accessible by employees, as well as the treatment and rewards emphasized for shared success.

Problem seeking and solving

Another important factor indicated in Goh (1998) is the need of a culture that encourages problem seeking and solving. This is an innovative culture that encourages employees to look for problems as a way to improve the organization (Goh, 1998), and a capacity to learn from failure (Taylor & Wright, 2004). Failures in experimentations should be tolerated and treated as learning lessons by employees and organizations. It can also be viewed as the opportunity to improve the service and product quality of the organization.

Involvement

Denison and Mishra (1995) have identified cultural traits that are associated with effectiveness in organizations. This thesis will adopt 3 of these traits in the study. First, involvement gained through integration around a small number of key values is important in organizations. The same factor is also mentioned by Rezgui (2007) and would result in a sense of ownership and responsibility.

Adaptability

Second, the organization should be adaptable or capable of absorbing internal change in response to external conditions. The organization norms and beliefs should be able to support their capacity to receive and interpret signals from their environment and translate them into behavioral and structural change.

Sense of vision and mission

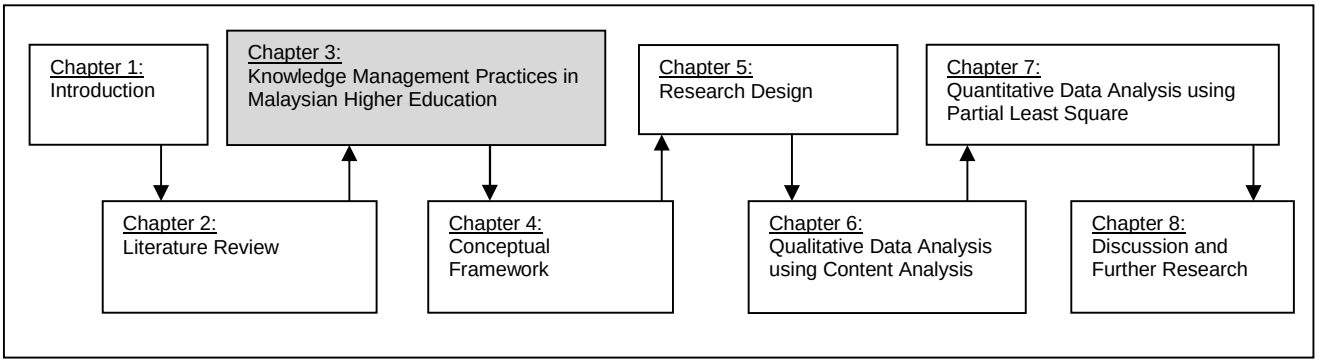
Third, the organization should also create the sense of mission and vision. The same factors are also indicated by Liao (2006) and Tiwana (2000, p. 93). An organizational mission appears to provide two major influences on the organization's functioning. Firstly, a mission provides purpose and meaning as to why the organization's work is important; and secondly, a sense of mission defines the appropriate course of action for the organization and its members (Dasgupta & Gupta, 2009). Vision is meant to create a clear purpose for the employees, and to bring forth the necessary change in the organization to achieve the desired future goals (Kanter, Stein, & Jock, 1992). Understanding the organizational vision drives much of the change in organizational culture and helps direct employee efforts toward innovative work practices and outcomes (Mumford, Scott, Gaddis, & Strange, 2002; Sarros, et al., 2008). Through a direct connection between mission and vision, a more active participation from the employees could be achieved, which will motivate them to view their daily work in a larger context, and make them encouraged by the purpose of their work (Johannessen, Olsen, & Olaisen, 1999).

2-7 Conclusion

In real life knowledge and organizational culture go hand in hand as organizational culture permeates every aspect of the organization's repertoire of knowledge. This chapter explored relationship between data, information and knowledge, and further explored categorization of knowledge and how these lead to knowledge management concepts, knowledge management processes and models. The adoption of knowledge management in organizations is seen as bringing change for the organization's survival and growth. The chapter further looked at the adoption of knowledge management in higher educational institution's administrative departments, and how internal innovative culture of the higher educational institutions affects the knowledge management practice. The study explored the following cultural factors: knowledge sharing, cooperation and collaboration; trust; problem seeking and solving; involvement; adaptability; and, sense of vision and mission.

3 Knowledge Management Practices in Malaysian Higher Education

If you have knowledge, let others light their candles at it.
Margaret Fuller (1810 –1850)



3-1 Introduction

Knowledge Management implementation in Malaysia Higher Educational Institutions is still at a preliminary stage. Related studies found is this area mostly are focusing on KM implementation for teaching and learning purposes in universities. While teaching and learning is indeed important, as it is the core business process of the universities, KM implementation in administration services is also important. This is because the organizational knowledge of HE is not only being handled by the academic staff but also the administrative staff from various departments in the HEI.

This chapter will provide a glimpse of Malaysia as a country, followed by introducing the reader to the higher educational system in Malaysia. This chapter will consider how to understand the studies of KM development in Higher Education in Malaysia.

3-2 A glimpse of Malaysia

Malaysia consists of two components separated by the South China Sea: Peninsular Malaysia and East Malaysia. Peninsula Malaysia stretching between southern Thailand and Singapore consists of eleven states, while East Malaysia consists of two geographically large states, namely Sabah and Sarawak, which occupy the northern zone of Borneo Island. Statistics as of July 2009 shows the population to be

28.31 million (www.statistics.gov.my, 2010) with an area of 332,633 square kilometers (Hassan, 2006). Malaysia is a multicultural country, comprised three major ethnic groups namely Malays, Chinese and Indian, with a small population of bumiputra (son-of-soil) ethnics in Sabah and Sarawak. Hassan (2006) indicates that a little over 51% of the population is Malay, about 27% are Chinese and 8% are Indians. The country is largely Muslim, with some Buddhist, Hindu and Christian communities. A coalition government headed by the principal Malay party, the United Malays National Organization, has ruled Malaysia since its independence in 1957. Economically, Malaysia has experienced rapid industrialization and is now considered an upper middle-income country.

The education sectors in Malaysia offer a variety of higher educational programs as well as professional and specialized skill courses that are comparatively priced and of excellent quality. Malaysian government aspires to make Malaysia a leading international educational center in the Asian region (Mohd Ghazali Mohayidin, Nor Azirawani, Man Norfaryanti Kamaruddin, & Mar Idawati Margono, 2007). To achieve this goal, appropriate actions need to be taken in order to enhance the performance of local universities through the application and implementation of a knowledge management system (Mohd Ghazali Mohayidin, et al., 2007).

3-3 Malaysian Higher Education System

Higher education in Malaysia is the responsibility of the Ministry of Higher Education (MOHE). The higher education system in Malaysia replicated the British education system as it was transplanted from Britain to Malaysia during the British colonial era (Selvaratnam, 1985). Selvaratnam (1985) indicates the historical origins and growth of the higher education system in Malaysia as comprising four main stages:

1. the development of a higher education system in Malaysia and Singapore before the independence of Malaysia in 1957 (the amalgamation of King Edward VII College of Medicine and Raffles College to University of Malaya in 1949 in Singapore);
2. the establishment of University of Malaya in Kuala Lumpur in 1961;

3. the growth after the year 1969 with the establishment of three new national universities (Science University of Malaysia in 1969, National University of

Malaysia in 1970 and University of North Malaysia in 1984) and International Islamic University in 1983;

4. the upgrading of the Agricultural College to Agricultural University of Malaysia in 1971 and Technical College to University Technology Malaysia in 1972[1].

The Universities and University Colleges Act 1971 is an important instrument in the running of higher educational institutions in Malaysia. To this day, this Act governs the establishment of all public universities in Malaysia (Morshidi Sirat, 2010). Following the Universities and University Colleges Act 1971, the Vice-Chancellor and Deputy Vice-Chancellor will be appointed by the Government and the Vice-Chancellors will appoint Deans and Heads of Departments (Selvaratnam, 1985). Today, the higher education system in Malaysia also consists of two major groups: 1) the public (government-funded) institutions of higher learning, such as, public universities, polytechnics, community colleges and teacher training institutes; and 2) private (private-funded) higher educational institutions such as, private universities, private university colleges, foreign branch campus universities and private colleges (Ministry of Higher Education Malaysia, 2009). The establishment of private colleges in Malaysia in the late nineties was a result of an amendment to the Education Act in 1995, which led to the introduction of the Private Higher Education Act 1996 (Act 555). Sixty percent (60%) of the higher education in Malaysia is provided by the public universities with the private sector providing the balance (Ministry of Higher Education Malaysia, 2009). The government of Malaysia subsidizes 90% of the cost of education in public institutions of higher education, while private institutions are expected to raise the necessary funds for capital and operating expenditure on their own (Nordin, 2001).

Prior to the year 2004, the HEIs in Malaysia were under the jurisdiction of the Ministry of Education (MOE). Upon the establishment of the Ministry of Higher Education (MOHE) in 2004, higher education became the responsibility of MOHE, while pre-tertiary education was put under the responsibility of MOE. Due to continuous growth in the demand for places in higher educational institutions, the number of institutions offering programs at various levels in Malaysian HEIs has increased. A research through the website of the Ministry of Higher Education, Malaysia (MOHE, 2009), shows that as of the year 2008, there were currently 20 public universities, 22 polytechnics, and 36 community colleges. In addition, there are about 21 private

[1] For a comprehensive reading on the history of Malaysian Higher Education System development please refer to Selvaratnam (1985)

universities, 23 university colleges, 5 foreign university branch campuses, and 405 private colleges in operation. Besides catering for the needs of Malaysia, Malaysian HEIs have also been going global by recruiting international students to the country. MOHE website (2009) reported that up to 2008, there were about 65,000 international students from 150 countries pursuing studies at various levels in Malaysia.

In August 2007, the National Higher Education Strategic Plan 2020 and the National Higher Education Action Plan 2007-2010 were launched (Morshidi Sirat, 2010). The aim of these plans was to trigger the transformation of the higher education system in Malaysia in sync with the transformation occurring in the global higher education landscape (Morshidi Sirat, 2010). The launching of these plans put emphasis on the efficiency and accountability of the higher education system in Malaysia.

The transformation of the Malaysian economy into a knowledge-based economy during the 21st century, added new challenges for higher education. The growth of Malaysian higher education institutions played an important role in the development of the workforce and the economy in general. In order to make this transformation a success, HEIs therefore face the challenge to become truly knowledge organizations by actively managing existing knowledge effectively and efficiently.

3-4 Research Trends in Malaysian Higher Education and Knowledge Management

Knowledge management is still considered in its infancy in Malaysia (Rohana Ngah, Chua, & Abdul Razak, 2009; Tat & Hase, 2007). Studies conducted in the area of Higher Education in Malaysia are sparse. An investigation through Scopus database on the studies conducted on Malaysian Higher Education, published after the year 2005, shows that the recent trends in the research are in the area of globalization, internationalization and quality of higher education, as well as distance education and self-regulated learning. Total Quality Management is also another area still of interest to some researchers.

Understanding knowledge management within the Malaysian context is difficult due to the limited number of works published in this area. This problem is also reported in Md. Zahidul et al. (2008) and Goh et al. (2006). The search through the Scopus

database for articles published after the year 2005, showed that recent topics appearing in recent publications about knowledge management in Malaysia focus on knowledge sharing and critical success factors for knowledge management implementation. An area that seems to have attracted recent scholars in Malaysia is on the influence of top management power towards knowledge management implementation in organizations.

Realizing the importance of knowledge management in higher education as a provider of knowledge, in recent years a number of studies have been conducted on the knowledge management implementation in Malaysian higher education (Ali A. Zahrawi & Yazrina Yahya, 2009; Maizatul Akmar Ismail & Chua, 2005; Rusli Abdullah, Mohd Hassan Selamat, Azmi Jaafar, Salfarina Abdullah, & Suaini Sura, 2008; Sharimllah Devi, Chong, & Ismail Hishamuddin, 2009; Sohail M Sadiq & Salina Daud, 2009; Yusuf I & Suhaimi MD, 2006). It is observed that the streams of research conducted on knowledge management in higher education are focusing of the knowledge management systems implementation as well as the knowledge sharing and transfer practices particularly for academic purposes (see Jain et al. (Jain, Sandhu, & Sidhu, 2007)). Among these research streams, it is also observed that none of the research is looking at the administrative area of higher education. Limited studies are also found on research linking cultural factors and knowledge management (see Nik Maheran (2009) and Jantan et al. (2003)), and none so far are related to higher educational institutions in Malaysia.

Having identified the above gaps in the studies of knowledge management in Malaysian higher education, this thesis contributes by filling in the missing literature focusing on the importance of knowledge management practices for educational administration in HEIs. Even though many researchers acknowledge the importance of organizational culture as one of the knowledge management enablers in organizations, as of today, the extent to which the appropriate culture is nurtured towards making knowledge management implementation a success has never been studied in Malaysian higher educational institutions. The following section will explore what is known about knowledge management implementation in Malaysian higher education, and further explore the detailed contribution that this thesis will lead to.

3-5 Knowledge Management in Malaysian Higher Education

State of implementation

Many organizations have accepted that knowledge management is a way or concept of doing business that revolves around four processes: 1) gathering data and information into the system; 2) organizing items and subjects into context to make them easier to find; 3) refining knowledge by abstracting, synthesizing, and sharing for a value-added affect; and 4) disseminating knowledge to the people who can use it (Badruddin A. Rahman, 2004). The Ministry of Higher Education Malaysia, has identified knowledge management as one prerequisite to turn Malaysia into a center of excellence for higher education (Mohd Ghazali Mohayidin, et al., 2007). However, knowledge management practices in Malaysian higher educational institutions are still at an early stage, and the contribution of these practices is still a debatable issues (Ali A. Zahrawi & Yazrina Yahya, 2009). In 2004, Badruddin (2004) conducted a survey, which reveals that out of 33 HEIs being surveyed, 27% were at the investigation stage, 15% at the review stage, 18% at the preparation stage, 6% at the budgeting stage and 9% at the monitoring stage. In 2007, the report from the Centre for Academic Development (CADe) of Universiti Putra Malaysia indicated that the level of knowledge management practices in Malaysian universities was merely moderate (Mohd Ghazali Mohayidin, et al., 2007). Mohd Ghazali (2007) also reported that most Malaysian universities have invested heavily in the implementation of Information, Communication and Technology (ICT). However, it was found that these technologies are yet to enable the free flow of information and the sharing of knowledge among the members in organizations, including higher education. Mohd Ghazali (2007) also commented that Malaysian universities were not utilizing knowledge to the fullest to improve its performance due to the improper management of available knowledge in the institutions.

Framework

In the existing studies on knowledge management in higher education in Malaysia, Rusli et al. (2005) and Maizatul Akmar & Chua (2005) have proposed knowledge management frameworks to be implemented in Malaysian HEI. Maizatul Akmar & Chua (2005) proposed a framework that is to be deployed in HEI environments. They specified three environments as input to the knowledge management system in HE: social environment, globalization environment and technological environment. These inputs cover the attitude, willingness and behavior of people involved, methods of how the knowledge can be captured and the tools available to capture the knowledge (refer to Section 2.3.4 for further detail). Rusli et al. (2005) proposed a framework consisting of five major components: psychological, cultural, system function, system

architecture and knowledge measurement (refer to Section 2.4.4 for further detail). A recent work by Ali A. Zahrawi & Yazrina Yahya (2009) also proposed another framework for KM in Malaysian HE which focused on the KM system application design by looking at social and management, infrastructure, technological and business organizational process aspects. These aspects are approached from the system-thinking concept in which the components will be governed by the economy and acceptance factors.

3-5.1 Knowledge Management in Higher Education Administration

Literature shows limited research has been conducted in the area of knowledge management implementation for higher education administration. Most studies focus on how knowledge management can help academics and faculties to enhance their performance for teaching and learning as well as research and development purposes. However, the Education Development Plan for Malaysia 2001-2010 (Ministry of Education, 2001, p. 14) indicated that

> *"The education management development plans aim to improve and strengthen the level of efficiency and effectiveness of management in the aspects of administration, monitoring and evaluation, curriculum and assessment, personnel, information and communication, R&D, finance and infrastructure".*

The above statement shows that the Malaysian government stresses the importance of the development plans of Malaysian Education in improving the implementation in the administrative aspect. This includes the importance of knowledge management for administration in the higher educational institutions in Malaysia, and therefore it is important for the HEIs to achieve the aim stated in the Education Development Plan for Malaysia.

3-6 Chapter Summary

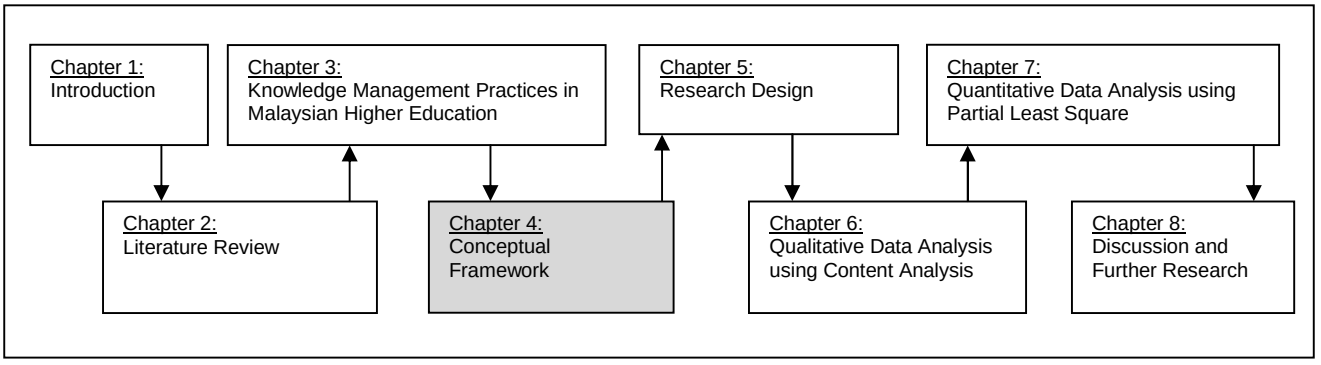
Knowledge management is not a new concept; however, its implementation in Malaysia is still in the infancy stage. While most institutions focus on the knowledge management implementation of teaching and learning, and research, the importance of knowledge management in administration is acknowledged by the government as one necessary process to enhance quality in educational institutions.

Looking from another direction, focusing on technological issues alone does not ensure the success of KM practices in higher education. It is also important to address problems related to social and cultural issues in KM implementation (Mohd Ghazali Mohayidin et al., 2007). Anderson (1996) indicates that 80% of cultural changes influence the KM process. Studies by Hishamudin Md Som et al. (2004) and Ramanathan Narayanan et al. (2003) found that Malaysian organizations tend to be highly bureaucratic with centralized decision making structures in place. They also found lower levels of knowledge management applications and systems in use.

The following chapters of this thesis will look into the cultural factors that affect knowledge management practices in Malaysian higher educational institutions. Studies were conducted to investigate how these cultural factors affect knowledge management practices.

4 Conceptual Framework

If we value the pursuit of knowledge,
we must be free to follow wherever that search may lead us.
Adlai E. Stevenson Jr. (1900-1965)



4-1 Introduction

Many studies have linked organizational cultures as a pre-requisite for effective knowledge management. Scholars and practitioners believe that supportive and adaptive organizational culture enables the successful implementation of knowledge management practices in organizations (Saeed, Tayyab, Anis-Ul-Haque, Ahmad, & Chaudhry, 2010). This thesis studies the extent to which the cultural factors in organizations affect the knowledge management practices. Even though this study is specifically conducted for the administrative departments in higher educational institutions, the cultural factors being studied can also be applied to other knowledge organizations. The following section explains the conceptual framework used for this study, and how these cultural factors affect the knowledge management practices in higher educational institutions.

4-2 Conceptual Framework

Culture and knowledge management

Organizational culture refers to the norms and value systems that are shared among employees in organizations. Culture can promote the knowledge management practices in an organization and has been regarded as a backbone in an effort to manage knowledge in organizations (Dasgupta & Gupta, 2009; Tushman & O'Reily, 1997). Culture is people related and may influence the effectiveness of knowledge processes in organizations. Ruggles (1998) writes that culture has became one of

the main barriers in implementing knowledge management in organizations. Poor understanding of the processes involved with knowledge management, and working in surroundings that inhibit knowledge sharing may contribute to the barriers to implementing knowledge management in organizations. Study of the literature shows various cultural factors that may affect knowledge management practices in organizations. It is therefore important to define and identify which cultural factors positively or negatively affect these practices.

The term culture covers a broad range of perspectives related to institutionalised behaviour (Ahmed, 1998), as well as implicit beliefs, norms and values. Literature divides cultural factors affecting organizational practices and innovation into two levels: 1) the macro level that acts upon cultural dimensions; and 2) the micro level which has to do with the organizational culture shaped by the employees working in the organizations (Rivera-Vazquez, Ortiz-Fournier, & Flores, 2009).

Innovation can be described as a pervasive attitude that allows business to see beyond the present and create the future and therefore becomes the key driver of the organization's ability to change (Abdul Razak, Ali, Sivadasan, & Ahmad Vazehi, 2009). In this context it is important to understand what is meant by innovativeness and the innovative culture of an organization. Firm innovativeness is defined as an openness to new ideas as an aspect of a firm's culture (Hurley & Hult, 1998). It is conceptualised from two perspectives: 1) viewing it as a behavioural variable, which refers to the rate of adoption of innovations by the firm; and 2) viewing it as an organization's willingness to change (Hurt et al. (1977) as quoted in Calantone et al. (2002)). It is also important that a creative environment backs up the organizational attitude and actions people are comfortable with (Abdul Razak, et al., 2009), which constitute the cultural element of the organization.

This study deals with the explicit nature of culture which represents the typical patterns of people's behaviour with which they produce and live within (Ahmed, 1998). Based on the literature, this study develops a conceptual framework as shown in Figure 4.1. It is suggested that the following are seven important cultural factors affecting knowledge management practices in organizations. This study further conducted an empirical investigation to test this framework in Malaysian higher educational administrative environments using a partial least squares method. The seven identified factors are:

1. Willingness to share knowledge (Dasgupta & Gupta, 2009; Lin & Kuo, 2007).
2. Cooperation among organizational members (Calabrese, 1999; Goh, 2002; Jantan, Mohd Nasurdin, & Ahmed Fadzil, 2003; Tiwana, 2000, p. 93).
3. Involvement and participatory culture (Denison & Mishra, 1995) which includes open communication channels, encouragement of participation, involvement in decision making and encouragement for sharing information.
4. High-level of trust among employees in organizations (Conley & Zheng, 2009; Dasgupta & Gupta, 2009; Goh, 2002; Guzman & Wilson, 2005; Hawamdeh, 2003; Krogh, 1998; Mooradian, Renzl, & Matzler, 2005; Politis, 2003; Tiwana, 2000, p. 93; Wan Ismail & Abd Majid, 2007; Zheng, 2005).
5. Problem seeking and solving culture which will encourage employees to look for problems as a way to improve the organization (Goh, 1998; Jantan, et al., 2003) and to embrace the capacity to learn from failure (Taylor & Wright, 2004).
6. Adaptability or capability to absorb internal change in response to external conditions (Denison & Mishra, 1995).
7. Sense of mission and vision (Denison & Mishra, 1995; Liao, 2006; Tiwana, 2000) which influences the organization by providing purpose and meaning as to why the work is important, and defines the appropriate course of action for the organization and its members (Dasgupta & Gupta, 2009).

Table 4.1 summarizes the resources from which the cultural factors mentioned above were adapted. These factors are used as the basis for the development of the conceptual framework shown in Figure 4.1. The description of the construct is provided in Table 4.2. Each of these constructs is discussed in detail in the following sub-sections.

Aside from focussing on how the above seven cultural factors affect knowledge management practices, literature also suggests relationships between each of these cultural factors. This study will also investigate the extent to which each of these cultural factors affects one another. Section 4.3 below will discuss these relationships in further details.

Cultural factor / References	Knowledge sharing	Involvement	Cooperation/ Collaboration	Trust	Adaptability to change	Problem seeking and solving	Sense of vision and mission
Lin & Kuo, 2007	√						
Calabrese, 1999			√				
Goh, 2002			√	√		√	
Jantan et al., 2003			√			√	
Tiwana, 2000, p. 93			√	√			√
Denison & Mishra, 1999		√			√		
Rezgui, 2007		√					
Conley & Zheng, 2009				√			
Dasgupta & Gupta, 2009				√			√
Guzman & Wilson, 2005				√			
Hawamdeh, 2003				√			
Mooradian et al, 2005				√			
Wan Ismail & Abd Majid, 2007				√			
Zheng, 2005				√			
Taylor & Wright, 2004						√	
Liao, 2006							√

Table 4.1: Resources used to identify the seven cultural factors

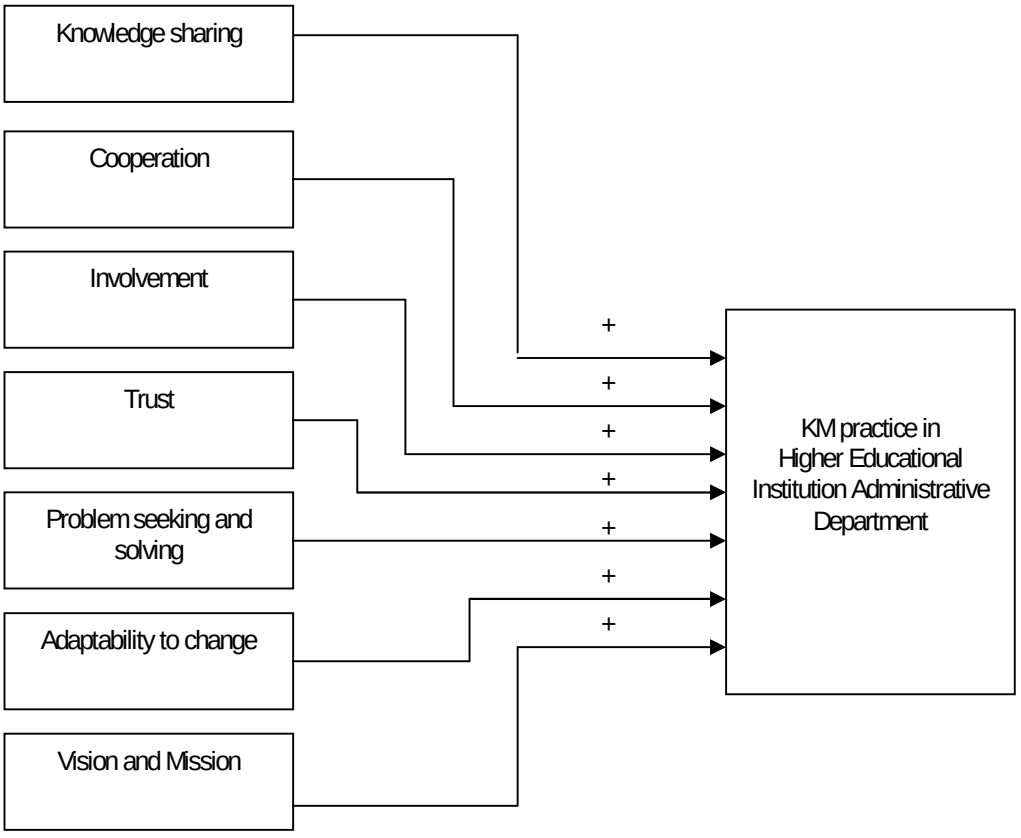


Figure 4.1: Conceptual framework to study the affect of cultural factors on KM practice in HE Administrative Departments

Construct	Description
Knowledge sharing	A part of knowledge processes, which is referred to as the act of disseminating and making available knowledge that is already known (Tiwana, 2000). It is always seen as communication of all types of knowledge (Boer, 2005; Hawamdeh, 2003) and the willingness of individuals to learn from others (Boer, 2005; Sohail M Sadiq & Salina Daud, 2009).
Cooperation	Cooperation is defined as the process by which individuals, groups, and organizations come together, interact and form psychological relationships for mutual gain or benefit (Smith, Stephen, & Susan, 1995).
Involvement	The idea that involvement and participation will contribute to a sense of responsibility and ownership and, hence, organizational commitment and loyalty (Baker, 2002; Denison & Mishra, 1995).
Trust	A phenomenon that can be examined at different levels. Organizational trust is referred to as a collective commitment and cooperation in order to achieve organizational goals, while at the individual level, trust is referred to as the willingness to cooperate and to commit to organizational changes (Puusa & Tolvanen, 2006).
Problem seeking and problem solving	Situation where employees are encouraged to look for problems and view them as opportunities to improve customer service and product quality (Goh, 2002).
Adaptability to change	It is the idea that norms and beliefs that enhance an organization's ability to receive, interpret, and translate signals from the environment into internal organizational and behavioral changes will promote its survival, growth, and development (Ahmed, 1998; Baker, 2002; Denison & Mishra, 1995).
Vision and Mission	Vision refers to a big-picture goal or target that describes what the future looks like and builds agreement and commitment toward a shared future state (GAMA Foundation, 2009). Mission refers to the idea that a shared sense of purpose, direction, and strategy can coordinate and galvanize organizational members toward collective goals (Baker, 2002) and it defines the reason for the existence of the organization and describes the impact that the team has on its clients and the community (GAMA Foundation, 2009).

Table 4.2: Description of Key Constructs

4.2.1 Knowledge Sharing

What is knowledge sharing

Knowledge sharing is essential in order to translate individual knowledge into organizational knowledge. Knowledge sharing is seen as crucial to ways to sustain competitive advantage (Chandran & Raman, 2009; Liao, 2006; Rivera-Vazquez, Ortiz-Fournier, & Flores, 2009) and is seen as a way to assist knowledge creation in organizations (Bartol & Srivastava, 2002). It refers to the process where individuals exchange both tacit and explicit knowledge in order to create new knowledge (Rivera-Vazquez, et al., 2009) and involves disseminating or diffusing knowledge from one person to another (Liao, 2006). Bartol & Srivasta (2002) define knowledge sharing as individuals sharing organizationally relevant information, ideas, suggestions and expertise with one another, and this could involve both tacit and explicit knowledge. Knowledge sharing can be regarded as contributions by individuals to the collective knowledge of an organization and is seen as necessary to prevent the loss of information due to employee turnover and transfer (Cabrera & Cabrera, 2002; Calantone et al., 2002). It keeps alive the knowledge gathered from various sources and serves as a reference for future action (Calantone, et al., 2002). Effective knowledge sharing helps promote organizations' best practices and reduces redundant learning efforts in organizations (Hansen, 2002). The value of knowledge will also be increased with its accessibility and the frequency that it is shared within the organization (Davenport & Prusak, 1998).

How sharing occurs

Ford and Staples (2010) categorized knowledge sharing into two – full knowledge sharing and partial knowledge sharing. Full knowledge sharing occurs when the informer gives all the knowledge they feel relevant to the recipient in an open communication environment whereby knowledge is not withheld for any reasons. Partial knowledge sharing on the other hand refers to sharing of some relevant knowledge and restrictions on the knowledge to be shared either due to confidentiality or risk to the informer or organization. Sharing of knowledge can be done in the form of documents, organizational rules, working procedures, personal experience and know-how (Lu, Leung, & Koch, 2006). Individuals may also share knowledge through: 1) contributing to organizational databases; 2) formal interactions within and across teams or work units; 3) informal interactions among individuals; and 4) communities of practice (Bartol & Srivastava, 2002). Bartol and Srivasta also relate these to the codification and personalization strategy of Nonaka's (1994) SECI (Social-Externalization-Conversion-Internalization) model of knowledge conversion.

They classify the contribution to an organizational database as a codification strategy, while the others fall under personalization strategy.

Motivation, rewards, and goal orientations

There are several factors that play an important role in order to ensure that knowledge sharing take place in organizations. Motivation and reward are factors recognized as contributing to the success of knowledge sharing in an organization (Barachini, 2009; Dasgupta & Gupta, 2009; Swift, Balkin, & Matusik, 2010). Barachini (2009) regards knowledge sharing as a business transaction process where people will only share knowledge when motivational factors exist for them to do so. Lam and Lambermont-Ford (2010) approach motivation based on its separation into intrinsic and extrinsic rewards. This separation is in line with Bartol and Srivasta (2002) who also divide rewards into two categories, i.e. extrinsic rewards and intrinsic rewards. Extrinsic motivation or reward could range from monetary incentives like bonuses to non-monetary awards such as promotion, certificates or public recognition (Bartol & Srivastava, 2002; Lam & Lambermont-Ford, 2010). Intrinsic reward refers to the pleasure derived from performing a task and appears to be self-sustaining (Bartol & Srivastava, 2002; Lam & Lambermont-Ford, 2010). Drawing from motivation leads to the idea that individuals maintain goal orientations which reflect the goal they pursue (Swift et al., 2010). Dweck (1986) and Swift et al. (2010) indicates that individuals motivation involve two classes of goal orientation relevant to competence: 1) a learning goal orientation, where individuals engage in behaviours that enable them to acquire new skills; and 2) a performance goal orientation, where individuals engage in behaviours that enable them to demonstrate their competency and gain positive evaluations.

Trust factor

Another important factor that might influence employees' willingness to share knowledge would be their sense of, and confidence in, the competence of others (Dasgupta & Gupta, 2009; Politis, 2003). This is related to the trust factors by which the relationship among colleagues will determine whether members of organizations are willing to cooperate with each other (Barachini, 2009; Holste & Fields, 2010) and enlarges the possibility of knowledge exchange (Argote, McEvily, & Reagans, 2003). It is found that individuals are more willing to provide useful knowledge to those they have strong ties with due to the increased trust in the others' intention and ability to comprehend the knowledge (Levin and Cross (2004) as quoted in Swift et al. (2010)). Trust and reciprocity also provide reassurance that the knowledge will be used for the parties' mutual benefit (Swift et al., 2010). The trust factor is another construct that this study investigates in terms of its effect on knowledge management practices

in organizations. The relationship between the trust and knowledge flow in organizations will be explained further in the next section.

Greed and self-efficacy

Two other factors that are argued by Lu et al. (2006) as affecting knowledge sharing behaviour in organizations are greed and self efficacy. Lu et al. (2006) defined greed as the behaviour involving the desire to tap into others' valuable knowledge without reciprocation, while self-efficacy is regarded as the perceptions of one's ability to make useful contributions. Lu et al. (2006) sees that reducing greed results in a more cooperative behaviour while self efficacy is seen as one factor which will enhance cooperation and reduce free-riding and promote the sharing of knowledge. Lu et al. (2006) also indicate that organizational support is one dimension of organizational context that affects the organization's knowledge sharing behaviour. This refers to a perception of how the organization cares about employees' well-being and values their contributions. Lu et al. (2006) identify three types of organizational support - managers attitudes, training provided and sanctions.

Intentions and other predictors and contextual factors

Recent studies in knowledge sharing show interest in intentions to share knowledge. Reychav and Weisberg (2010) and Ford & Staples (2010) claim that intention influences knowledge sharing behaviour in organizations. In their studies based on the theory of reasoned action, they referred to intentions as a subjective probability that the individual will perform knowledge sharing, which is context specific and occurs in a specific timeframe in future. Ford and Staples (2010) also categorized the predictors of knowledge sharing into three categories which are individual differences, attitudinal factors and situational factors. Individual differences refer to individuals' predispositions towards sharing knowledge that is not context specific and reflects a trend of behaviour over a range of contexts and across time. Attitudinal factors include intentions, perceived value of knowledge (an informer's attitude to the worthiness of their knowledge), uniqueness (the degree of belief that one's knowledge is distinct from others) and psychological ownership (that one believes that they have ownership rights in the object in question). Management supports and rewards, and interpersonal trust and distrust are categorized as situational factors. Research also suggests that knowledge sharing may also vary depending on contextual factors such as the nature of the knowledge being exchanged and the relationship between the actors (Swift et al., 2010). The nature of knowledge may vary in terms of the universality of the knowledge and how easy it is to separate the knowledge from its source, while the nature of the relationship may include factors such as the network or position between actors, the quality of the relationship

between actors like respect, friendship and trust, as well as the cognitive aspect of the relationship which refers to the shared meaning, language and representation among actors (Swift et al., 2010). Communication is another factor widely accepted as crucial for sharing experiences in organizations (Asimakou, 2009). Apart from these, management support and leadership are also repeatedly quoted as factors that may affect people's willingness to share (Jain, Sandhu, & Sidhu, 2007).

Reluctance to share

Studies have explored the various factors that may contribute to the reasons for not contributing among employees. These include the fear or losing superiority or individual power (thus enhancing the opportunities of others), the perception of being inadequately awarded for the sharing action, the lack of resources and time (Bartol & Srivastava, 2002; Lam & Lambermont-Ford, 2010) as well as viewing personal ownership of knowledge as a method of ensuring job security (De Long & Fahey, 2000). Opportunistic behaviour might also occur in organizations where people could possibly benefit without contributing (Lam & Lambermont-Ford, 2010). Provided that people have a positive answer to the question "what is in it for me", the knowledge sharing process would be likely to happen in organizations (Bartol & Srivastava, 2002). Organizational members must also be assured that even if they share their knowledge with others, their position is not endangered (Rivera-Vazquez et al., 2009). It is indicated in Taminiau et al. (2009) that lack of knowledge sharing may imply a large financial risk when people leave their companies without their knowledge being retained. Without sharing it is almost impossible for knowledge to be transferred to another person.

4.2.2 Cooperation

What is cooperation

Cooperation is mostly defined as the process by which individuals, groups, and organizations come together, interact and form psychological relationships for mutual gain and benefit (Smith et al., 1995). Smith et al. indicate the existence of two types of cooperation, i.e. informal and formal cooperation. Informal cooperation involves arrangements in which behavioural norms determine the contributions of parties and perceive that individuals will be in contact with each other for a long time. They believe cooperation occurs to their advantage and recognizes that they must reciprocate any benefits received (Smith et al., 1995). Formal cooperation on the other hand characterizes a formal structure of control, where job design and definition can force individuals to work together, while organizational structures and processes can detail how departments and groups must function (Smith et al., 1995).

Cooperation and organizations

Issues of cooperation are fundamental to management success (Smith et al., 1995). Magnier-Watanabe and Senoo (2010) regard organizations as systems of cooperative behaviours where cooperation is the sharing of goals. This has been conceptualised in the literature since 1938 by Barnard who stated that organizations are a system of cooperative effort and coordinated activities (Smith et al., 1995). Smith et al. (1995) also cited Lawrence and Lorsch in 1969 as defining an organization as a system of specialized interrelated behaviours of people that must be integrated in order to achieve organizational performance.

Cooperation and knowledge management

Recent writers have also linked cooperation with knowledge management concepts. Barachini (2009) and Lucas (2005) indicate that knowledge acquisition and knowledge transfer in organization can only be successful if people are willing to cooperate. Goh (2002) considers cooperative culture as a prerequisite for knowledge transfer in organizations. Cooperation in organizations is also linked to support, which refers to the extent to which people in organizations actively support and assist each other in work-related matters (Md Zahidul Islam, Hanif Mahtab, & Zainal Ariffin Ahmad, 2008; Tjosvold & Tsao, 1989) so that they can all be successful and thus can enhance the activity of knowledge sharing (Raja Suzana Raja Kasim, 2008). This support may exist in the form of collaborative efforts among staff and superiors, which further allows for open interactions leading to the existence of creativity among organizational members. Cooperation in organizations also promotes efficiency as employees do not have to re-create the work that has already been done in distant parts of the organizations (Abrams, Cross, Lesser, & Levin, 2003).

Determinant factors

However, willingness to cooperate strongly depends on other cultural factors in organizations. Barachini (2009) and Lucas (2005) stated that cooperation depends on the trust level within individuals in an organization. Liao (2006) suggests that trust is fundamental to cooperation within organizations, and Smith et al. (1995) and Goh (2002) support this by indicating that trust is an immediate antecedent and essential for cooperation to occur. Smith et al. (1995) also consider motivational factors as prerequisites to cooperation. Earlier studies by Tjosvold and Tsao (1989) indicate that factors such as shared vision, supportive culture and rewards are necessary to promote cooperation. Fair treatment of employees and rewards that emphasize employee's success will increase the level of trust in the organization, and therefore lead to cooperation (Goh, 2002).

Literature shows insufficient detail on how cooperation links to knowledge management practices. Another close term that is discussed with regard to cooperation is collaboration. However, since the term collaboration always refers to how external organizations work together (as opposed to the focus of cooperation in this thesis which is internal cooperation among staff), and considering that there is also no direct translation of the word 'collaboration' in the Malay language in Malaysia where this study takes place, the term collaboration will not be covered in the context of this thesis.

4.2.3 Involvement and Participation

Concept of involvement

Involvement refers to a participatory type of culture which has an open channel of communication and encourages participation in decision making and therefore enhances knowledge sharing in organizations (Rezgui, 2007). This concept relates to goal setting, evaluating alternatives, making a final choice and solving problems (Jantan et al., 2003). The term involvement is closely associated with other words such as empowerment, participation, consultation and joint decision making (Jantan et al., 2003).

Benefits of involvement

Studies show that high levels of involvement and participation would make employees more committed to their work and create a feeling of ownership and responsibility towards the organizations (Denison, Haaland, & Goelzer, 2004; Denison & Mishra, 1995). The theory of involvement also indicates that when employees are allowed to participate in activities such as decision making, their competency in relation to achievement and feeling for self determination will be enhanced and increase their commitment to participating in organizational activities (Jantan et al., 2003). This would further lead to the quality of the decisions and their implementation as well as promote the knowledge management practices in the organization. Involvement would create a sense of ownership and responsibility which will grow greater commitment to the organization as well as a growing capacity to operate under conditions of ambiguity (Ahmed, 1998; Baker, 2002).

4.2.4 Trust

Definition of trust

Trust is defined as the willingness of a party to be vulnerable to the action of another party based on the expectation that the other party will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party (Abrams et al., 2003; Huff & Kelley, 2003; Lucas, 2005; Mayer, Davis, & Schoorman, 1995). In other words, trust refers to faith in the trustworthy intentions of others, as well as confidence in the ability of others, yielding ascriptions of capability and reliability (Politis, 2003). Trust level in an organization plays an important role to determine whether members of organizations are willing to cooperate with each other (Barachini, 2009) or share knowledge with other colleagues (Barachini, 2009; Holste & Fields, 2010).

Internal trust and external trust

Organizational trust can be differentiated into two difference measures, i.e. internal trust and external trust (Huff & Kelley, 2003). Internal trust refers to the trust within the organization and is known as having impact on enhancing teamwork, leadership, goal setting and organizational performance (Huff & Kelley, 2003). External trust on the other hand refers to the extent to which organizational members collectively hold trust orientation towards partners in other organizations (Huff & Kelley, 2003).

Competence trust versus benevolence trust

In the knowledge management literature, trust is known as playing a crucial role towards the knowledge flow in organizations. The most common dimensions of trust discussed in knowledge management literature are benevolence and competence trust (Abrams et al., 2003; Ko, 2010; Niu, 2010; Politis, 2003). Competence trust is formally defined as trustworthiness on the basis of ability, reliability and competence, while benevolence trust is defined as trustworthiness on the basis of sentiments, genuine care, honesty and personal attachments (Ko, 2010). The same categorization of trust is also discussed in Holste & Fileds (2010) using the terms affect-based trust and cognition-based trust to refer to competence and benevolence trust. Holste & Fields (2010) defined affect-based trust as the form of trust grounded in mutual care and concerns between workers, while cognition-based trust is defined as those grounded in co-worker reliability and competence. A study conducted by Lucas (2005) differentiated the interpersonal trust and reputation of the knowledge recipient and source in terms of its effect on knowledge transfer, also based on the concept of competence and benevolence trust.

Benefits and impact of trust

Knowledge management literature shows that the existence of the above two types of trust improve the knowledge processes in organizations (Ko, 2010; Niu, 2010; Politis, 2003). Holste & Fields (2010) found that affect-based trust (benevolence trust) significantly affects the willingness to share knowledge, while cognition-based trust (competence trust) has a greater impact in the use of tacit knowledge. Research also shows that trust can lead to increased knowledge exchange and make knowledge exchange less costly (Abrams et al., 2003). Trust further increases the likelihood that knowledge acquired from one colleague is sufficiently understood and absorbed for another person to use (Abrams et al., 2003). In such situations, strong personal connections, the degree on interdependence between colleagues as well as their sense of identity and belongingness with each other impact the practice (Bate & Robert, 2002). The more the employees trust each other, the greater the possibility that they would interact and share knowledge with each other (Dasgupta & Gupta, 2009).

Other factors affected by trust

Few studies also link organizational trust with cooperation and collaboration. A greater level of trust in an organization leads to a greater level of cooperation (Rohana Ngah, Chua, & Abdul Razak, 2009). Trust also supports and enables collaboration and knowledge sharing processes (Politis, 2003). The existence of trust in organizations, in which employees feel safe to display their proactive behaviour, helps organizations to achieve better long-term cooperative outcomes (Liao, 2006). It is also found that trust factors encourage organizational members to develop useful ideas for problem solving purposes (Politis, 2003). The success of knowledge creation and transfer also relies on a culture that supports trust among the organizational members (Syed Omar Sharifuddin & Rowland, 2007).

Barriers to trust

Even though trust is known as an antecedent that helps knowledge exchange in organizations, the risks of losing organizational competitiveness over peers (refers to affect-based trust), the trustworthiness of the source and reliability of the source (refers to the cognitive-base trust) (Holste & Fields, 2010) are among those important barriers that may affect trust levels among members of organizations. Szulanski (1996) refers to this as the arduous relationship that exists between the knowledge provider and recipient. It is thus important for trust factors to be explored with deep understanding.

4.2.5 Problem Seeking and Solving

Problem seeking and solving behaviour

Problem seeking and solving behaviour is seen as the culture which encourages experimentation in an organization (Goh, 2002). This culture encourages employees to look for problems as a way to improve the organization, as well as expecting and tolerating failures and treating them as learning lessons for organizations (Goh, 1998). Goh (2002) indicates that sharing ideas and solutions should be encouraged in a group environment to solve the identified problems in organizations. Syed Omar Sharifuddin and Rowland (2007) quoted Augier et al.'s (2001) argument that *whenever people solve complex unstructured problems they bring knowledge and experience to the situation and as they interact during the process of problem solving they create, use and share knowledge.*

Benefits

Regardless of whether or not the implementation of the solution is successful, it should be looked upon as an opportunity to understand the working environment and therefore improve the ability to react appropriately to future attempts of solving problems that arise (Gray, 2001). In some cases the solution may have no direct impact on the organizations; however, it can be thought of as an opportunity to improve a product, process or approach towards providing better customer service and offering a better product quality.

Encouraging factors

Leaders play important roles in encouraging problem seeking and solving behaviour in organizations. Failures should be treated as a learning and adaptation process over time (Gray, 2001). Leaders should be tolerant of mistakes and treat employees fairly (Goh, 2002). Employees' problem-solving skills can also be improved by equipping them with the necessary skills and knowledge via continuous training and development (Jantan et al., 2003). Other than these factors, Politis (2003) indicates that much empirical evidence has also shown that trust factors affect problem solving behaviour in organizations. Another key to successful problem solving behaviour in organizations is the existence of effective networking among staff (Davenport & Prusak,1998) because networking is regarded as a problem solving system composed of human networks (Su & Lin, 2006).

Problem solving behaviour is associated with organizational norms such as the support for individual creative ideas, recognizing ideas or innovations as a solution to organizational problems, an open exchange of information within the organization, an open-minded consideration of new ideas, and allowing moderate risk taking

behaviour (Pooja & Ruby, 2002). A framework on problem solving for knowledge management is provided by Gray and Chan (2000). A detailed description of this process is out of the scope of this thesis; however, this framework can act as a model on how problem solving is used for knowledge management implementation in organizations.

4.2.6 Adaptability to Change

What is adaptability to change

Change in organizations refers to any alteration in activities or tasks. Introducing knowledge management practices requires the change of daily routine and behaviour as well as organizational processes and structures (Feher, 2004). Introducing such innovations requires organizational members to accept the changes. A report from the European Committee for Standardization (CEN) states that all KM programs *involve change and in order to provoke change individuals must be motivated sufficiently to be willing to suffer the stress of the change process to find benefit and subsequent commitment* (CEN, 2004, p. 19).

Adaptability to changes is seen as the capacity to receive and interpret signals from the organization's environment and translate these into internal cognitive behaviour and structural changes (Ahmed, 1998; Denison & Mishra, 1995). Attitude toward changes may differ among individuals and groups and may include one of the following responses (Md Zabid, Murali, & Azmawani, 2004):

- Affective response which refers to the feeling linked to satisfaction and anxiety about the change;
- Cognitive which refers to the opinion relating to the usefulness and necessity of the changes, and the information or knowledge the individual possesses about the changes;
- Behavioural which concerns the way the individuals intend to behave towards the changes; and
- Instrumental which refers to the action, which will be taken to handle the changes.

Adaptation is focused on adapting to demand from the external environment and viewed as an aspect of a process of organizational change and innovation involving openness and responsiveness to changing demands (Bartell, 2003). Adaptability to change is closely related to unlearning concepts where organizational members should forget the old capabilities and accept the new ones (Calantone et al., 2002;

Liao, 2006). Liao (2006) linked the unlearn concepts with open mindedness which is accepted as a change of heart. Open mindedness refers to people's willingness to critically evaluate the organization's operational routine and accept new ideas (Calcantone, Cavusgil, & Zhao, 2002; Liao, 2006). Lucas (2005) stresses that individual willingness to change the way things are done and willingness to take risks are important in the knowledge transfer process in organizations.

Benefits versus resistance

Changes in organizations are driven by customers and are encouraged by the behaviours of taking risks and learning from mistakes (Denison et al., 2004). Continuously changing the system will improve the organizations' collective abilities to provide values for their customers (Denison et al., 2004). However, changes in organizations are always faced by resistance (Dasgupta & Gupta, 2009; Feher, 2004; Md Zabid et al., 2004). For some individuals changes may bring satisfaction and advantages, while for others, changes brings stress and disadvantages (Md Zabid et al., 2004). This happens because employees have to give up the usual processes of work and behaviour and adapt to the new work environment in organizations.

Encouraging factors

Jantan et al. (2003) suggest that one way to reduce employees' resistance to change is by equipping them with the necessary skills and knowledge via continuous training and development. These activities will help develop the employee's confidence in order to make full use of the new opportunities for change. Trust is also another factor which may affect individual willingness to experiment with new and unfamiliar ways of doing their jobs (Lucas, 2005). Feher (2004) suggests that employees should be involved as part of the decisions and changes, as this increases the role of trust in making changes happen.

Rezgui (2007) states that the future has only two predictable features – change and resistance to change – and the very survival of organizations will depend upon their ability to adapt to, and master, these challenges. Organizations that value openness and adapt successfully to changes in the organization have more possibilities for a successful knowledge management practice.

4.2.7 Sense of Vision and Mission

Role of vision and mission

Various departments in organizations differ in their ways of obtaining and interpreting knowledge, which further leads to varying interpretations of the same information (Calantone et al., 2002). A shared vision coordinates the focus of these various

departments so that each organizational member knows what to learn and that ideas can be implemented towards a common direction (Calantone et al., 2002). Shared vision is understood and used by the organization's members in a manner that gives the organizations a sense of purpose which further leads to the organizational mission (which dictates the core activities of the organization) and the desired outcome (Baker, 2002; Liao, 2006). Abrams et al. (2003) indicate that shared vision is one factor which promotes trust in organizations. Their study suggests that an activity such as initiating a project that establishes the common vision of the organization and clarification of unique terms and jargon may help to increase the level of trust.

Clear vision and mission helps an organization to have clear objectives and sense of direction in order to set priorities and follow coordinated actions (Su & Lin, 2006). The vision and mission also guide and regulate knowledge management practices in organizations (Su & Lin, 2006). Su & Lin (2006) also indicate that without linking knowledge management with vision and mission, knowledge is only managed for its own sake instead of for organizational benefit.

Limited references and study

Relatively few authors have directly linked this topic as one of the important cultural factors in organizational practices (Denison & Mishra, 1995), but most authors are agreed that a sense of mission and vision provides two major influences towards organizational functions: 1) mission provides the purposes and meaning of why an organization's work is important towards defining the organizational goals and strategic objectives and vision of how the organization will look in the future (Ahmed, 1998; Denison et al., 2004; Denison & Mishra, 1995); and 2) mission defines the appropriate course of action for the organization and its members in other aspects of the organizational culture (Ahmed, 1998; Denison et al., 2004; Denison & Mishra, 1995). People who have similar goals and who think alike find it easier to form a closer bond and to understand one another's communication and expertise (Abrams et al., 2003).

The importance of the sense of vision and mission among staff is also indicated in Yang et al. (2009) as affectual knowledge or critical knowledge. This type of knowledge defines the affectual state of organizational members and is manifested in mission awareness, managerial policies, and ethical and moral standards in the workplace. Affective identification that refers to a deep sense of temporality and motivation by purpose is one precondition of innovation (Tzeng, 2009). However,

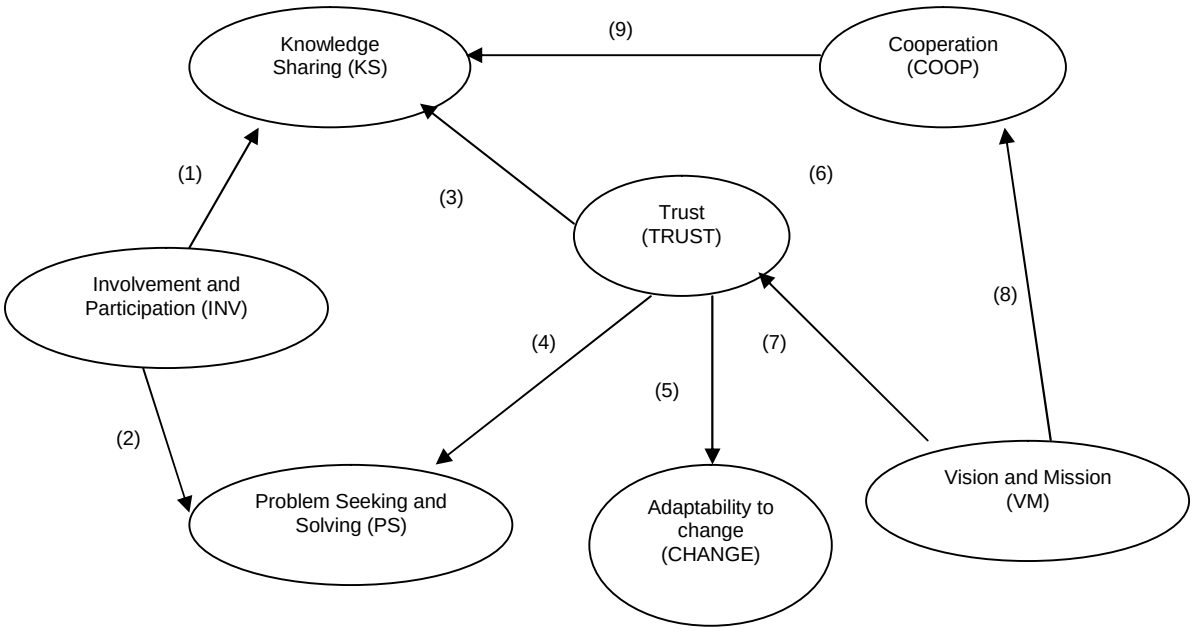
Yang et al. (2009) also indicate that most knowledge management literature does not incorporate the importance of this aspect of knowledge which explains the dearth of studies to be found on this aspect of cultural factors.

4-3 Relationship between Factors

Literature also discusses factors above that can affect one another. The willingness of people to share knowledge was found to be depending on other factors such as cooperation (Raja Suzana Raja Kasim, 2008), trust (Argote et al., 2003; Barachini, 2009; Dasgupta & Gupta, 2009; Holste & Fields, 2010; Politis, 2003; Swift et al., 2010) and, involvement and participation (Rezgui, 2007). Other than affecting people's willingness to share, trust factors also affect problem seeking and solving behaviour (Politis, 2003), as well as people's adaptability to change (Feher, 2004; Lucas, 2005).

Other important relationships among these factors are that organizational vision and mission were also found to affect people's trust (Abrams et al., 2003) with others, and also people's willingness to cooperate (Tjosvold & Tsao, 1989) among themselves. A large number of studies were also found to link trust factors with people's willingness to cooperate (Barachini, 2009; Goh, 2002; Holste & Fields, 2010; Liao, 2006; Lucas, 2005; Rohana Ngah et al., 2009; Smith et al., 1995). Another relationship found indicated that involvement and participation affects problem seeking and solving behaviour among employees.

The above relationships were summarized and shown in Figure 4.2. These relationships were empirically tested during the second stage of the study, in order to investigate whether the same relationship existed in the higher educational administrative environment in Malaysia. The result will be discussed further in Chapter 7 of this thesis.



1. INV → KS (Rezgui, 2007)
2. INV → PS (Jantan et al., 2003)
3. TRUST→KS (Argote et al., 2003; Barachini, 2009; Dasgupta & Gupta, 2009; Holste & Fields, 2010; Politis, 2003; Swift et al., 2010)
4. TRUST →PS (Politis, 2003)
5. TRUST→CHANGE (Feher, 2004; Lucas, 2005)
6. TRUST →COOP (Barachini, 2009; Goh, 2002; Holste & Fields, 2010; Liao, 2006; Lucas, 2005; Rohana Ngah et al., 2009; Smith et al., 1995)
7. VM → TRUST (Abrams et al., 2003)
8. VM → COOP (Tjosvold & Tsao, 1989)
9. COOP → KS (Raja Suzana Raja Kasim, 2008)

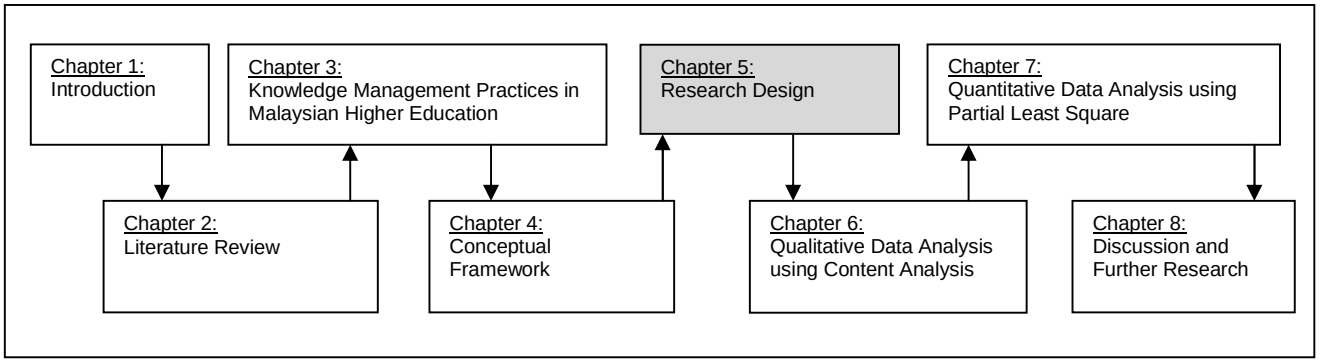
Figure 4.2 Relationship among the cultural factors

4-4 Chapter Summary

This chapter presents the cultural framework for innovative knowledge management culture in organizations. Viewing knowledge management as innovation in organizations, this chapter explores a variety of literature on the seven cultural factors identified as affecting knowledge management practices in organizations. The seven factors explored by this chapter are, knowledge sharing, involvement and participation, cooperation, trust, adaptability to change, problem seeking and solving, and, the sense of vision and mission in organizations. Relationships among these factors were also explored.

5 Research Design

Research is to see what everybody else has seen, and to think what nobody else has thought.
Albert Szent-Gyorgyi (1893-1986)



5-1 Overview of Research Designs and Paradigms

Debates on research paradigms have a long history in research. Quantitative research was among the first research design choices in the 19th century (Leech & Onwuegbuzie, 2009). At the turn of the 20th century researchers turned to qualitative research design (Leech & Onwuegbuzie, 2009). It was then, somewhere around the 1960s where the mixing of these two approaches was introduced and became popular (Leech & Onwuegbuzie, 2009).

Quantitative purists have articulated quantitative research design with a philosophy called positivism. Positivism philosophy refers to the belief whereby social observations should be treated as entities in the same way that physical scientists treat physical phenomena (Johnson & Onwuegbuzie, Oct 2004). It sees the social phenomena as having an objective reality, and that the real causes of social scientific outcomes can be determined reliably and validly (Johnson & Onwuegbuzie, Oct 2004; Spratt, Walker, & Robinson, 2004). Positivism views that the only source or knowledge comes from experiences and that there will be no knowledge of any reality beyond experience (Given, 2008, p. 647).

In contrast to positivism, qualitative purists argue the superiority of constructivism, which refers to the theory which holds that social phenomena and their meanings are constructed by the people involved in using them, rather than being external objects existing independently (Spratt et al., 2004). This philosophy claims that knowledge is

constructed between inquirer and participant through the inquiry process. This inquiry is essentially dialectic and iterative, and the insights and understanding emerge from the joint construction of the inquirer and participant (which refers to the etic and emic views) (Given, 2008, p. 117). Qualitative purists also contend that the research is value bound and it is impossible to differentiate fully causes and effects, and that knower and known cannot be separated because the subjective knower is the only source of reality (Johnson & Onwuegbuzie, 2004).

Quantitative research is also linked to deduction, that is, the process of deriving logical conclusions about particular instances from general premises or statements (Spratt et al., 2004). On the other hand, qualitative research is linked to induction, that is, the process of inferring a generalized conclusion from particular instances (Spratt et al., 2004).

Both quantitative and qualitative purists view their paradigm as ideal for research, which leads to advocating the term *incompatibility thesis*. Incompatibility thesis posits that these two research paradigms and their associated methods cannot and should not be mixed (Howe, 1988; Teddlie & Tashakkori, 2003, pp. 18-19). However, a third research paradigm has been debated and moved beyond the quantitative and qualitative research arguments. This third paradigm is recognized as mixed research methods, which argue that both quantitative and qualitative research are important and useful. The goal of mixed research methods is not to replace any of the previous methods, but to maximize the strengths and minimize the weaknesses of both methods either in a single research study or across studies (Johnson & Onwuegbuzie, 2004).

Mixed research method uses a method and philosophy that attempts to fit together the insights of both quantitative and qualitative research into a workable solution (Johnson & Onwuegbuzie, Oct 2004). This method takes a pragmatic approach to help improve communication of researchers from different paradigms and find ways that the mixing of these research approaches can offer the best opportunities in answering the research questions (Johnson & Onwuegbuzie, Oct 2004; Maxcy, 2003).

Pragmatism focuses on the nature of truth and that truth is relative to the current situation (Given, 2008, p. 672). Pragmatism is often seen as the practical philosophy

in which truth is not seen as an absolute but a moveable and usable construct for understanding the nature of reality (Given, 2008, p. 672). According to pragmatists, reality is to be revealed and experienced. Pragmatism is held within ontological views (i.e. philosophy that's concerned with perceptions of reality (see Given, 2008, p. 577) for further reading) whereby its usability lies in the ability to assist in revealing the nature of reality (rather than the ability to render truth) (Given, 2008, p. 673). The pragmatic concern is that truth is always present and about how it is used to understand realities.

Pragmatic rules can be applied through thinking (like thinking what would happen if you do something), practical experiences (such as observing what happens when you do something) or experiment (that is trying a rule and observing the outcome) (Johnson & Onwuegbuzie, Oct 2004). Mixed research method rejects the incompatibilist position, and recommends that both quantitative and qualitative methods are compatible, and are equally useful in probing the nature of reality (Given, 2008, p. 673). In other words, both empirical and practical consequences should be considered when judging ideas in order to help decide which action comes next as one attempts to better understand the real-world phenomena (Johnson & Onwuegbuzie, Oct 2004). Mixed research method would involve the use of induction (the discovery of patterns), deduction (the testing of theories and hypotheses) as well as abduction (i.e. the uncovering and relying on the best of a set of explanations for understanding one's result) (Johnson & Onwuegbuzie, Oct 2004).

In today's research world, which has become more interdisciplinary, complex and dynamic, all researchers need a solid understanding of multiple methods used by other researchers in order to facilitate communication, to promote collaboration and to provide superior research. Taking a compatibilist position allows researchers to mix and match the design components in order to find the best chances, which can answer their specific research questions.

5-2 Mixed Methods Research

Mixed methods research has become popular in recent years. However, before this discussion continues, it is important to differentiate mixed method research from mixed model research. Mixed model research refers to the mixing of qualitative and quantitative approaches within and across the stages of the research process

(Johnson & Onwuegbuzie, Oct 2004; Teddlie & Tashakkori, 2003, p. 29). This process is classified by Teddlie and Tashakori (2003, p. 29) as the investigation, data collection or process, and data analysis and inference. On the other hand, mixed methods research refers to the inclusion of quantitative phase and qualitative phase in an overall research study (Johnson & Onwuegbuzie, Oct 2004) and only relates to the data collection and data analysis stage (Teddlie & Tashakkori, 2003, p. 29) whereby the inference occurs at the end of the study. Mixed methods research also involves one type of research questions (either exploratory or confirmatory), in contrast to mixed model research, where the research questions for the second phase of the study emerge from the inferences made from the first phase (Tashakkori & Teddlie, 2003, p. 687).

The concepts of mixed method research have also been defined in various ways. Johnson, Onwuegbuzie & Turner (2007) have examined these definitions from various leaders in the mixed methods field. They found that the definition of mixed methods research has various levels of specificity. They divide their results into several themes which are:

- what is mixed (refers to the paradigm mixing that involves both quantitative and qualitative research, as well as mixing within the same paradigm);
- mixing stage (refers to the stage at which the mixing occurs in the research);
- breadth of the mixed research (refers to the mixing of qualitative and quantitative language and discourse in a methodological worldview, interpretations and writing and communicating research results);
- why the mixing is carried out (i.e. the purpose of conduct) and;
- the orientation of research (either it is drawn by the research questions (called bottom-up) or it is drawn by the researchers' quest and focus such as the lives and experiences of the marginalized persons or groups (called top-down).

Based on these themes, this thesis therefore adopts the definition offered by Johnson, Onwuegbuzie & Turner (2007), Leech & Onwuegbuzie (2009) as follows:

> *Mixed methods research is the type of research in which the qualitative and quantitative research approach is combined in any stages of the research involving conceptualization, data collection and*

> *data analysis, for the purpose of breadth and depth of understanding and corroboration, in a single study, or in a series of studies that investigate the same underlying phenomenon.*

Other than these broad themes, there are also several other dimensions that a researcher should consider when planning to conduct a mixed research study such as paradigm emphasis (i.e. the equal or dominant status of paradigm), time ordering (either sequentially or concurrently), the degree of mixture and also whether there is a critical theory or any ideological approach associated with the study (Johnson & Onwuegbuzie, Oct 2004). This shows that it is possible for the mixing to involve various ways of conduct due to these potential dimensions. The following sub-section will elaborate further on the components of the above definition and dimensions as well as other important issues in considering the adoption of mixed methods research for a study.

5.2.1 Types of Mixed Methods Research

Mixed methods research can be viewed using the research continuum diagram shown in Figure 5.1. This diagram shows the overlapping types of mixed research method. The area in the center shows the strongest or pure form of mixed method, where both types of paradigm are given equal status. To the left, is the approach that is labelled as qualitative dominant which refers to a type of mixed research, where one relies on a qualitative method, while at the same time recognizing that the addition of quantitative data and approaches will also benefit the research project. To the right, is another variation of research approach labelled as quantitative dominant, where one relies on a quantitative method, while at the same time recognizing that the addition of qualitative data and approaches will also benefit the research project (Johnson, et al., 2007). These variations of mixed method research lead to nine types of mixed research design matrix (Johnson & Christensen, 2008, p. 446; Johnson & Onwuegbuzie, Oct 2004; Morse, 1991) as shown in Figure 5.2.

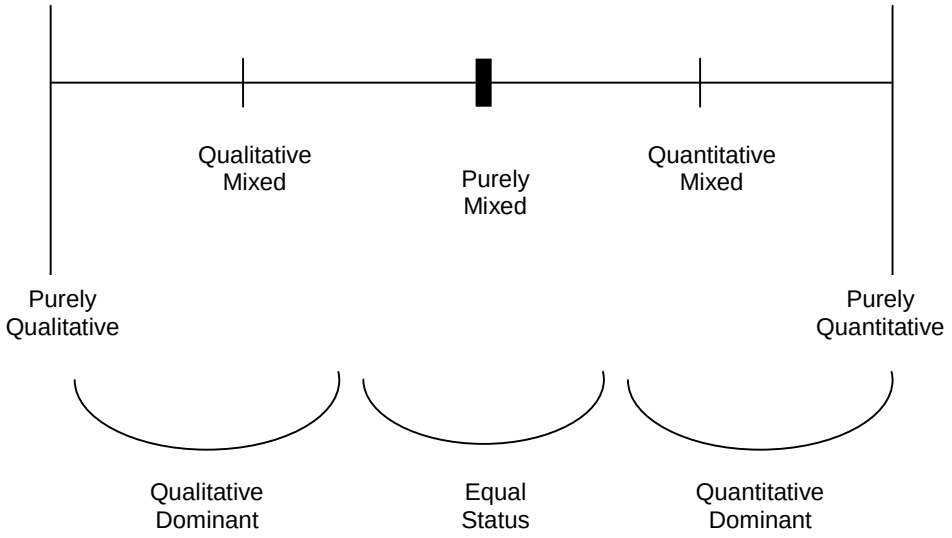


Figure 5.1 The research continuum

Time order decision

	Concurrent	Sequential
Equal Status	QUAL + QUAN	QUAL → QUAN QUAN → QUAL
Dominant Status	QUAL + quan QUAN + qual	QUAL → quan qual → QUAN QUAN → qual quan → QUAL

Figure 5.2 Mixed methods design matrix (Johnson & Christensen, 2008; Johnson & Onwuegbuzie, Oct 2004)

Teddlie and Tashakkori (2006) also discussed the typologies of mixed method design. They use four different criteria in creating these typologies: 1) the number of methodological approaches (either a monomethod or mixed methods); 2) the number of phases (or what they call strands); 3) type of implementation; and 4) stage of integration of the approaches. Teddlie and Tashakkori (2006) have developed a Methods-Strands Matrix featuring these models. For the purpose of this thesis, discussion will only be focused on the mixed methods with multistrand designs. This

model consists of 4 types of implementation: 1) concurrent mixed design; 2) sequential mixed design; 3) conversion mixed design; and 4) fully integrated design.

Teddlie and Tashakkori (2006) and Tashakkori and Teddlie (2003) explained that in concurrent designs, the strands of a study occur in a parallel or synchronous manner with at least two independent strands (see Figure 5.2). Inferences that are made on the basis of the results from each strand are synthesized to form the inferences at the end of the study. This model is used to help researchers simultaneously ask confirmatory and exploratory questions. Figure 5.3 shows an illustration of concurrent mixed method design.

In sequential designs, at least two strands occur in chronological order in which one strand emerges from the other. The conclusions are made on the basis of the results of the first strand leading to data collection and data analysis for the next strand. The inferences are finally drawn based on the result of both strands of the study (see Figure 5.4 for an illustration). In this model the second strand of the study is conducted either to confirm or disconfirm the inferences of the first strand or to provide further explanation for findings in the first strand (Tashakkori & Teddlie, 2003; Teddlie & Tashakkori, 2006).

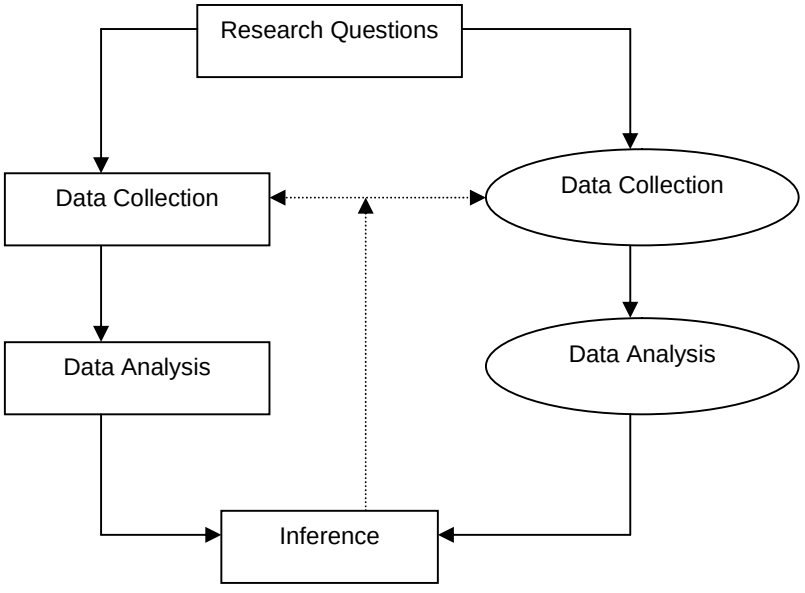


Figure 5.3 Concurrent mixed method design (Tashakkori & Teddlie, 2003, p. 688)[1]

[1] Note: The rectangles and ovals represent either a QUAL or a QUAN stage of the research strand. The mixing of these symbols indicates that the figure represents a mixed method design. The broken line arrow indicates that the conclusion emerging from the inferential stage of a study may lead to the gathering of further data and further analysis of the same study.

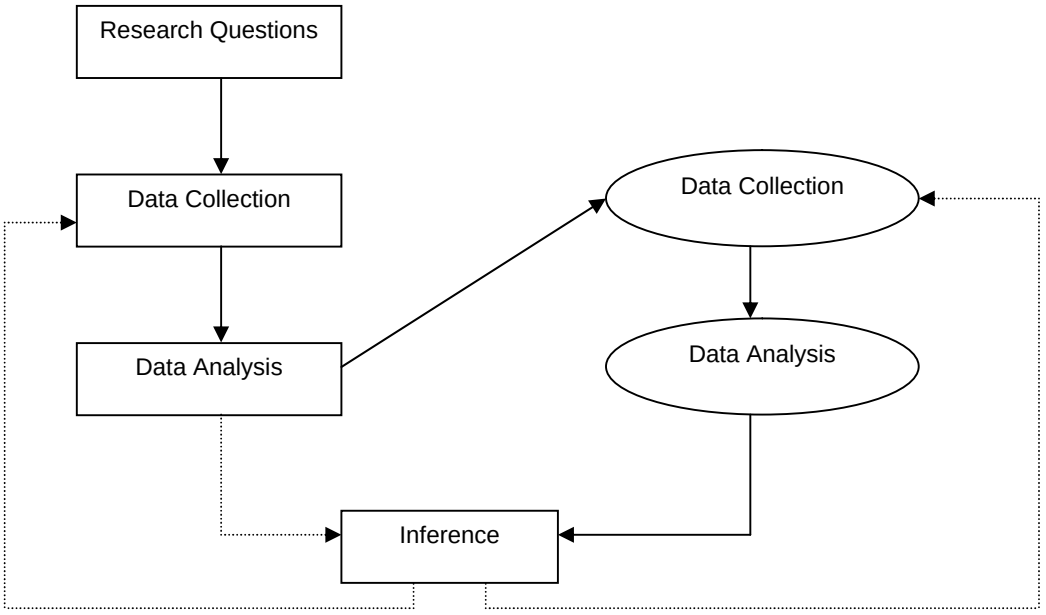


Figure 5.4 Sequential mixed method design (Tashakkori & Teddlie, 2003, p. 688)[2]

Conversion design on the other hand, offers a unique feature of mixed methods research, involving conversion or transformation of qualitative data to perform a quantitative analysis (called quantitizing) and conversion from quantitative data to perform a qualitative analysis (called qualitizing). Only one inference is made on the basis of all results (Tashakkori & Teddlie, 2003; Teddlie & Tashakkori, 2006). Figure 5.5 shows an illustration of conversion mixed method design.

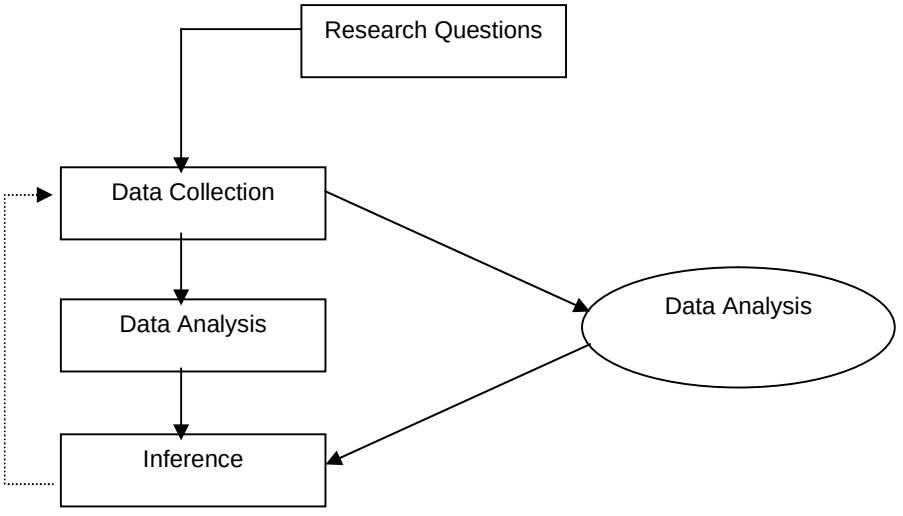


Figure 5.5 Conversion mixed method design (Tashakkori & Teddlie, 2003, p. 689)[3]

[2] Note: The rectangles and ovals represent either a QUAL or a QUAN stage of the research strand. The mixing of these symbols indicates that the figure represents a mixed method design. The broken line arrow indicates that the conclusion emerging from the inferential stage of a study may lead to the gathering of further data and further analysis of the same study.
[3] Ibid.

The last type of mixed method multistrand model elaborated by Teddlie and Tashakkori (2006) is the fully mixed design. It incorporates two or more of the previous types of mixed method design. Since this model is categorized by Tashakkori and Teddlie (2003) as one type of mixed model design (and not mixed method design) this type of design will not be discussed in detail.

5.2.2 Rationale of Mixed Methods Research

Much has been debated about the advantages and disadvantages of mixed methods research. Teddlie and Tashakkori (2003) discuss three areas by which mixed methods research are found to be superior in research. First, mixed methods research is found to be able to answer research questions that cannot be done by other methodologies. This is due to the confirmatory nature of quantitative research, which involves theory verification (Punch, 1998), while on the other hand, qualitative research is exploratory in nature and involves theory generation (Punch, 1998). Therefore, when a research is both confirmatory and exploratory in nature, mixed methods research enables the researcher to simultaneously answer both types of research questions, and further verifies and generates theory in the same study.

Second, mixed methods research can provide better inferences (Teddlie & Tashakkori, 2003) because it may offset the disadvantages that other methods have by themselves. In a way, this offers complementary strengths and nonoverlapping weaknesses which may lead to better and more accurate inferences. Third, mixed methods provide the opportunity for presenting a greater diversity of divergent views (Teddlie & Tashakkori, 2003), which may lead to a reexamination of conceptual frameworks and the assumptions underlying each of the quantitative and qualitative components. Such reexamination is useful for further analysis of the data in the form of the possible transformation of one data type to the other, internal validity audit, as well as designing a new phase for further investigations.

Based on an initial review of previous theory as a starting point, Greene et al. (1989) developed a conceptual framework of five broad purposes and rationales for conducting mixed methods research. Greene et al.'s framework is also cited in Johnson & Onwuegbuzie (2004) and Johnson et al. (2007). These five rationales discussed by Greene et al. (1989) are described below:

1) Triangulation, which refers to simultaneous use of quantitative and qualitative methods (Morse, 1991), intent to seek convergence and corroboration of results from different methods when studying the same phenomenon. By counteracting biases of the two methods, the result of these methods converge and corroborate one another to strengthen and enhance the validity of inquiry findings (Greene et al., 1989; Mark & Shotland, 1987; Rossman & Wilson, 1985);
2) Complementarity, whereby the qualitative and quantitative methods are used to measure overlapping but also different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon. This is done to seek elaboration, enhancement, illustration and clarification of the results from one method with results from the other method (Greene et al., 1989; Mark & Shotland, 1987);
3) Development, which involves the sequential use of qualitative and quantitative methods, where the first method is used to help inform the development of the second (Greene et al., 1989; Rossman & Wilson, 1985);
4) Initiation, which refers to the discovery of paradoxes and fresh perspectives from the study which will lead to reframing of the research questions or an analysis of a fresh insight (Greene et al., 1989; Rossman & Wilson, 1985); and
5) Expansion, which seeks to expand the scope, breadth, and range of inquiry by using different methods for different inquiry components.

Other rationales that are argued and discussed in the literature in favour of the use of mixed method research are listed below:

- For verification purposes (Sechrest & Sidana, 1995);
- Providing some basis for estimating possible errors (Sechrest & Sidana, 1995);
- Facilitating the monitoring of the collected data (Sechrest & Sidana, 1995);

- As a probing of the data set to determine its meaning (Sechrest & Sidana, 1995);
- For participant enrichment (Collins, Onwuegbuzie, & Sutton, 2006) such as ensuring that the participant selected is appropriate for inclusion (Johnson et al., 2007);
- For instrument fidelity (Collins et al., 2006) such as assessing the appropriateness of existing instruments or for creating new instruments (Johnson et al., 2007);
- Treatment integrity (Collins et al., 2006) such as assessing the fidelity of intervention (Johnson et al., 2007); and
- Significance enhancement (Collins et al., 2006) such as to facilitate thickness and richness of data, and augmenting interpretation and usefulness of findings (Johnson et al., 2007).

5.2.3 Analyzing Data in Mixed Methods Research

In considering the analytical strategies to be undertaken in mixed methods research, Onwuegbuzie and Teddlie (2003, pp. 361-373) explained twelve preanalysis considerations. These considerations, which are to be decided prior to the data analysis stage, are presented in Table 5.1.

Decisions	Explanations
1. The purpose of the mixed methods research	As presented by Greene et al. (1989) there are five purposes for mixed methods research i.e. triangulation, complementarity, development, initiation and expansion. These purposes have been explained in 5.2.2 above.
2. Variable oriented versus case-oriented analysis	Variable oriented approach is conceptual and theory-centered and used over a large number of cases with concerns for variables and their intercorrelation. On the other hand, case oriented approach considers the case as a whole entity, looking at configurations, associations, causes and effects within the case and then turns to comparative analysis of a number of cases. While variable oriented approach is suitable for both quantitative and qualitative methods with large samples of data, case oriented approach pertains more to qualitative analysis (see Miles and Huberman (1994, p. 174) for details) .

3. Exploratory versus confirmatory data analytical techniques	It is necessary to determine the nature of data analysis to be used on the collected data: either it is exploratory or confirmatory or maybe both and to choose the appropriate techniques. Onwuegbuzie and Teddlie (2003, p. 364) present a typology of these techniques.
4. Which data type to use	This decision relates to whether qualitative or quantitative data or both should be used in the data analysis stage. This however, will depend on the research purpose chosen.
5. Relationship between quantitative and qualitative data types	In a situation where both quantitative and qualitative data are used, two decisions emerge, i.e. as to whether the quantitative approach will be used with equivalent status design, or whether technique should be dominant. The researcher will need to choose whether the data is to be analysed using parallel mixed analysis, sequential mixed analysis or using a data correlation method (Onwuegbuzie & Teddlie, 2003, pp. 365-369).
6. Data assumptions	It is important to be cognizant and check the assumptions that underlie the chosen data analysis techniques. Examples of assumptions in quantitative analysis are normality, independence and homogeneity of variance, while in qualitative analysis, these assumptions include internal generalizability and truth space (Onwuegbuzie & Teddlie, 2003, p. 369).
7.Source of typology development	Based on Caracelli and Greene (1993) typology development is one type of mixed method analytic strategy. Typology development involves the analysis of one data type that yields a set of substantive themes that is further applied to analysis of the other type of data. According to Constas (1992) the following are five sources which can be used to create these typologies: a. investigative (constructed directly by the researcher) b. participants (participants themselves identify categories) c. literature (derived from findings and conclusions documented in the extant literature) d. interpretative (constructed from a preexisting set of analytical concepts) e. programs (constructed from a set of goals or objectives stated in a program manifesto) The researcher should beforehand decide where the responsibility or the authority of the typology development resides.
8. Nomination source for typology development	The source of the names used to identify a given theme should also be decided. As in the case of item (7) above, the source of the names used to identify a theme include: a. investigative (provided directly by the researcher) b. participants (participants themselves name the themes)

	c. literature (existing theories from the literature lead to the naming of the theme) d. interpretative (names derived from a preexisting set of analytical concepts) e. programs (derived directly from programmatic objectives)
9. Verification source for typology development	Once the typology has been constructed, the researcher should attempt to justify its creation. Constas (1992) identify at least six sources of justification: a. rational (using reasoning and logic to justify a given typology) b. empirical (verifies a typology by examining the coverage, distinctiveness, and exclusivity of the categories that underlie it) c. technical (employs language and concepts used by quantitative researchers to verify a typology such as interrater reliability) d. participative (participants are asked to review and then to verify or modify one or more categories) e. referential (using research findings or theoretical frameworks to justify through corroboration) f. external (using a panel of experts not connected to the study to verify and substantiate a given typology)
10. Temporal designation for data analytical procedures	This is the decision made by the researcher whether the typology development will occur a posteriori, a priori, or iteratively (Constas, 1992). In a posteriori case, categories are created after all data have been collected, while in the a priori context, categories are created before data are collected. In the iterative scenario, categories are created at different phases of the research process.
11. Data analysis tools	Computers are likely to be needed in performing the data analysis especially with a large sample of data. There is a variety of computer software available that suit different purposes of quantitative and qualitative data analysis (see Onwuegbuzie and Teddlie (2003) for further details)
12. Process of legitimation	It is important that the researcher verify the inferences made before making any final conclusion. Various types of validity in qualitative and quantitative research will further be explored in section 5.2.4 which will lead to legitimation concepts in mixed methods research.

Table 5.1 Preanalysis considerations in mixed methods research

Once the above considerations have been made, the mixed methods data analysis process begins. Onwuegbuzie and Teddlie (2003, p. 373) and Johnson and

Onwuegbuzie (Oct 2004) outlined a seven-stage conceptualization of data analysis process in mixed methods research. The seven data analysis stages are data reduction, data display, data transformation, data correlation, data consolidation, data comparison, and data integration. Figure 5.6 (adopted from Johnson and Onwuegbuzie (Oct 2004) shows the mixed methods process model with the seven data analysis stages. As these seven stages are explained below, it might be helpful to refer to this figure.

Data reduction involves reducing the form of data gathered during the data collection process. Reducing dimensionality of quantitative data includes techniques such as descriptive statistics, computation and exploratory factor analysis, while techniques for reducing qualitative dimensionality include exploratory thematic analysis and profile analysis. Other techniques are referred to by Onwuegbuzie and Teddlie (2003, p. 364).

The data display stage involves reducing the information into appropriate and easily understood configurations and presentations. Such techniques include tables and graphs for quantitative data, and matrices, charts, lists and rubrics for qualitative data. If the data display stage is compelling enough, the data interpretation can immediately begin without going to the other five stages (Onwuegbuzie & Teddlie, 2003, p. 375).

During the data transformation stage, qualitative data are converted into numerical codes that can be represented statistically, and quantitative data are converted into narrative so that it can be analyzed qualitatively. Calculating effects size or using exploratory factor analysis for emergent themes are examples of techniques used in this stage (Onwuegbuzie & Teddlie, 2003, p. 375).

If only one data type is collected during the data collection process, data transformation leads to the data interpretation stage. However, if both data types are collected in the study the next step might be data correlation, data consolidation or data comparison. It is necessary to note that even though these seven stages are sequential in nature, they are not linear. Any of these stages may not be necessary depending on the purpose of the research.

The data correlation stage involves the quantitative data being correlated with the qualitized data or the qualitative data being correlated with the quantitative data. The data correlation stage is appropriate when the purpose of the mixed methods research is triangulation (Greene et al., 1989).

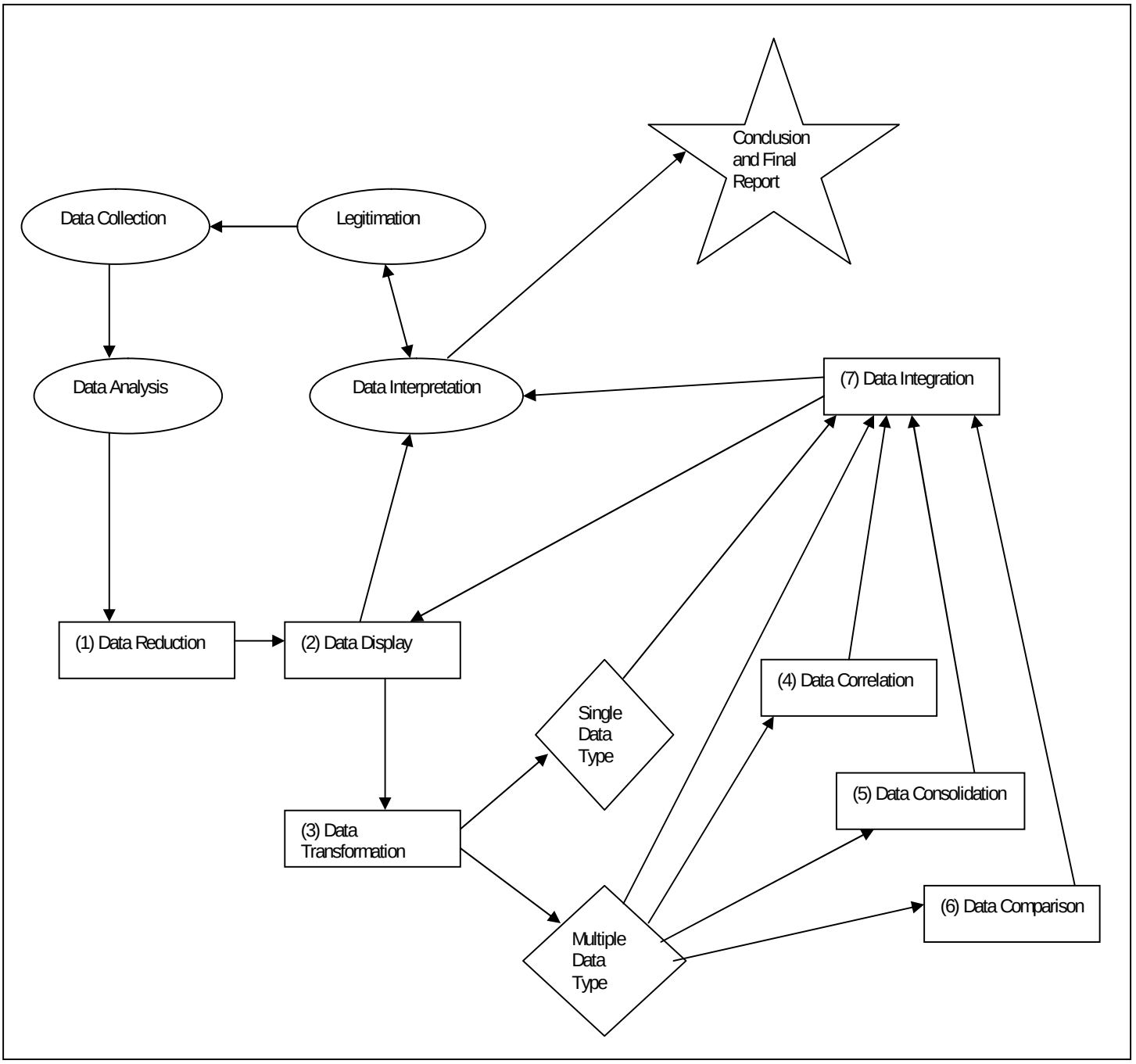


Figure 5.6: Mixed Methods Process Model (Onwuegbuzie & Teddlie, 2003)[4]

[4] Note: Ovals represent steps of research process; rectangles represent stages of data analysis process; diamonds represent components.

The data consolidation stage involves the combination of both quantitative and qualitative data to create new or consolidated variables or data sets. According to Greene et al. (1989) this stage is appropriate when the purpose of the mixed methods research is development.

The next stage, data comparison, involves comparing the data from qualitative sources and quantitative sources. This step may be used if the purpose of the research is either triangulation, initiation or complementarity (Greene et al., 1989). Greene (1989) also indicated that the data correlation, consolidation and comparison can be bypassed if the purpose of the research is expansion, and the research can proceed directly to the next stage, data integration.

During data integration, both quantitative and qualitative data are integrated into a coherent whole or two separate sets of coherent wholes. This stage leads to an initial data interpretation where inferences are made.

The data interpretation step is subject to legitimation. This indicates that collection of more data and subsequent analysis might be needed and may lead to a modified data interpretation. Once the researcher believes that the interpretation represents the most plausible explanation of the underlying data (i.e. the legitimation), the conclusion can be made and the final report is written. The following section explores the legitimation issues in mixed methods research.

5.2.4 Validity and Legitimation in Mixed Methods Research

Research needs to be defensible to the research and practice communities for whom the research is produced and used (Onwuegbuzie & Johnson, 2006). In order to reach rigor in research, it is necessary for researchers to be fully accountable for their data collection, analysis and interpretive methodologies (Onwuegbuzie & Teddlie, 2003).This accountability requires researchers to strive to assess and document the legitimacy of their findings.

The legitimation step in mixed methods research refers to assessing the validity and trustworthiness of both quantitative and qualitative data and subsequent data interpretation (Johnson & Onwuegbuzie, Oct 2004). Onwuegbuzie and Johnson (2006) argued that since mixed methods research involves combining

complementary strengths and nonoverlapping weaknesses of quantitative and qualitative research, assessing the validity issues is complex.

In quantitative research, the validity issue is very common and the importance of validity has long been accepted. Addressing validity issues in quantitative research, Onwuegbuzie and Johnson (2006) presented 50 different threats to internal and external validity in quantitative research. However, in qualitative research the validity concepts have been reconceptualized to make them more acceptable to qualitative researchers. Due to the association with the quantitative conceptualization of the research process, the term validity has been replaced by the term trustworthiness within qualitative research.

5-3 Research Design

This research is aligned based on the process model described by Johnson and Onwuegbuzie (Oct 2004). The research starts with: 1) determining the research questions; 2) determining if the mixed methods research is appropriate; 3) selecting the appropriate type of mixed method research; 4) collecting the data; 4) analyzing the data; 5) interpreting the data; 6) legitimating the data; and 7) writing conclusions and final report. These processes are shown in Figure 5.7 below. As the discussion goes on in this chapter, referring to this figure might help in understanding the research process undertaken.

5-4 Determining Research Questions

In order to achieve the aim of this research, i.e. to study how cultural factors affect innovation of Knowledge Management (KM) practices in higher education administration in Malaysia, and to develop an innovation culture framework to work in the Higher Educational Institution (HEI) administrative environment, the following three primary research questions were formulated.

Question 1: *What is the perception of the administrative managers and staff in Malaysian public universities on viewing knowledge management as innovation?*

Knowledge management implementation in higher education is still new and considered in its infancy, especially in Malaysia (Ali A. Zahrawi & Yazrina Yahya,

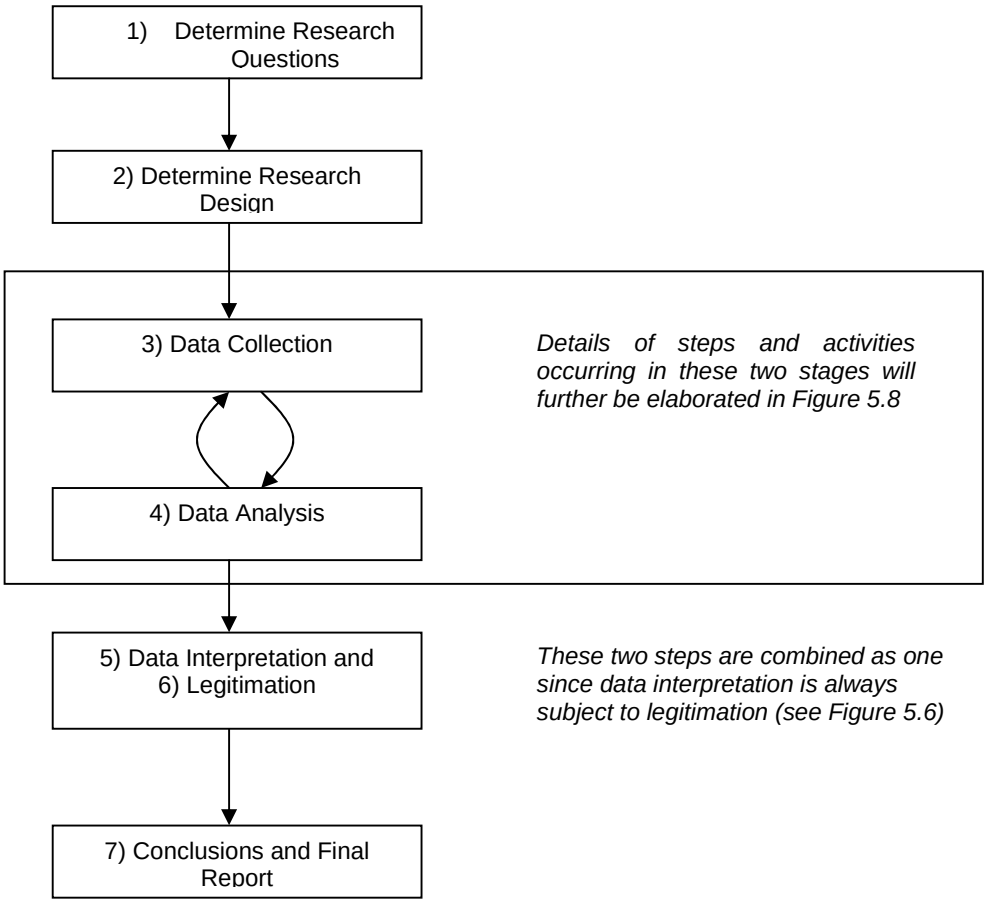


Figure 5.7: Research methodology adopted for this research[5]

2009; Mohd Ghazali Mohayidin, Nor Azirawani, Man Norfaryanti Kamaruddin, & Mar Idawati Margono, 2007). In order to investigate the existence on KM practices in higher educational administration, it is important to understand how the managers and staff have perceived the KM implementation as an innovation in their institution. Investigation will also need to be made to explore their understanding on the KM activities that occur in their departments and how they support these activities.

Question 2: *What is the state of KM implementation in the administrative departments of the public universities in Malaysia?*

This question implies the importance of knowing the extent to which knowledge management practices are embedded in their departmental activities. This question explores the current practice of how the knowledge processes are implemented in

[5]The two arrows between data collection and data analysis step indicate two phases of data collection and analysis to be undertaken by this research (See section 5.5 below).

performing administrative routine tasks in the department. This also includes investigating the existence of any tools that help the managers and staff supporting their knowledge activities, as well as exploring any barriers to implementing knowledge management. Based on participants' experiences, they will also be asked the factors that may contribute to their support towards the practice.

Question 3a: *What are the cultural factors perceived as affecting knowledge management practices in the administrative department of the public universities in Malaysia?*

Guided by a study of the literature, the opinion of the participants with regard to the existing cultural factors in their administrative department will be explored. Based on the study of the literature, the existence of seven cultural factors and employees' contribution towards these factors will be investigated. These factors are knowledge sharing, cooperation, involvement and participation, trust, problem seeking and solving, adaptability to change, and sense of vision and mission.

Question 3b: *Do the seven cultural factors investigated in question 3a affect the knowledge management practices in the administrative department of the public universities in Malaysia?*

In order to find the relationship between the above factors and the knowledge management practices in place, the following hypotheses will be tested.

H1: The existence of the knowledge sharing culture positively affects knowledge management practices in the administrative department of Malaysian public universities.

H2: The existence of the cooperative culture positively affects knowledge management practices in the administrative department of Malaysian public universities.

H3: The existence of the involvement and participation culture positively affects knowledge management practices in the administrative department of Malaysian public universities.

H4: The existence of the trust culture positively affects knowledge management practices in the administrative department of Malaysian public universities.

H5: The existence of the problem seeking and solving culture positively affects knowledge management practices in the administrative department of Malaysian public universities.

H6: The existence of the culture of adaptability to change positively affects knowledge management practices in the administrative department of Malaysian public universities.

H7: The existence of the sense of vision and mission culture positively affects knowledge management practices in the administrative department of Malaysian public universities.

In addition, to investigate how the seven cultural factors affect knowledge management practices, based on the past literature, another nine relationships among the variables are also predicted as follows:

H8: The involvement and participation culture positively affects the knowledge sharing culture.

H9: The involvement and participation culture positively affects the problem seeking and solving culture.

H10: The trust culture positively affects the knowledge sharing culture.

H11: The trust culture positively affects the problem seeking and solving culture.

H12: The trust culture positively affects the culture of adaptability to change.

H13: The trust culture positively affects cooperative culture.

H14: The sense of vision and mission positively affects the trust culture.

H15: The sense of vision and mission positively affects the cooperative culture.

H16: The cooperative culture positively affects the knowledge sharing culture.

5-5 Research Methods

It was decided that this research would adopt a mixed methods research methodology and pragmatic paradigm. Since understanding organizational culture in organizations is complex (in the case of this thesis it refers to knowledge management culture), a deep and thorough investigation would be needed. Therefore, this research was conducted with development purposes and intention (Greene et al., 1989; Johnson et al., 2007) with an exploratory approach (Hair, Money, Samouel, & Page, 2007) whereby two types of data collection methods took

place. It was also decided that all research questions specified in section 5.4 above would be answered using both qualitative and quantitative methods.

This research used sequential mixed methods research (Tashakkori & Teddlie, 2003, p. 687) with equal status dimension (Johnson & Onwuegbuzie, Oct 2004). The purpose of using this approach was to allow the findings of the first method to be used for designing the second method of the research (Greene et al., 1989). This research started with a qualitative data collection followed by the quantitative phase (referred to as notation QUAL → QUAN in Figure 5.2). The data analysis process started after the completion of the first phase data collection (qualitative data), and a further data collection phase (quantitative data) was conducted based on the analysis of data from the first phase. This cycle of process is shown in Figure 5.7 using the arrows between the data collection and analysis steps.

Qualitative methods are conventionally used in the management field to represent those techniques of data collection and analysis that rely on non-numerical data (Cassell, Buehring, Symon, & Johnson, 2006) inclusive of a range of techniques focussing on textual data or visual images. In this research the qualitative data collection phase is used in order to provide a better understanding of the organizational culture factors that exist in the KM practices of HEI administration. This process allows the participants to express their opinion on the cultural issues. Based on this qualitative data collection, the cultural factors are analysed using content analysis and categorizing process. This data collection process also helps the researcher to identify new cultural elements that might be overlooked in the literature study, as well as allowing emphasis on different topics and subjects discussed being used for the purpose of designing the quantitative survey questionnaire in the second phase.

The second phase of data collection (quantitative phase) was used to identify the cultures that positively or negatively affect the KM practices for HEI administration in Malaysia. These cultural factors are discussed in Chapter 4. This phase was used to determine the relationship that exists between the constructs identified in the framework and the KM practice of the HEI administration departments. The detail of the research design process incorporating data collection and analysis phases and the time expected for each phase to be completed are shown in Figure 5.8.

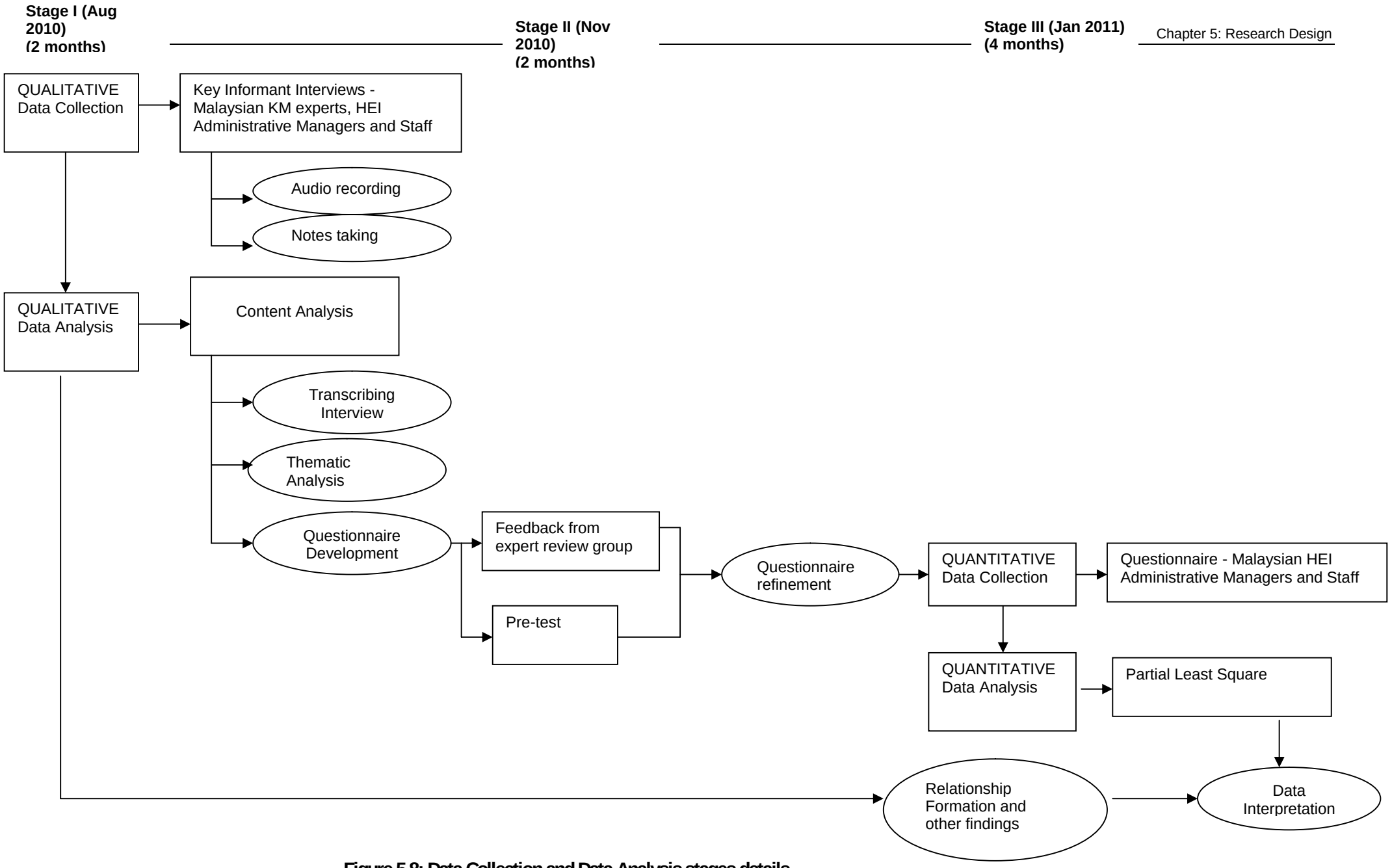


Figure 5.8: Data Collection and Data Analysis stages details

5-6 Data Collection

As explained in the previous section and depicted in Figure 5.8, this study was conducted in two phases starting with the qualitative phase and followed by the quantitative phase. In the qualitative phase, key informant interviews were used as a data collection technique. Key informant interviews were used to obtain perceptive information about social settings and events (Bryman, 2008, p. 695) from an individual who is considered as knowledgeable about the topic of interest (Alavi & Leidner, 2001; McKernan, 1996, p. 131). This method is used when published records are limited or do not exist, and allows the researcher to explore a phenomena from different perspectives (Alavi & Leidner, 2001). Referred to as an expert source of information, and based on personal skills and position within a community, the key informants are able to provide more information and deeper insights into what is going on around them (Marshall, 1996; McKernan, 1996, p. 131). This method is known as being able to obtain quality data in a short period of time (Marshall, 1996) due to the experience of the selected key informants. Bryman (2008, p. 409) also indicates that key informants often develop an appreciation of the research and direct the researcher to the situations, events or people likely to be helpful to the progress of the investigation.

The main purpose of the adoption of this technique in this study was to explore the current knowledge management scenario and cultural factors in higher educational institutions in Malaysia focussing on the administrative departments from different perspectives. As such, key informant interviews were conducted for three groups of participants: 1) Malaysian knowledge management experts in higher education; 2) administrative department managers in Malaysian higher education; and 3) administrative staff in Malaysian higher education. The potential key informants were considered by the researcher based on their ability to fulfil the selection criteria set by the researcher. The Malaysian knowledge management experts were chosen based on their expertise in the knowledge management area which was judged by their qualification and number of publications. All the experts chosen for this study obtained their doctorate degree at least 5 years ago, with 20 to 30 publications relevant to knowledge management field. The administrative managers and staff list was obtained from the human resources

office of the universities. The researcher clearly stated that the prospective managers or staff should have a minimum working experience of one year with the respective administrative department. Since these suggestions come from the human resource office of the university, the credibility of the respondent is highly trusted. It is believed that these key informants have competence in the subject under study (Alavi & Leidner, 2001; Marshall, 1996). It also believed that the criteria indicating that the key informant should be able to communicate their experience effectively and can give reliable information (Alavi & Leidner, 2001; Marshall, 1996) was also able to be achieved. Since the researcher does not have any prior relationship with all respondents, issue of bias of the information (Alavi & Leidner, 2001; Marshall, 1996) given by the key informants was also reduced.

The data collected from the key informant interviews conducted was transcribed and analysed using content analysis and categorization process. This was done in order to bring to the surface the culture elements or areas discussed during the interviews. The results from this analysis were used to develop web-based questionnaires to be used for the second phase of the study. The questionnaire is used to confirm the factors identified during the interviews. Since the researcher's intent was to reach as many respondents as possible from the Malaysian university staff working in the administrative departments, this questionnaire technique was found to be the most cost- and time- effective method (Bryman & Bell, 2007, p. 241; Hair et al., 2007, p. 210) in order to reach a wide geographic coverage (Hair et al., 2007, p. 210) of Malaysia. This questionnaire was developed using GoogleDoc as a tool.

The questionnaire used a mixture of questions with nominal, ordinal, internal and ratio measurement scales. The questions developed to answer the three research questions identified above consisted of four subsections: 1) gathering the demographic data of the respondents; 2) questions with regard to respondents' perception in accepting knowledge management as innovation; 3) questions with regard to respondents' experience in implementing knowledge management practices in their workplace; and 3) questions related to the workplace culture that surrounds them in performing their daily work in relation to knowledge management practices.

This web-based questionnaire was developed based on typology development from content analysis from the qualitative data. This questionnaire was further verified in an attempt to justify its creation. External sources of verification were chosen to verify this questionnaire (Constas, 1992). The questionnaire was sent to a panel of KM experts not connected to this study. This panel consisted of a combination of KM experts from Malaysia (since they might better understand the KM culture scenario in Malaysia where the research was conducted) and also other KM established researchers not residing in Malaysia. Feedback received from this expert group was used to refine the questionnaire. Comments and suggestions received from the expert group were considered, and modifications and refinements to the questionnaire were made to ensure organization, consistency and clarity of the questionnaire's item and instruction. The research process continued with a pilot testing stage to further assess the readability and quality of the questions. The pilot testing stage was conducted on the administrative staff in private higher education. This resulted in further refinement of the questionnaire before the actual data collection took place.

The second phase of data collection (quantitative data) started by sending emails to the administrative staff and managers from the chosen HEIs requesting their participation in the survey. The email consisted of the cover letter and survey instructions, an information sheet to provide the respondents with a brief idea about the research conducted, an electronic consent from, and the Internet URL from where the questionnaire could be accessed. The cover letter explained the purpose of the research and assured the confidentiality of the responses given, while the instruction page explained to the participant the proper way to provide the answer to the questionnaire.

5-7 Sampling

Purposive sampling techniques are primarily used in qualitative studies and may be defined as selecting units such as individuals or groups, based on specific purposes associated with answering a research study's questions (Teddlie & Yu, 2007). It is also defined as a type of sampling in which, "particular settings, persons, or events are deliberately selected for the important information they can provide that cannot be gotten as well from other choices" (Maxwell, 1997, p. 87).

The data for this study was drawn from a purposive random sample of administrative department's staff and managers, from public HEIs in Malaysia. The target population of the study was public higher educational institutions in Malaysia and the sampling frame was the administrative department managers and employees of the HEIs. Approval to conduct this research in the premises of HEIs in Malaysia was first obtained directly from the vice chancellor's office of the university prior to the data collection stage. The contact information was obtained from the websites of the universities. The list for the sampling frame was obtained from the human resource department, and the e-mail list for the respective administrative managers and staff was obtained from the information technology department of the HEIs.

Out of 20 public universities in Malaysia, 5 universities are included in the qualitative study phase, and 8 universities are included in the quantitative study phase. The universities involved are International Islamic University Malaysia (IIUM), North University of Malaysia (UUM), Universiti Malaysia Kelantan (UMK), University of Malaya (UM), University Malaysia Sarawak (UNIMAS), Universiti Teknologi Malaysia (UTM), University ITM (UiTM) and Universiti Perguruan Sultan Idris (UPSI).

5-8 Data Analysis

Based on the decision made that this thesis was to adopt the sequential mixed method designs (refer to section 5.2.1 above), the results from the qualitative data analysis (first phase) led to the quantitative data collection and data analysis. The inferences were finally drawn based on the results of both the qualitative and quantitative study (see Figure 5.4).

It is also important to note that, prior to conducting the data analysis stage, the following decisions of preanalysis considerations were made based on Onwuegbuzie and Teddlie (Onwuegbuzie & Teddlie, 2003, pp. 361-373). Table 5.2 summarized these decisions.

Decision type	Decisions made for this study
1. The purpose of the mixed methods research	Development purpose (Greene et al., 1989)
2. Exploratory versus confirmatory data analytical techniques	i. Exploratory technique is used for qualitative data ii. Confirmatory technique is used for quantitative data
3. Data type to use	i. Qualitative data is collected during qualitative data collection ii. Quantitative data is collected during quantitative data collection
4. Relationship between quantitative and qualitative data types	Sequential mixed analysis (Onwuegbuzie & Teddlie, 2003, pp. 365-369)
5.Source of typology development	i. Categories are derived from the existing literature ii. Participants will identify themes to these categories during data collection
6. Nomination source for typology development	i. Existing literature in the concept under study ii. The themes collected from the participants during data collection stage
7. Verification source for typology development	i. Using expert group not connected to the study to verify and substantiate the typology
8. Temporal designation for data analytical procedures	i. A posteriori typology development for qualitative data ii. A priori typology development for qualitative data
9. Data analysis tools	i. NVIVO for Content Analysis ii. LISREL for Structural Equation Modelling

Table 5.2: Preanalysis consideration made for this thesis

Following the above decisions, the data collected then proceeded to the data analysis stage. The data collected during the qualitative data collection (first phase) using key informant interview techniques was transcribed and analysed using content analysis and categorization processes. This was done in order to bring to the surface the cultural elements or areas discussed during the sessions. NVIVO software was used to help perform this data analysis step. The results from this analysis were used to develop web-based questionnaires for the quantitative phase of the study (second phase).

The data collected from the web-based questionnaires was analysed using the Partial Least Square method and PLS software. This technique is used for testing and estimating causal relationships using a combination of statistical data and qualitative causal assumptions. It consists of two models: the structural model which will portray the causal relationships of latent construct; and a measurement model which specifies the indicators for each construct and assesses the reliability of each construct for estimating the causal relationship (Hair, Black, Babin, Anderson, & Tatham, 2006; Tabachnick & Fidell, 2007).

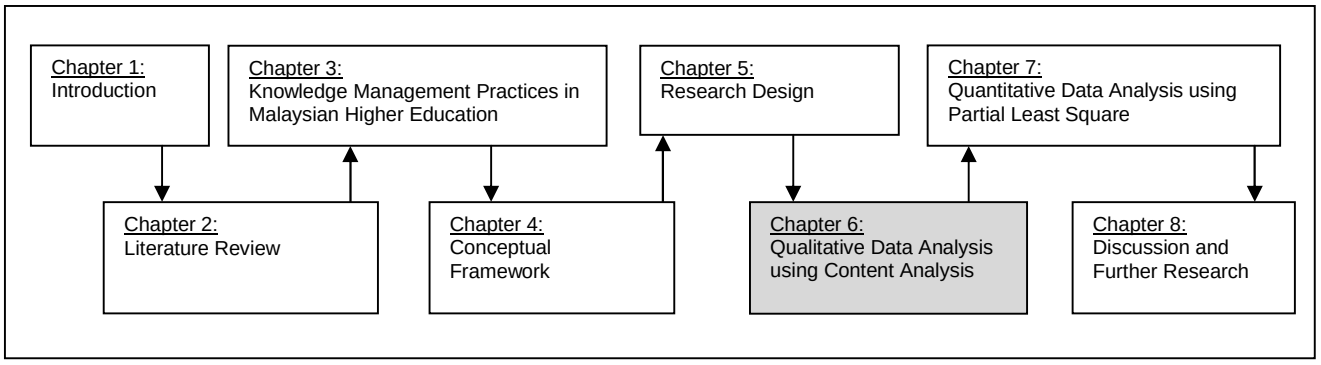
Further detail on the qualitative data analysis using content analysis conducted is explained in Chapter 6, while the detail on quantitative data analysis using the partial least squares method is explained in Chapter 7.

5-9 Chapter Summary

This chapter gives an overview of and explores the mixed research methodology adopted for this study. The chapter also explains the research questions addressed by this study and how the mixed research methods chosen were used to address the research questions. The timeline planned for completion of the research was given as well as the description of how the data collection and data analysis would be conducted.

6 Qualitative Data Analysis: Content Analysis

"That is what learning is. You suddenly understand something you've understood all your life, but in a new way."
(Dorris Lessing)



6-1 Introduction

The first phase of the data collection stage of this research involved conducting a qualitative study in Malaysian higher education administrative departments. This study involved using a purposive sampling method to gather the required data from three different groups of respondents: the administrative managers, administrative staff and Malaysian knowledge management experts from higher educational institutions. The data collected was analysed by using thematic analysis procedures. The following subsections give an overview of using thematic analysis procedures as one method of performing content analysis with the data collected. Data collection procedures and sampling are further discussed followed by discussion of the findings and questionnaire development for the next stage of the research. This stage of data collection sought to address the following research questions:

1. *What is the perception of the administrative managers and staff in Malaysian public universities on viewing knowledge management as innovation?*
2. *What is the state of KM implementation in the administrative departments of the public universities in Malaysia?*
3. *What are the cultural factors perceived as affecting knowledge management practices in the administrative department of the public universities in Malaysia?*

6-2 Overview of Content Analysis

Content analysis has a long history in research, starting from the 18th century in Scandinavia and at the beginning of 20th century in the United States (Hsieh & Shannon, 2005, p. 138). Content analysis is described as a family of lexical analysis (Lee & Fielding, 2004, p. 534) and was primarily regarded as a quantitative research method with text data coded into categories and described using statistics (Hsieh & Shannon, 2005) that seeks to quantify the contents in a systematic and replicable manner (Bryman, 2001, p. 14). However, later movement in the research area has abandoned this strict requirement of quantification in content analysis methods and they are now widely accepted and used in qualitative research.

6.2.1 Definition of Content Analysis

Various early definitions of content analysis link this method to quantitative strategies. Franzosi (2004, p. 548) explores a few definitions provided by Kaplan (1943), Berelson (1952, p. 15) and Cartwright (1953). Kaplan (1943) and Cartwright (1953) indicate that content analysis attempts to characterize or describe a behaviour systematically and in a quantitative fashion. Berelson (1952, p. 18) also describes content analysis as a research technique used for the objective, systematic and quantitative description of the manifest content of communication.

However, later definitions given by Stone et al. (1966) and Holsti (1969) (quoted in Franzosi (2004)) state that content analysis techniques are used for making inference by objectively and systematically identifying specified characteristics of messages and text without any reference to quantification. The use of content analysis as a qualitative method has recently been recognized by many researchers as a way to provide efficient analysis for large data sets with textual components (Sonpar & Golden-Biddle, 2008). Weber (1990) indicated that qualitative content analysis goes beyond merely counting words in text especially for the purpose of classifying a large amount of text into an efficient number of categories that represent similar meanings. This is agreed by Zhang and Wildemuth (2009) who stated that qualitative content analysis is used to examine meanings, themes and patterns that may be manifest or latent in particular text.

Researchers agree that data reduction is one important strategy for qualitative research (Attride-Stirling, 2001). In relation to this, content analysis is defined by Patton (2002) as a qualitative method of data reduction and sense-making effort that

takes a volume of qualitative materials and attempts to identify core consistencies and meanings. Content analysis is also described as a research method used for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns (Hsieh & Shannon, 2005). Table 6.1 presents the differences between quantitative content analysis and qualitative content analysis adapted from Zhang and Wildemuth (2009).

Quantitative Content Analysis	Qualitative Content Analysis
• used widely in mass communication as a way to count manifest textual elements • conducted in deductive manner, with an intention to test hypotheses or address questions that are generated from previous theories or research • data selected using random sampling in order to ensure the validity of statistical inference • produces numbers that can be manipulated with various statistical methods	• developed in anthropology, sociology and psychology to explore the meaning of underlying physical messages • inductive in manner in that the topics, themes, and the inferences drawn are grounded in the data • in some cases it is used to generate theory (normally referred to as a grounded theory method) • sample usually consists of purposively selected data which can inform the research questions being investigated • produces description or typologies along with expressions from subjects reflecting how they view the social world (so that the perspective of the subject can be better understood by the researcher)

Table 6.1 Quantitative vs qualitative content analysis

6.2.2 Approaches to Content Analysis

Many variations of content analysis approaches exist in the literature. Weber (1990) suggests that the best content analytic approach is to use both qualitative and quantitative operations. Qualitative analysis could also combine inductive and deductive reasoning (Zhang & Wildemuth, 2009). The work by Krippendorf (1980, pp. 60-63) lists a few possible methods by which content analysis can be conducted. These include syntactical analysis using word count, referential analysis, prepositional analysis and thematic analysis. Contrasting thematic analysis from

referential analysis, Franzosi (2004) indicates that thematic analysis is ideally suited to get a clear picture of the basic content of text, while referential analysis is better suited for capturing the complexity of language in the production of meaning. This is supported with reference to Krippendorf (1980, p. 62) saying that referential analysis is used when the task is to ascertain how an existing phenomenon is portrayed.

In a more recent publication, Hsieh and Shannon (2005) identify three types of content analysis, namely conventional analysis, directed analysis and summative analysis. Conventional analysis aim to describe the phenomenon in the situation where the existing theory or research regarding the issue under study is limited. On the other hand, directed analysis is used to validate the existing theory and research framework, while summative analysis is more quantitative in nature, by which it normally starts with identifying and quantifying certain words or content in the text with the purpose of understanding the conceptual use of the words or content.

6.2.3 Thematic Analysis

Content analysis is used to determine the presence of certain words, concepts, themes, phrases or sentences within texts or set of texts. Berelson (1952, p. 136) indicates five major units of analysis: words, themes, characters, items and space-and-time measures. For the purpose of fitting this research, only word and themes units of analysis will be discussed.

The theme unit of analysis is referred to as a simple sentence or an assertion about a subject matter. It usually exists as a summary or abstracted sentence under which a wide range of specific formulation can be subsumed (Berelson, 1952, p. 138). Analytic literature also refers to theme as other names such as *assertion, statement, idea, issue* and *argument* (Berelson, 1952, p. 138). The theme is the most useful unit of analysis because it takes the form in which issues and attitudes are usually discussed (Berelson, 1952, p. 139). However, it is also the most difficult topic to analyse from the standpoint of reliability with regard to the varied nature of communication in almost every topic. Berelson (1952, p. 139) suggests that one method of attacking this problem is by breaking down the theme into its components and analysing them.

The idea of thematic analysis is used to develop themes and work out how the data relate to each other. Thematic analysis is normally applicable in analyses with a

focus on behaviours, commonalities, differences or contradictions in a manner appropriate to the specific theoretical interests (Attride-Stirling, 2001). Gibson (2006) explained that two types of coding normally used in thematic analysis are open coding and relational coding. While open coding refers to the creation of the categories, relational coding refers to the way in which categories or codes are related to each other.

6-3 Data Collection and Sampling

Sampling method – purposive random sample

The data for this study were drawn from a purposive random sample of administrative department staff and managers from public higher educational institutions in Malaysia. A key informant interview was used as the data collection method for this phase of the study. The purposive sample used in this study was based on the involvement of the participants in the administrative department of the higher educational institution. The purposive sampling was chosen due to informational considerations and to maximize the information (Lincoln & Guba, 1985, p. 202). One objective of this sampling method is to ensure that all relevant types of respondent are included in the sample so that the study would obtain the most productive sample (Bock & Sergeant, 2002).

The participants for this research are managers and staff who work in the administrative department of the universities involved. In order to obtain meaningful and relevant data with regard to the knowledge management practices and scenarios in administrative departments, knowledge management experts from the universities are also included in these interviews. The rational of including expert participants in this study is based on Davenport and Prusak (1998) who indicate that people's experience will provide a perspective from which they view and understand situations and events. The author considers the expert to be knowledgeable and that this will influence the way they look at the issues investigated. As suggested by Marshall (1996), the participant chosen for the key informant interview satisfied the following characteristics:

- that they had a role that fits the purpose of the study and are exposed to the issue being discussed;
- that they are willing to cooperate and communicate their opinion in the interview; and

- that the quality and richness of information are varied based on their background and experience.

Data collection procedure

A request to conduct the data collection procedure in the public universities was sent to 20 public universities in Malaysia. However, the researcher only received approval from 5 public universities. The researcher requested that the universities that agreed to participate in the study to suggest a few names, which would satisfy the researcher's criteria. Based on these suggestions, a call of interest was sent to the prospective respondents by the human resource departments of these universities. The researcher then initiated further communication with the respondent by email. Once the respondent volunteered to participate, an electronic copy of the consent form was sent to the respondent requesting them to fill it in and return it to the researcher. Due to geographical factors of the locations of the five universities, and the cost that might be incurred for a face-to-face interview arrangement, the interview was therefore conducted by phone. It is acknowledged that one disadvantage of the phone interview is that the interviewer would miss the opportunity to report observations such as facial expressions of the interviewee during the interview (Fowler, 2009, p. 81). However, since the purpose of this interview was to gather the information on current practices, rather than to explore feelings and hidden expressions, it was felt that these disadvantages should not affect the findings of the study.

The key informant interview

A total of 22 respondents were contacted for the interview session, however the researcher managed to conduct the interviews with only 9 respondents. A follow up was made with the remaining respondents, which resulted in 3 other responses obtained by answering the interview questions through email rather than phone interviews. This resulted in a response rate of 54.5%. Four knowledge management experts, four administrative managers and four administrative staff were interviewed based on an interview script guided by the literature review. The total time taken for the 9 interviews was 221 minutes, with the average time of 25 minutes for each respondent. The Interviews were conducted from August 15 to October 15, 2010. The interviews sought to answer the three research questions discussed earlier in Chapter 5 and covers nine main areas as stated below:

Research question 1*: What is the perception of the administrative managers and staff in Malaysian public universities on viewing knowledge management as innovation?*

- Investigating respondents perceptions towards the implementation of knowledge management as an innovation in their institution;

Research question 2: *What is the state of KM implementation in the administrative department of the public universities in Malaysia?*

- Investigating the existing practice of knowledge management in the administrative departments of the institutions;

Research question 3: *What are the cultural factors perceived as affecting knowledge management practices in the administrative department of the public universities in Malaysia?*

- Investigating the extent to which the knowledge sharing culture exists in the institution;
- Investigating the extent to which the cooperative culture exists in the institution;
- Investigating the extent to which the involvement and participation culture exists in the institution;
- Investigating the extent to which the trust culture exists in the institution;
- Investigating the extent to which the problem seeking and solving culture exists in the institution;
- Investigating the extent to which the culture of adaptability to change exists in the institution; and
- Investigating the extent to which the sense of vision and mission are in place within the institution.

The interviews were prepared in both English and Malay versions, and were conducted in either English or Malay or both. The complete key informant interview script is provided in Appendix A. All interviews were recorded upon participants' permissions, and responses to the interview questions were translated from Malay to English and transcribed accordingly. Interview transcripts were analysed for emerging themes and issues raised by participants using a thematic analysis procedure. The result from this analysis was used to develop the questionnaire for the quantitative phase of the study.

Sample size

It was observed that there is the lack of a standard definition for the ideal sample size of qualitative research in the literature. Therefore the theoretical saturation paradigm defined by Guest, Bunce and Johnson (2006) was used to guide the study. Saturation is achieved when no new data seems to be obtained from the interviews conducted (Guest et al., 2006; Nagarajan & Edwards, 2009). Guest et al. (2006, p. 60) cited Morse (1995) as indicating that *saturation is the key to excellent qualitative work*. Even though there are no published guidelines in estimating the required sample size to reach saturation, it has become a gold standard in determining purposive sample sizes (Guest et al., 2006).

Guest et al.'s (2006) experiment indicated that they achieved data saturation and variability with 12 interviews. They also found that even though saturation was achieved after twelve interviews, the basic elements of themes and category were present as early as six interviews. The researcher found that her study aligned well with Guest et al.'s (2006) argument as she found that saturation in the study was achieved with seven (7) interviews. The researcher therefore decided that the sample size of 12 was sufficient for this study.

Member check procedures were used to check the validity of the transcribed data. A summary of the points discussed in the interview was sent to the participants' email to double check that the interviewer understood their point raised correctly. This way, participants could give additional comments if they felt that their points were understood wrongly.

6-4 Results and Findings

The findings of this qualitative phase of the study were guided by the research questions arranged accordingly to the key informant interview script. The first two research questions aimed to: 1) explore managers and staff perceptions of the views that knowledge management is an innovation and to investigate the university support towards these practices and 2) investigate the current state of implementation of knowledge management practices in the administrative department of higher educational institutions in Malaysia.

The third research question was designed to investigate the existence of seven cultural factors in the administrative department of higher educational institutions in Malaysia. These cultural factors are listed below:

a. Knowledge sharing culture
b. Cooperative culture
c. Involvement and participation culture
d. Trust culture
e. Problem seeking and solving culture
f. Adaptability to change culture
g. The sense of vision and mission

The inclusion of these factors in the study was based on the existing literature in the knowledge management area combined with the findings from the interview. A conceptual framework was developed and the existence of these factors in the administrative department of higher educational institutions in Malaysia as discussed in the literature was investigated further using a quantitative data collection and analysis procedure. The findings from this qualitative phase of study were used to guide the questionnaire development for the quantitative phase.

6.4.1 Thematic Analysis

Thematic analysis refers to the use of themes or combinations of category as a unit of analysis. Based on the cultural factors and guided by the research questions, the interview transcripts were examined to identify relevant categories and concepts from the data. A priori code was determined during the literature study. The themes from interviews were matched with these themes. However the researcher also looked for new themes that emerged from the interviews and added these to the analysis. These newly emerged themes might then help the questionnaire development for the quantitative phase of the study. The themes were organized into ten high level categories as shown in Table 6.2.

Knowledge Management Practice - Understanding - Current practice - Tools - State of implementation	**Trust** - existing practice - encouraging factors - barriers
Knowledge Management as Innovation - Perception - Advantage - University support	**Problem seeking** - existing practice - encouraging factors
K-sharing - existing practice - encouraging factors - barriers	**Adaptability to change** - existing practice - encouraging factors - barriers
Cooperation - existing practice - encouraging factors - barriers	**Sense of vision and mission** - existing practice - encouraging factors - barriers
Involvement and participation - existing practice - encouraging factors - barriers	**Emerging themes** - Top management - Technology - Language - Religion

Table 6.2: Themes investigated from the interviews

Each of the above categories is further refined into smaller terms and presented in tabular form in Figure 6.1a to 6.1j. More detailed discussion of these themes and other findings will be discussed in section 6.4.2.

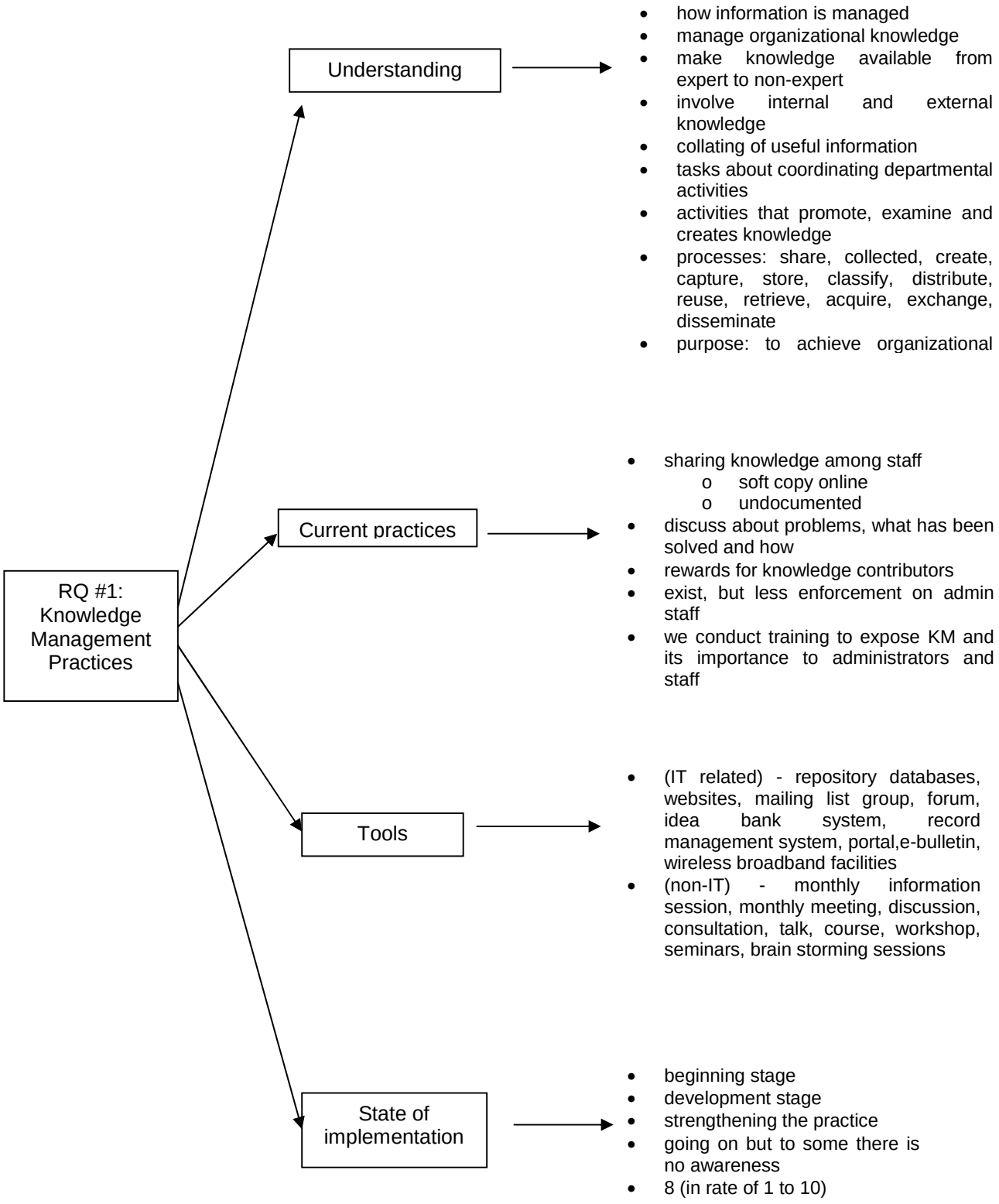


Figure 6.1a: Knowledge Management Practice – themes and findings

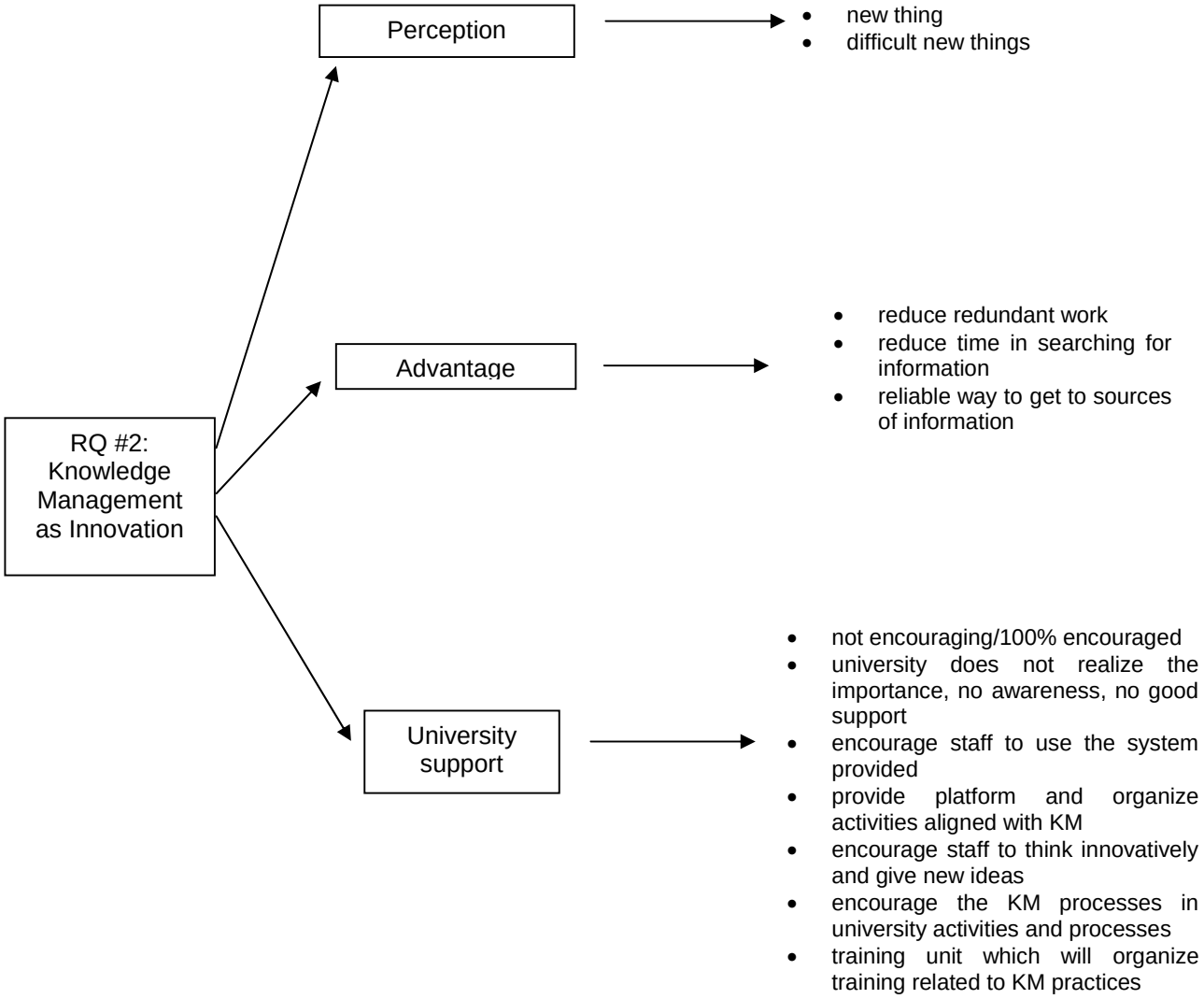


Figure 6.1b: Knowledge management as innovation – themes and findings

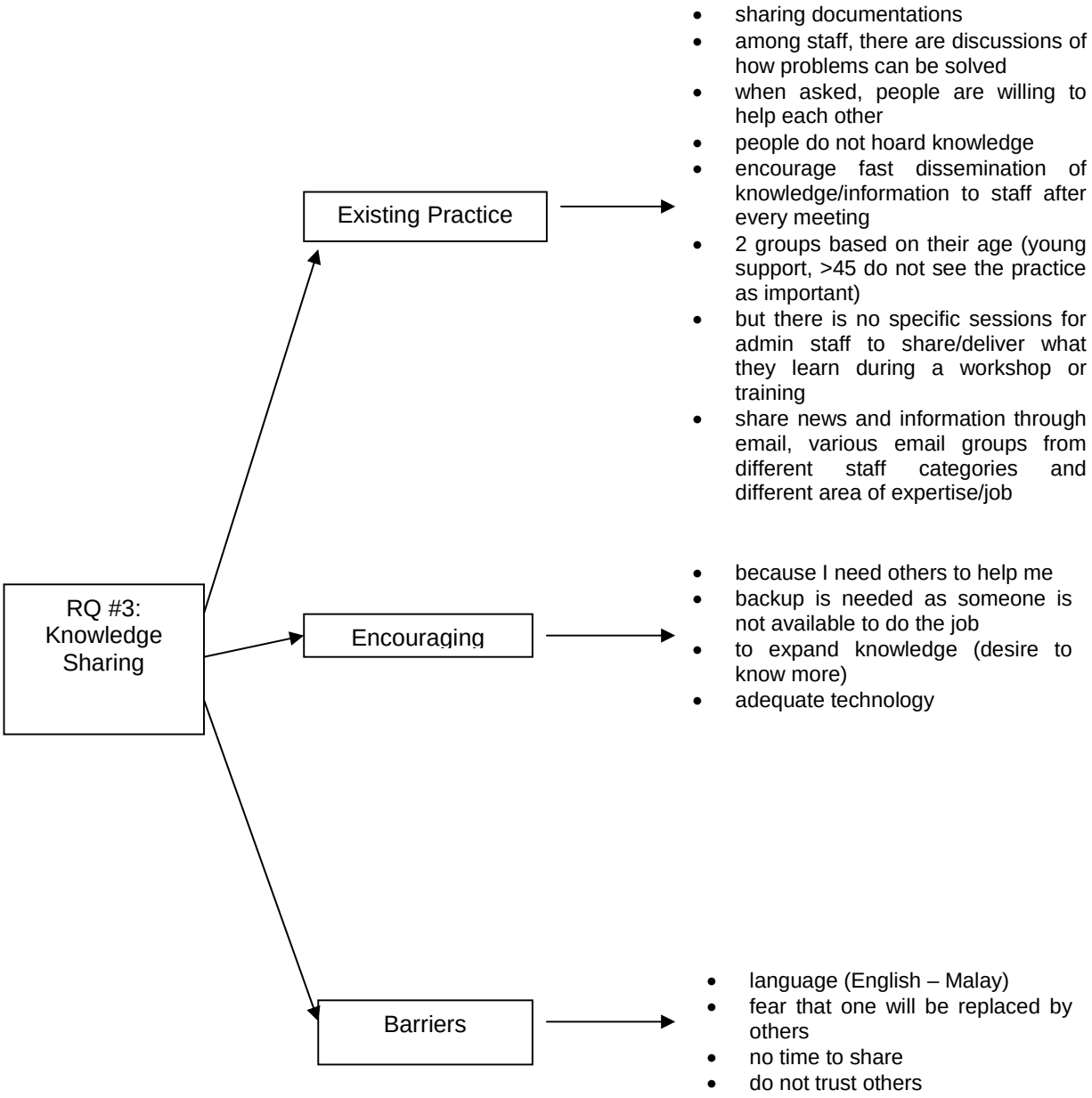


Figure 6.1c: Knowledge sharing – themes and findings

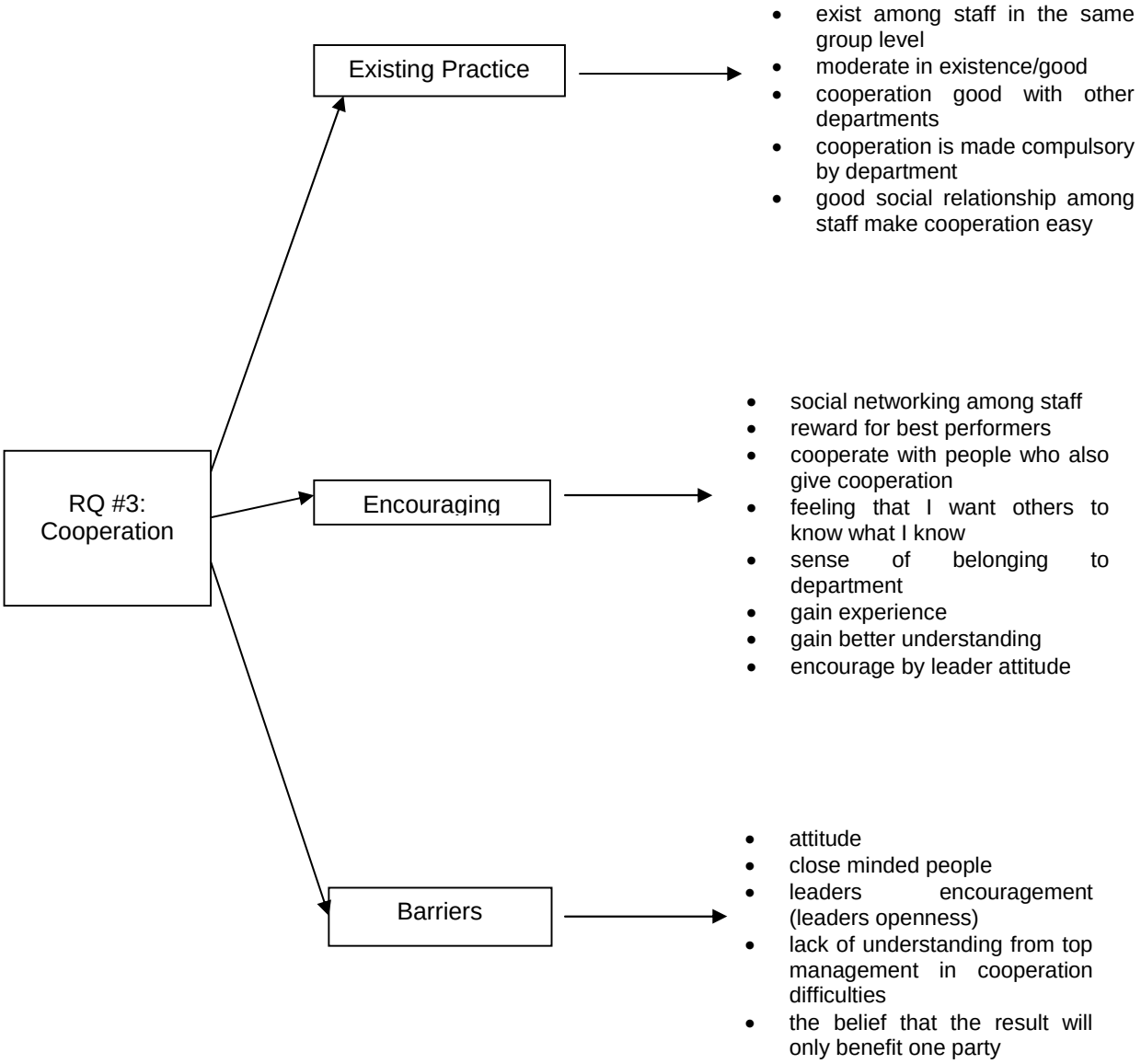


Figure 6.1d : Cooperation – themes and findings

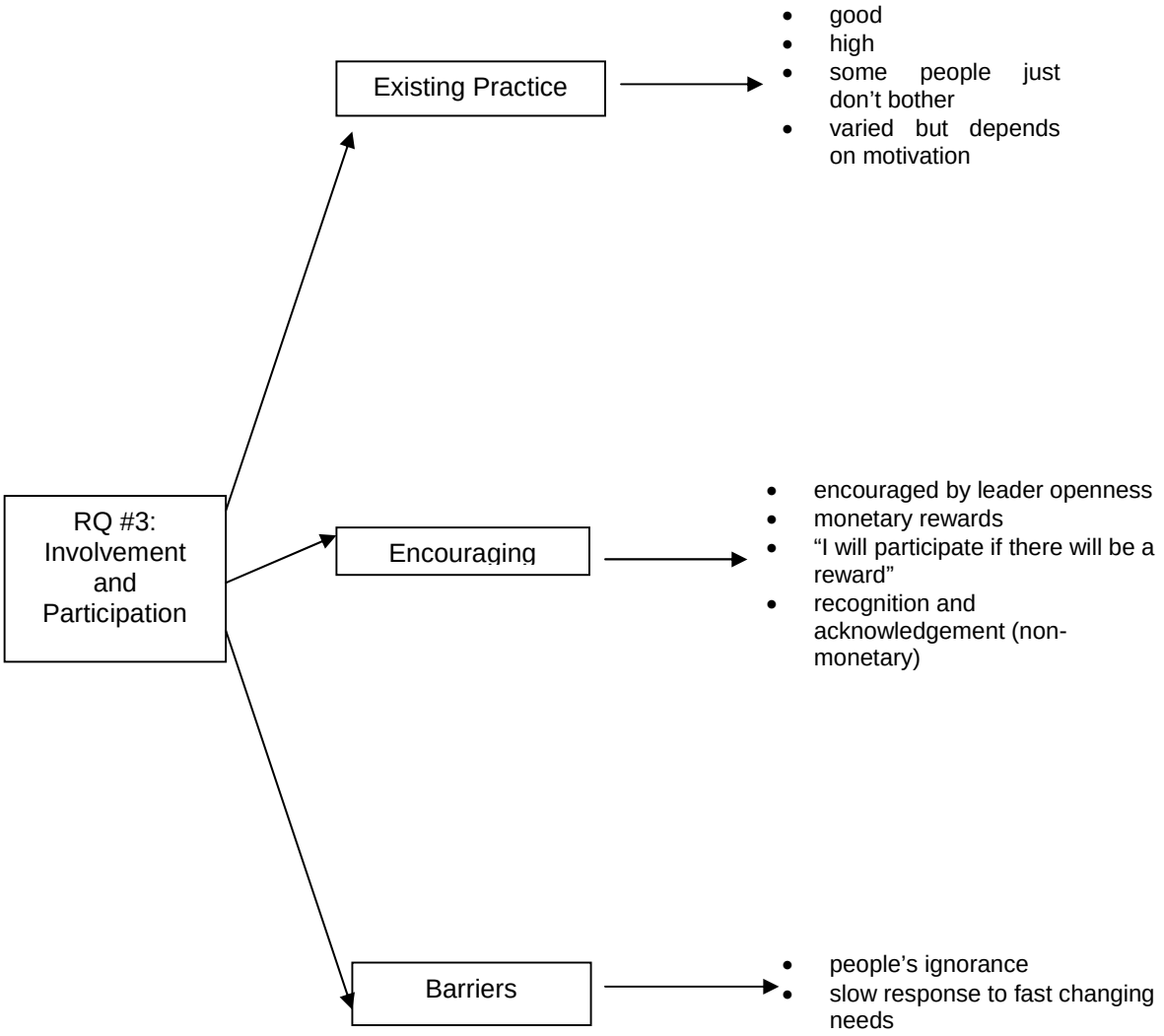


Figure 6.1e: Involvement and participation – themes and findings

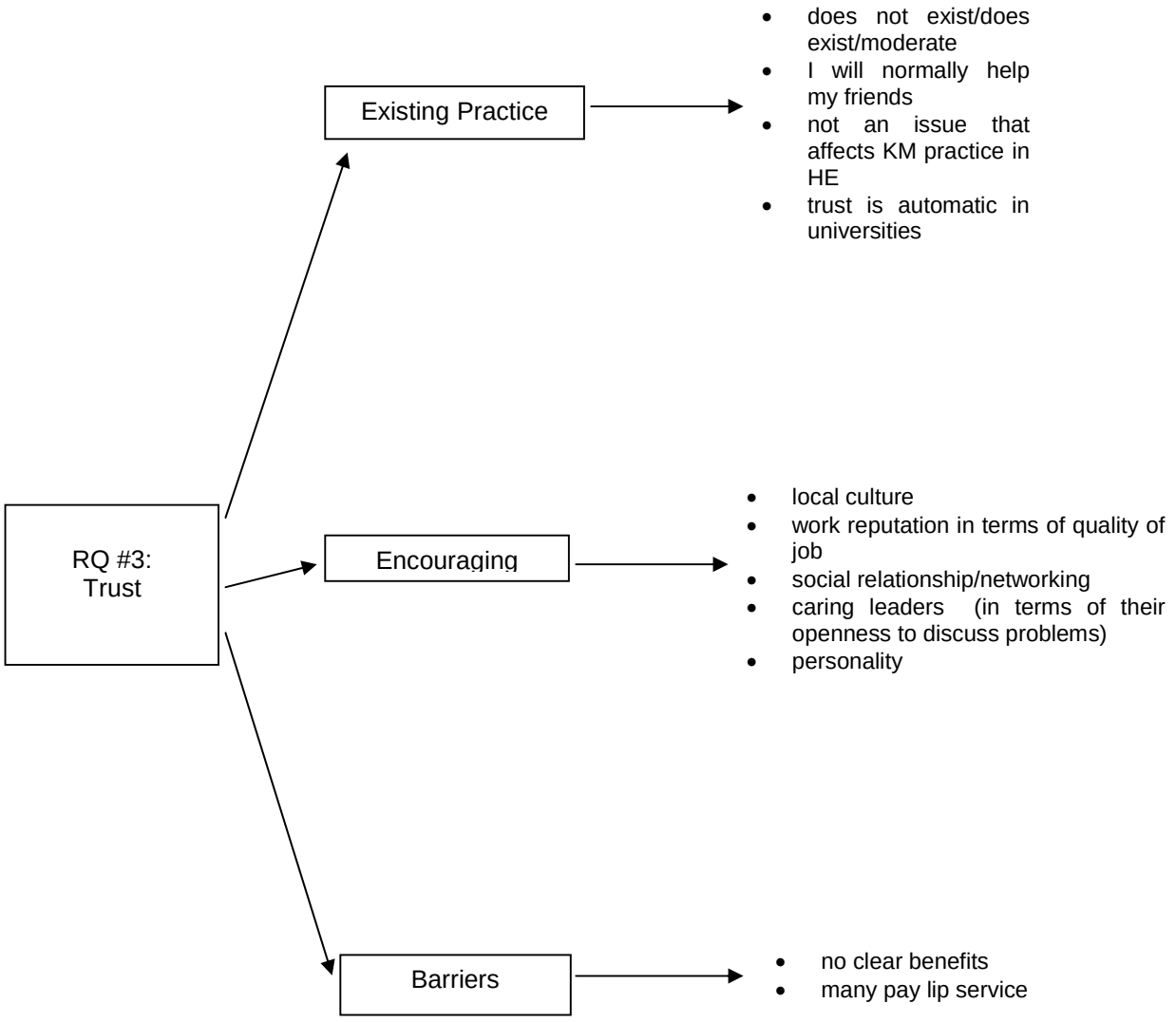


Figure 6.1f: Trust – themes and findings

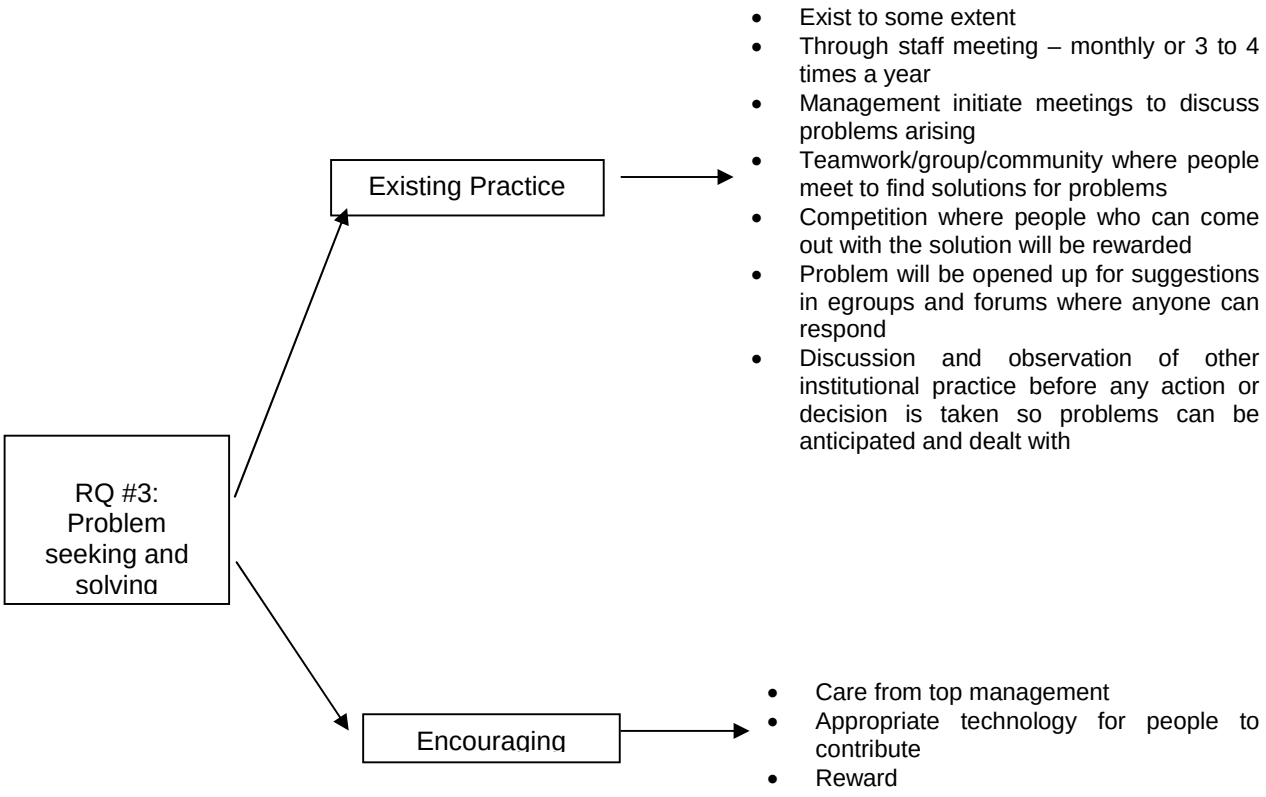


Figure 6.1g: Problem seeking and solving – themes and findings

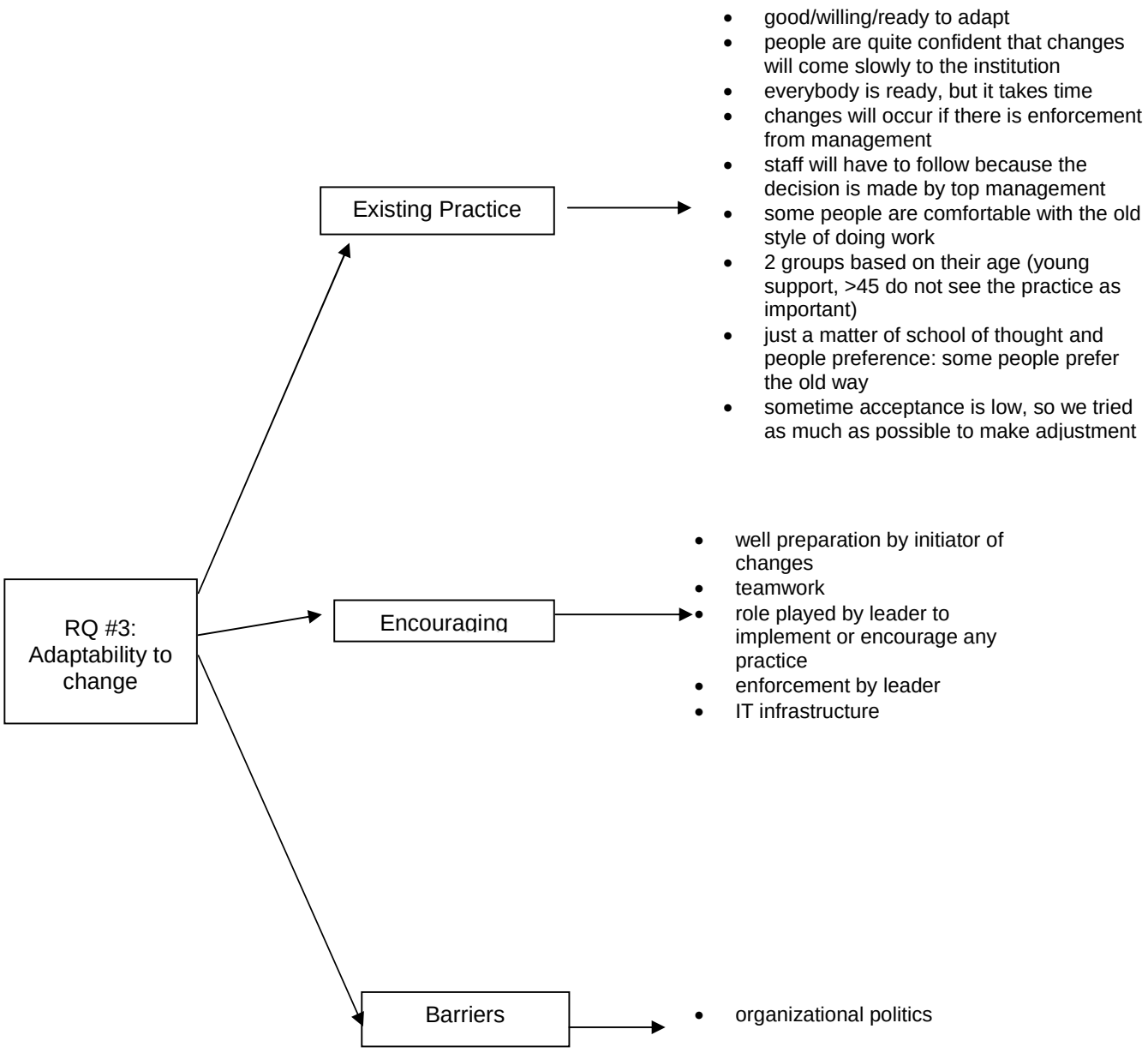


Figure 6.1h: Adaptability to change – themes and findings

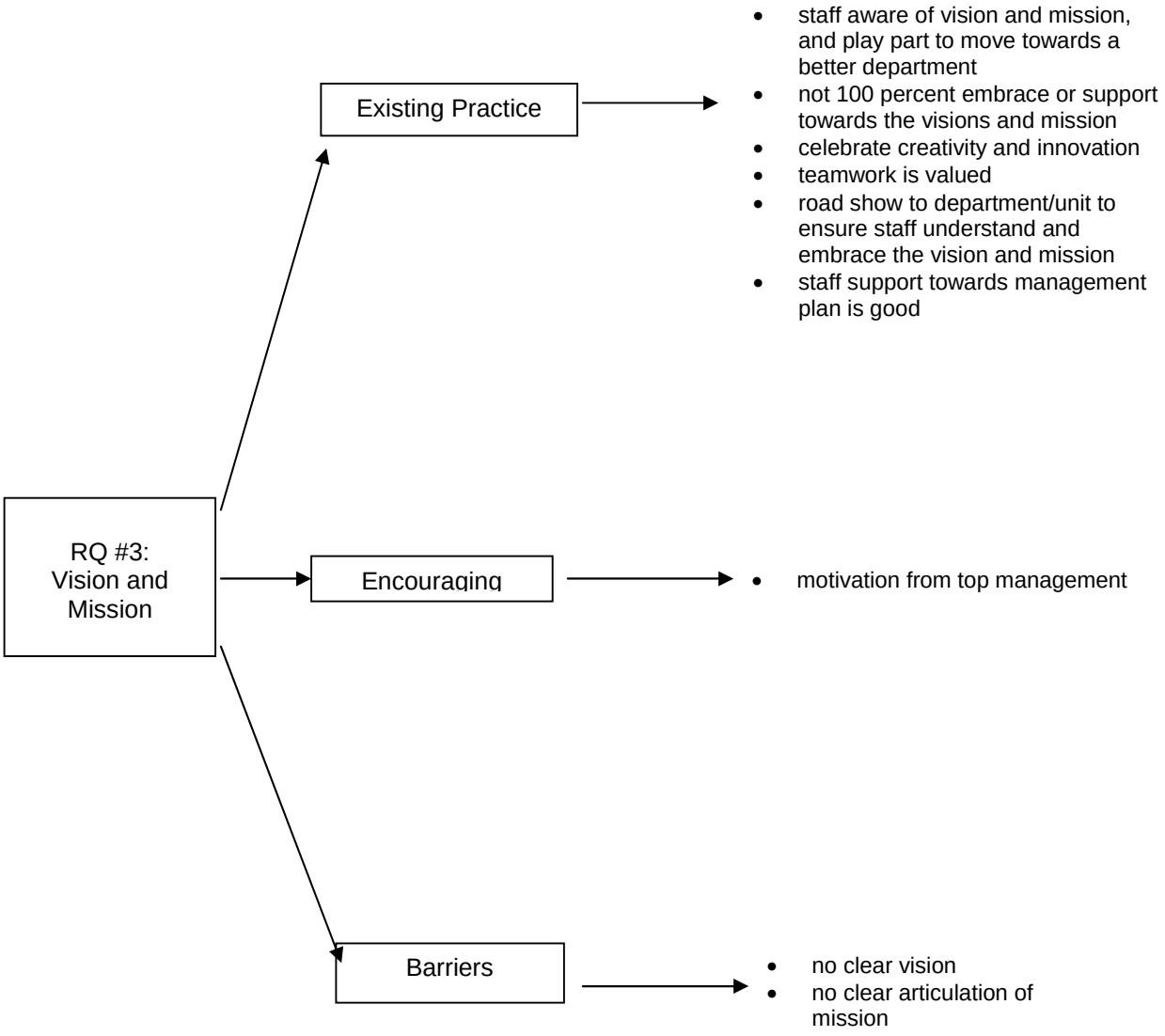


Figure 6.1i: Sense of vision and mission - themes and findings

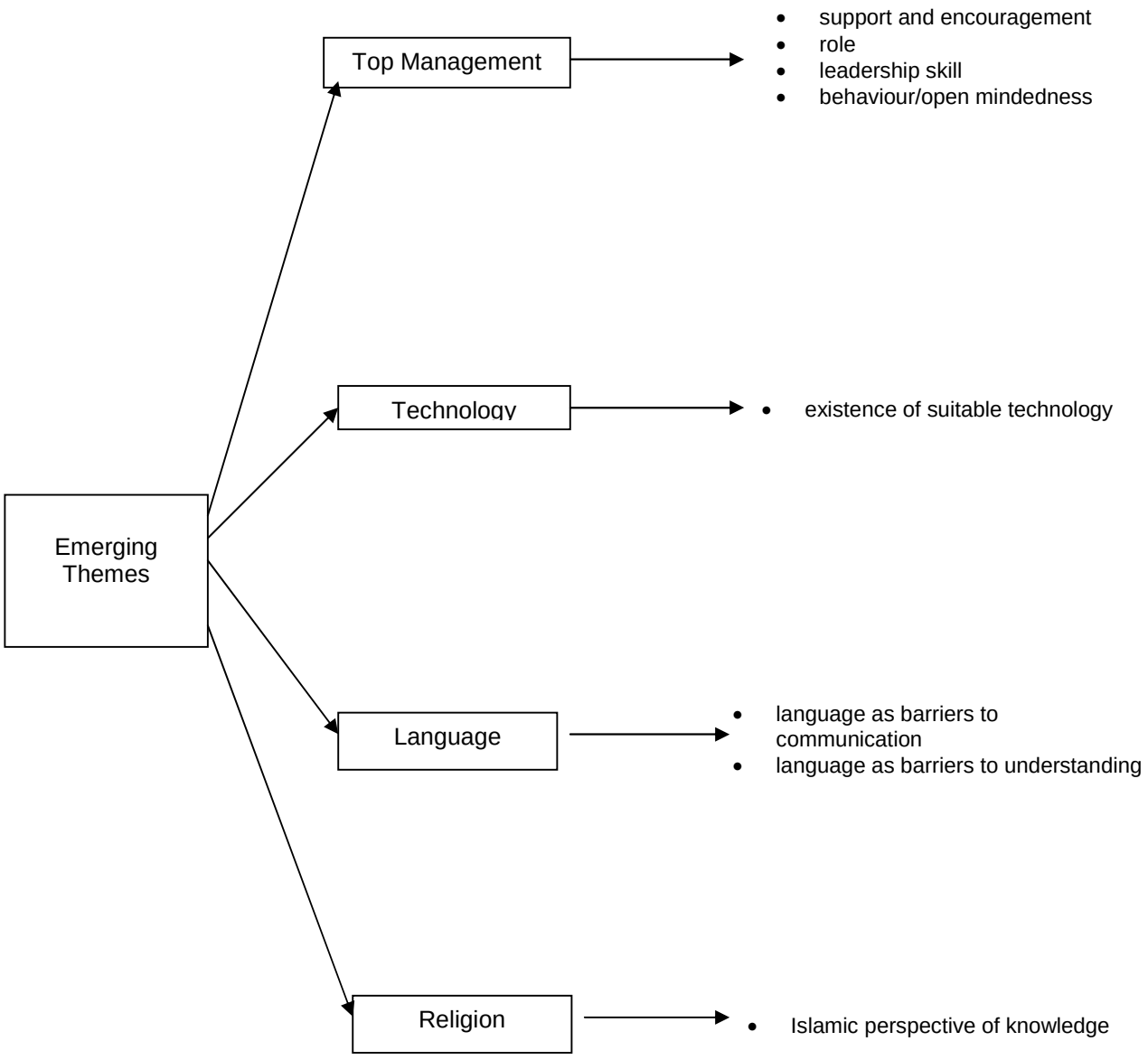


Figure 6.1j: Emerging themes and issues

6.4.2 Findings

a. Knowledge management practices in Malaysian HEI administrative departments

Understanding of knowledge management

Respondents view knowledge management implementation in HEI as a way to manage organizational knowledge in order to achieve business excellence. Knowledge management is used in HEI in order to coordinate the activities between various departments. Knowledge management practices in HEI are also concerned with collecting knowledge either from experts or not, so that it can be used at a later time, as one respondent said:

> *….. later can be retrieved for the right purpose, at the right time and from the right source….*

Interviews with the respondents show that they understand and agree that knowledge management is involved with the processes of creating, storing, sharing, and application of knowledge in the organization. The data collected from the respondents' as a whole show that they describe the knowledge management practices as comprising the following processes: *create, acquire, collect, capture, classify, store, retrieve, distribute, sharing, exchange, disseminate and reuse.*

knowledge sharing

Being asked about the current practices existing in their workplace, most respondents talked about the sharing practices that occur, especially related to their work. One of the administrative staff commented that the sharing occurs among the staff within the same job level. Sharing for her also occurs for documentation (hard copy documents) or discussions on how to solve work-related problems, while sharing soft copies of documents does not really exist. However, a few other respondents commented that soft copies of important documents are available and can be retrieved from the repositories.

tools

Respondents also listed a few tools that exist in helping them share their work or knowledge with others. These tools include the repository systems, which particularly are used for academic purposes, to store

theses and journal articles. Other tools are websites for each faculty and department, mailing groups to assist communication among staff, and forum sites where staff are free to post any suggestions or comments. One of the universities also implemented an Idea Bank System, which is a system used for staff to share their suggestions or comments regarding any issues that may improve the university processes. According to three respondents, good ideas will be rewarded by the university. Other activities that respondents categorized as knowledge management related activities involved meetings, discussions, consultations, talk and workshops where information and knowledge is shared and transferred to others. However, unlike the information sharing session which has commonly been practiced by the academic departments after their participation in any seminar or workshop, the same information sharing sessions do not actually exist for administrative staff.

Meetings are also used to discuss the progress of work and how problems may be solved and this has been a mechanism for top management to deliver information to staff. One of the universities involved in this study was found to make full use of the latest technology (such as wireless facilities and distribution of phone with internet access to staff) so that any decision or message can be delivered faster between them (particularly for management staff). This is reported as being the Vice President's initiative.

State of implementation

Most respondents commented that the knowledge management practices in the administrative departments are in the developmental stage with a lot of opportunities for improvement. However, it was also commented (by staff from two universities) that the practices have been around for some time, but the existence of such practices are not realized by the staff. A knowledge management expert from one university commented that:

> *Every single thing that we do is knowledge management…….You don't have to declare or label that it is knowledge management, it's just that you have to be aware that what you are doing is actually the promotion of knowledge, and examination of knowledge and creation of knowledge.*

b. Behaviour and support towards knowledge management innovation

KM as innovation

Findings from the interviews reveal that three out of five universities have already been implementing knowledge management for quite some time and are in the stage of strengthening their practices. On the other hand, the findings from one university show that the staff are unaware of the existence of such practices. Interviews with three employees (one manager and two staff) from another university show that they agree that knowledge management is still new in their university. This might be because this university is a new university and was established after the year 2000. Results also show that respondents agree that knowledge management practices bring many advantages to the university, however, one respondent indicated that *'knowledge management is a difficult new thing'* and therefore when people perceive it as difficult, it affects staff willingness in supporting the knowledge management practices in their institution.

Being asked about personal support, staff link their support with willingness towards contributing and sharing knowledge with others. One respondent commented that management support exists to some extent – such as emphasizing the importance of sharing knowledge and the use of knowledge as university resources - and is mentioned in the university meetings; however, *there is no implementation as well as enforcement and nothing actually happens after the meeting.* However, staff from another university reported that staff were provided with a platform where activities aligned with knowledge management practices are implemented, such as forum sites for staff to give suggestions and opinions. University staff are also encouraged to think innovatively and provided with the opportunity to come out with new ideas in order to improve the efficiency of university management and processes. It is observed that only respondents from one university indicated that management support towards knowledge management practice is not encouraging, while others indicated that various initiatives have been taken to encourage knowledge management practices in the university.

c. Knowledge sharing culture

Knowledge sharing culture does exist in HEI administrative departments; however, some respondents comments that the culture only occurs among the staff within the same group level and the same department. This is particularly true when it deals with tacit knowledge or staff experiences or knowledge in performing jobs specific to their expertise. Even though sharing of hard copy documentation does exist, and discussion on how an arising problem can be solved does occur in the work environment, a respondent commented that this does not happen to everyone:

> ...*Not everybody feels the heat, some do not know head and tail…*

Another respondent also commented:

> *….I see that everyone is busy doing their own work and did not bother about other people. Sometimes we don't really know what's going on in the campus…..*

However she also commented:

> *….but if we ask for help from others, people are willing to help. People do not hoard knowledge here, but not to the extend that they reveal the details…….if you want to know more, you have to go and find it yourself….*

One respondent mentioned that the meeting and workshop were used as a method where sharing took place, while in another university, an e-group was used as a place where staff can criticise, comment and suggest any ideas. In this university, the respondent commented that the university has an *open management concept* where *anyone can voice out anything to the management.*

Being asked about the respondents' willingness to share, all respondents were willing to share what they know with others for a few reasons:

- they expect others to help them in performing their job

- they believe that a backup person is needed to perform some job in an emergency case, therefore other staff should be knowledgeable about how the other's job is to be done
- they believe that it is important to leave a legacy, and to pass the knowledge to others
- they share with the purpose of learning new things

Despite these good comments on knowledge sharing culture, a knowledge management expert who used to give training to both academic staff and administrative staff commented that the universities are actually having problems with support staff:

> *They are the ones who are not actually practicing knowledge management, they are the ones who are backward and not open. They just do their own work and are not willing to help others.*

A manager from another university acknowledged that such a problem exists, but regards the issue as *human nature.*

The interview also revealed a few barriers identified as hindering the knowledge sharing culture from occurring. These include:

- language, where people prefer the mother tongue language, and sharing of anything in other languages (particularly English) is a problem
- the fears that others might take over their place if they share too much
- no time to share
- insufficient training as training and awareness workshops are only conducted for higher level staff
- low level of trust among staff

In summary, it can be concluded that partial knowledge-sharing does occur in the above institutions. Individuals also engage in knowledge sharing only to the extent that they believe it will be beneficial for them to do so, and that it will not cost their reputation.

d. Cooperative culture

Cooperation culture ranges from moderate to good among administrative staff in HEI. Respondents commented:

> *It depends on individuals, some people are not willing to cooperate with others.*

> *This depends on departments. Some departments are very cooperative, and there are some that are not cooperative at all.*

In dealing with cooperation, the majority of the respondents commented on the importance of the leadership role to make cooperation happen:

> *…..depends on the leaders who head the particular tasks….*

> *…..every leader of the units and department has to educate their own unit….*

> *…..it is made compulsory by the management for staff and managers to be involved in any program organized by the department or university.*

> *….the issue is not the people, but the person who initiates the changes…..they have to be ready and well prepared.*

One of the knowledge management experts indicated that leaders might be one of the factors that hinder staff from cooperating with others:

> *…the leader is the most important person… If their mind-sets are very old fashioned, traditional and closed minded, the unit is far from progressing…*

Respondents commented that they are willing to cooperate with people who are willing to cooperate with them or, as mentioned by one respondent, *given a fair opportunity.* The encouraging factors for staff to cooperate as indicated by respondents include:

- their understanding of the subject matter;
- belief that others need to know what they know;

- their sense of belonging to the unit or department;
- reward factor;
- relationship among staff; and
- encouragement based on leader attitude.

Cooperation culture is also regarded as important since one department is linked and related to another department. Cooperation is also believed to bring real intangible results and achievements.

e. Involvement and participation culture

Results from the interviews on involvement and participation culture in the administrative departments leads to the following observation:

1. some staff regard involvement and participation culture in their university as high and good, with existence of various tools for staff to participate;
2. the involvement and participation culture varies according to staff motivation;
3. the involvement and participation culture depends on the leader – whether they are open minded and willing to accept suggestions from lower level staff.

It is also observed that the leader's openness in accepting staff's suggestions and opinions affects the staff motivation to be involved in and participate in any practices or activities introduced in the department:

> *Once people reject our opinion, we feel demotivated.*

Most of the time involvement and participation in the administrative department is linked with the rewards factor:

> *Rewards in the form of recognition are given to the staff….to show that we acknowledge those who gave ideas. We gave them a bigger platform to contribute…..we make them one of the committee… we make them one of the administrators because we can see their potential.*

One factor that might hinder the involvement and participation culture is people's *ignorance*. One manager commented:

> *People need to keep themselves abreast of what's going on….. There are always opportunities … but it is their own initiative to do that.*

f. Trust culture

The majority of respondents rate trust culture in HEI administrative departments from good to high. One of the respondents also agreed that the willingness to help others depends on the social relationship with other staff. Two of the respondents also relate trust with cooperation:

> *….trust and cooperation come together.*

> *…..trust leads to cooperation among staff.*

In performing knowledge related work in HEI, a few factors were perceived as affecting the level of trust among staff:

- social relationship with others
- quality of job and past reputation of other staff
- local culture among staff
- leadership factor
- personality of others

Some respondents also highlight the importance of gatherings or get-together functions to improve the relationships among staff themselves, as well as with their leaders. These activities further increase the trust level among organizational members. As indicated in Sturdy et al. (2006), the informal setting such as lunches, drinks and dinner are important to facilitate smooth knowledge exchange in organizations.

g. Problem seeking and solving culture

Based on the interview results it is observed that problem solving cultures do exist in the administrative departments of HEI:

> *…post mortem, root cause analysis does exist….*
>
> *… there is a system here….where people will meet in order to find solutions for some kind of problems that arise…..whoever can come out with the solution will be rewarded [by the university].*
>
> *…the management will initiate a meeting to discuss how the problem is to be solved.*
>
> *…we have a lot of workshops to iron out whatever issues coming up.*
>
> *When a problem arises, it does not matter which unit, everyone will give ideas and suggestions how to solve the problem …..and we do help each other in solving problems.*

Problem solving culture is seen as important in order to address the issues arising in the university, as well as a method to create, collect and share ideas with others. According to one of the respondents, the existence of such culture will ensure that a problem can be solved in a short time. One of the universities implemented the Idea Bank System where any new ideas and workable suggestions on how problems can be solved are rewarded by the university. The reward used by this university is a non-monetary award in the form of recognition and staff promotions.

Even though the problem solving culture is quite broadly practiced in the administrative departments of HEI, about half of the respondents brought up the issue that the top management role and leadership are the most important factors for encouraging the problem solving culture among staff. One respondent commented:

> *…. even though the support does exists, sometimes the management are just busy and they don't care. At the end the problem just lies there unsolved.*
>
> *…encouragement to solve problem comes from the top management.*
>
> *…the culture is fairly practiced but depends on who is the head leading the task.*

Despite a good discussion on the problem solving culture during the interview, only one respondent mentioned the problem seeking behaviour in the administrative departments, while others were not sure if this exists in their university.

h. Adaptability to change

The interview results revealed various opinions on the adaptability to change culture in HEI administrative departments. Comfort or familiarity with what people already practice may be a factor in people's reluctance to change. In most situations, the management has to make some practice or implementation compulsory in order to make people change their current practice or adopt a new one. Introducing a new practice in an organization needs well-planned preparation.

One respondent commented:

> *.. the people who start the new initiative must ensure that they prepare enough, because you will get either one of two reactions, people who appreciate you, or people who oppose you….people don't appreciate new things easily…we have to prove to them that this initiative is for their benefit and then slowly they will start to see it…the drivers of the change must be strong.*

One knowledge management expert who gave training to the universities staff restated the importance of leadership:

> *..before this it was my personal struggle as a lecturer and trainer [to bring the awareness of knowledge management] to the staff... but when we have a new vice chancellor who truly believes in knowledge management… we can see the difference…before this, people understand, people acknowledge, but without a push from the management, nothing happens.*

All respondents indicated that they would support change in the department and universities, as they believe changes would improve job efficiency and the way work is done. All respondents also agreed that changes normally bring something new and good for organisational practice. However, one administrative manager commented:

> *Sometimes the acceptance of such changes is quite slow, but we normally tried as much as possible to make some adjustment to make it easier for staff…..*

Another manager commented:

> *It is not that they are difficult to adapt, but slower, especially if you compare to academic staff….*

The same manager regards the adaptability to change as a school of thought. While some staff thought that it is important to move forward by implementing a more efficient way of performing tasks, others felt that they need to maintain the old practices. In relation to the same issue, another manager observed that there are two categories of staff – one consists of those veterans of 45 years of age and above, and another group comprises the younger generation staff. The veteran group is seen to find the old simple style of doing work more convenient and do not see the necessity of embracing the knowledge management concept. However, he also commented that many of the higher position staff are positioned in this category. Therefore, educating this group of staff about the importance of knowledge management practices as well as making them adaptable to changes is necessary because their role involves evaluating and monitoring other low level staff.

i. Sense of vision and mission

It is important for all HEI staff to understand the vision and mission of the institution. These understandings will contribute toward a clear objective and sense of direction, which will be further coordinated in staff's actions. The vision and mission of a university are closely related to its core activities – the teaching and learning, and research activities. However in order to provide a quality service to its customers, that is the students, practices where university service can be enhanced should be implemented and the message should correctly be conveyed to staff so that every organizational member understands their contributions towards achieving the university vision and mission. One of the universities involved in this study indicates their Client's Charter to staff as follows:

- To provide staff with best facilities to aid work procedures
- To give appropriate incentives and opportunities to expand knowledge with justice for staff development and progress

Results from the interviews show that the administrative staff in Malaysian HEIs state that they are aware of their institutions' vision and mission. However, it is observed that the staff support toward the organizational vision and mission varies. While some staff indicated that the support is good, others commented that there was not 100 percent staff member embracement or support for the organizational vision and mission. This factor hence requires further investigation.

j. Other emerging factors

Leadership

Through the interviews, the comments on leadership issues arose from participants in all universities involved in this study. Some of these comments are:

> *[Involvement and participation among staff] will depend on our leader. If the leader is an open minded person, and willing to accept suggestions especially from lower staff, involvement will occur……..If the leader values and accepts our opinion, we feel motivated to participate, otherwise no…..*

> *What makes people contribute, I think is the administrator. I always believe that the leader is the most important person.*

> *When people [leaders] start some new initiative, they must make sure that they prepare enough.*

Most studies on knowledge management argue that leadership is a vital success factor for knowledge management initiatives. It may enable the promotion of knowledge sharing by creating an appropriate organizational culture and making arrangements for policies and procedures across the organization (Burstein, Sohal, Zyngier, & Sohal, 2010). One expert being interviewed commented that:

> *I have been lecturing about knowledge management for staff training for 10 years…..Before this, it was mainly my personal struggle as a lecturer and trainer who provided information….But now, I can see a big difference when we have a new vice chancellor…….When he came in, he immediately changed the whole system and culture, he initiated all sorts of activity which contributes towards changing the culture of knowledge management…..leader is very critical.*

Leadership is recognized as one of the most important enablers of KM (Anantatmula & Kanungo, 2010) and it is clear that top managements or leaders play a critical role in shaping culture because employees will use the priorities set by the management to guide their actions (Ahmed, 1998). The participant's concerns about the leadership issues are apparently important in knowledge management practices. It has been reported in literature that the lack of support from top management became one of the factors hindering knowledge creation and utilization in organizations (Mum Wai & Dominic, 2008).

Leadership is about getting people to work together to make things happen and has been found to play a vital role in steering learning in organizations and encourages a philosophy of continuous improvement based on sharing ideas, trust and experimentation (Pemberton et al., (2002) as quoted in Mum Wai & Dominic (2008)). Researchers have also insisted that top management leadership and commitment are critical factors for a successful knowledge management practice particularly related to knowledge culture and sharing activities (Mum Wai & Dominic, 2008). Two broad tasks of leadership are indicated in Ahmed (1998). First, leaders need to be sensitive to the environment and aware of the impact they have on those around them. Second, the leader must be able to deal with and accept ambiguity since problems cannot be anticipated in advance. This may avoid the culture of blame and allows space for risk taking and exploration of alternative solutions in the organization. A supportive leader will ensure that there are efforts to create a culture that supports knowledge management practices in an organization.

It is however, important to differentiate the roles that managers and leaders play. Leaders provide purpose, direction and behavioural role models, whereas management involves interpreting the enterprise vision

and mission in a way that make sense and resonates with employees (CEN, 2004, p. 18). Knowledge management tasks normally involve guiding people's actions rather than directing. It is also important to note that the failure of top management to signal the importance of knowledge management practices is a major impediment to organizations.

One important finding from the interviews is the observation, which comes from one of the respondents, that the group of staff that are slow in supporting changes in organization, comes from the above-45 age groups. Due to their seniority this means most of them become members of the management staff of the university. Due to this reason, they cannot be neglected and educating them (in terms of their understanding of knowledge management practice) is necessary, as the lack of knowledge or awareness of knowledge management concepts will be a disadvantage to them personally, and potentially to affect the university's performance.

Technology

It is observed that at the beginning of the interview sessions most respondents link their understanding on knowledge management practices with the existing technologies they have for storing and retrieving information and knowledge. They also frequently discuss their opportunity to make use of the technology offered by their university such as forums and email to discuss problems and offer ideas and solutions to issues raised. Despite the good comments indicating that they have proper technology available for them to implement knowledge management systems for administration jobs, they still stressed that the technology equipment is important for such practice to occur.

One of the expert respondents commented:

> *I think culture has to be supported by the technology. People must practice knowledge management through technology…. Culture alone is not enough, especially in our traditional culture …. I think, since our university is technology oriented, that is what makes our movement towards knowledge management faster compared to other university.*

It is acknowledged that technology is one of the enablers for knowledge

management practice in organizations. However, Duffy (2000) and Masterson et al. (2000) stated that the availability of knowledge management tools do not necessarily motivate employees to engage in knowledge management processes. Banks (1999) indicates that technology does help gather, analyze and disseminate information; however, only humans can successfully interpret and exploit it. In addition, Mum Wai and Dominic (2008) opine that KM is linked to soft issues and technology is part of the process of utilizing the creative and innovative capacity of human beings. The author agrees with Bank (1999) and Mum Wai and Dominic (2008), that knowledge management implementation is linked closely to people factors, and that justifies why this study is conducted. Further, technology is stated as contributing to 25% of the equation to a successful knowledge management strategy (Dubois & Wilkerson, 2008).

Adopting a new technology in organizations is also closely related to people's adaptability to change. Since the technology implemented is new, it is important for the organization to educate the staff in how to use the technology. One of the respondents indicated that the technology introduced by the university is difficult to use by staff, hence resulted in less usage. The experience of using the technology provided may also affect the cultural norms in an organization. CEN report (CEN, 2004, p. 31) indicates, depending on the experience of the individuals, if the experience is beneficial then the culture is enhanced. Otherwise, if the experience is frustrating and appears to be more difficult than the existing methods, then it will be seen as detrimental.

There are a few studies which have been conducted on the knowledge management system for universities, however, existing studies are more theoretical in manner rather than empirical. It is therefore important to conduct empirical research to study the extent to which adequate technology is in place for Malaysian universities to implement the knowledge management practices, as well as investigating how universities make the transition from the existing practice to the use of the new technology easier for their staff.

Language

There were a few respondents of this study who indicated that language became a barrier for staff to support knowledge management. The most common statement coming from the staff is that language became a *barrier to communication* and *barrier to understanding.*

The majority of public university staff in Malaysia are Malays and are conveniently using Malay as their medium of communication. In relation to knowledge management concepts, a lot of research studies on knowledge management are found in English. Delivering the importance of knowledge management to staff in English language might create some misunderstanding either in terms of people's interpretation or in terms of the understanding itself. On the other hand, delivering the knowledge management concept in Malay, will make the absorption of some knowledge management terms difficult especially when it deals with translation of terms. Therefore even though employees realize the importance of knowledge management implementation to their organization, due to the language factor, the instructions might be understood differently, and the difficulty in understanding will lead to ignorance of KM importance.

Since, there is a growing number of researchers in the area of knowledge management in recent years, it might be important for these researchers to publish their work in Malay. This will make the concept of knowledge management more easily understood and absorbed in Malay. The richness of the Malay literature itself will contribute to the effectiveness of delivering the message of knowledge management practices to higher education staff. How far and important language factors are in contributing to knowledge management practices in higher educational institution in Malaysia is subject to further studies and investigations. The author views these issues as an opportunity for future research.

Religion

Religion is also one factor that is being associated with the necessity to share and distribute knowledge in organization. Since most Malaysian public universities staff are Malays whose religion is Islam, few respondents of the study relate the existing practice with their religion. They indicated that knowledge is a fundamental principle of Islam and further added that distributing and sharing knowledge is a good deed promoted by their religion and that the act of story telling was also demonstrated in their religion. Whether or not religion is a factor affecting people's willingness to practice knowledge management from a cultural perspective is viewed as another opportunity for future research.

6.4.3 Questionnaire development

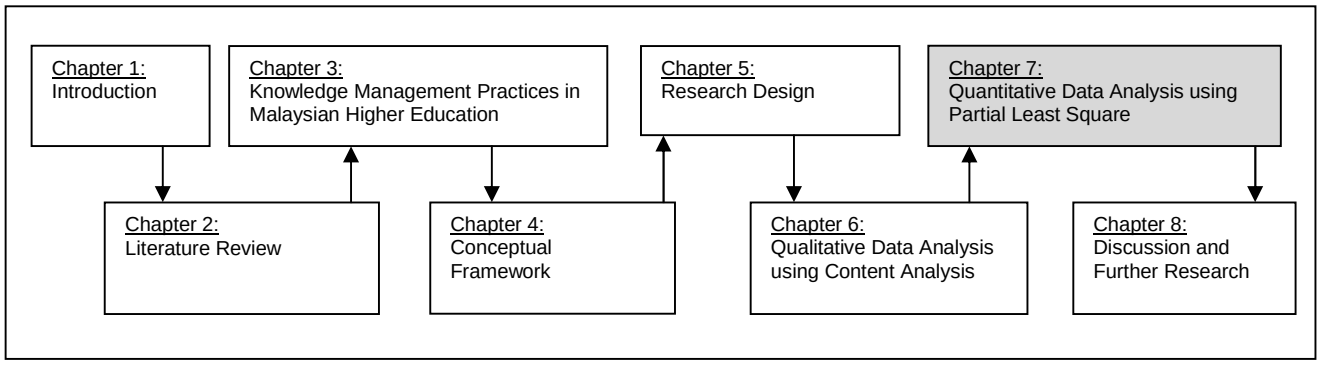
These cultural factors obtained from the interviews were used to guide the development of a questionnaire for the quantitative phase of this study. These findings were combined with the cultural factors used to develop the conceptual model explained in Chapter 4. The quantitative phase of the study was used to investigate the relationship between the cultural factors and to show whether the data collected from the respondents in Malaysian higher education's administrative departments align well with the model developed. The process of the questionnaire development from the qualitative findings will be discussed in Chapter 7.

6.5 Chapter Summary

This chapter presents the results obtained from the qualitative data collection. The data collection was conducted by using the key informant interview method and the data were analysed by using a thematic analysis approach. The chapter presents the themes obtained from the interviews which addressed the research questions of the study. Emerging themes from the interview were also discussed.

7 Quantitative Data Analysis using Partial Least Squares

Thus, the task is not so much to see what no one has yet seen, but to think what nobody has yet thought, about that which everybody sees
(Edwin Schrodinger 1887 – 1961)



7-1 Introduction

This chapter will address the quantitative phase data collection and analysis using the component-based Structural Equation Modeling method. Following suggestion by Small (2009), a well-selected interview alone will not be sufficient for the purpose of generalizing the result of the study to a large population, and hence a survey is needed. Therefore, to accommodate this, a mixed methods research approach was used in this study, whereby an online survey followed the interviews that have been conducted (as discussed in Chapter 6). The quantitative stage of the study sought to answer the following research question:

Do the seven cultural factors (knowledge sharing, cooperation, involvement and participation, trust, problem seeking and solving, adaptability to change, and, vision and mission) affect the knowledge management practices in the administrative departments of the public universities in Malaysia?

Sixteen hypotheses were developed to investigate the relationship of the above factors with Knowledge Management Practices, as well as the relationship among these factors (discussed in detail in Chapter 4). This chapter will provide an overview of the Structural Equation Modeling (SEM) method, contrasting the covariance-based SEM with component-based SEM, and provides justification for the choice of component-based SEM in this research. The chapter will further discuss how the instrument was developed and provides details on the data collection and sampling process, and finally presents the result of the analysis.

7-2 Structural Equation Modeling and Partial Least Squares

Structural Equation Modeling (SEM) has become a widely used tool in explaining theoretical models within the social and behavioural sciences (Worthington & Whittaker, 2006). This section will provide an overview of the structural equation modelling method by distinguishing the two different techniques of SEM: covariance-based SEM and component-based SEM. Following this, the section will discuss the suitability of Partial Least Squares (PLS) as a modelling method categorized under component-based SEM, to be implemented in this research, as well as the advantages of PLS in contrast to a covariance-based SEM (CBSEM) approach. The section further outlines the evaluation to be conducted for PLS analysis.

7.2.1 SEM: Covariance-based SEM vs Component-based SEM

Structural equation modelling is a statistical technique used for testing and estimating causal relationships using a combination of statistical data and qualitative causal assumptions. It is an “a priori” technique where theory drives the development of the model. SEM is a technique that models concepts as latent or unobserved variables that are indirectly inferred from multiple observed measures (also termed indicators or manifest variables) (Chin, 1998a). The use of SEM has also become an important method in *validating instruments and testing linkage between constructs* (Henseler, Ringle, & Sinkovics, 2009) to test whether a specified model supports or rejects theoretical assumptions with empirical data (Haenlein & Kaplan, 2004).

SEM can also be thought of as a hybrid method combining factor analysis and path analysis (Weston & Gore, 2006). In this context, SEM’s goal is similar to factor analysis, that is to provide a parsimonious summary of interrelationship among variables. On the other hand, SEM is also similar to path analysis whereby the researchers can test hypothesized relationships between constructs. This is why SEM is structured as having two primary components, the measurement model and the structural model.

SEM applications can be distinguished into two techniques, i.e. the covariance-based technique (CBSEM such as the one represented by AMOS or LISREL), and, the component-based technique represented by Partial Least Squares (PLS) path

modelling (Henseler, et al., 2009). Covariance-based techniques (CBSEM) can be considered as a generalisation of path models such as principal components analysis and factor analysis. CBSEM is usually used to validate a model, while the component-based techniques known an Partial Least Squares (PLS) is a partial information method that mainly uses the score computation method to estimate the structural equations (Tenenhaus, 2008).

This study uses the Partial Least Squares (PLS) modelling method which is known as a family of alternating least squares algorithms which extend principal component and canonical correlation analysis (Henseler, et al., 2009).

7.2.2 Partial Least Squares (PLS)

PLS path models are defined by two sets of linear equations: the inner model and the outer model (Henseler, et al., 2009). The inner model (also referred to as structural model) specifies the relationships between unobserved or latent variables, whereas the outer model (also referred to as measurement model) specifies the relationships between a latent variable (unobserved variables) and its observed or manifest variables. In referring to these models, this thesis uses the common terms referred to in SEM articles, i.e. structural model and measurement model. Figure 7.1 shows the representation of the structural model and measurement model in PLS analysis.

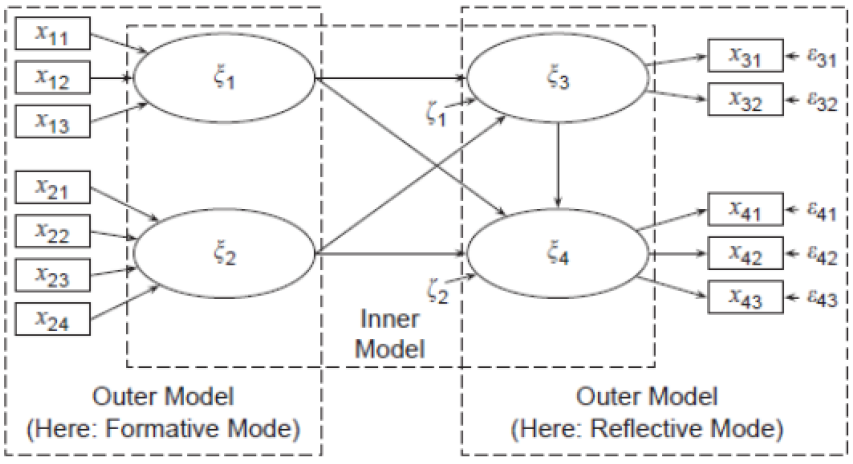


Figure 7.1: An example representing PLS path model (Adapted from Henseler et al. (2009))

In general, indicators in a model can be divided into two groups, reflective indicators and formative indicators. Reflective indicators are dependent on the construct, while

the formative ones cause the formation of, or changes in, the unobservable variables (Bollen & Lennox, 1991). In a reflective model, the latent (or unobserved) variables give rise to the observed indicators, while in formative models, the constructs (unobserved variables) are perceived as explanatory combinations of all indicators (Haenlein & Kaplan, 2004). PLS path models support both kinds of variables in its measurement model.

In contrast to covariance-based SEM, the PLS method demands fewer requirements and nevertheless delivers consistent estimation results. The main four issues discussed by Henseler et al. (2009) of what makes PLS method a popular choice among researchers include:

Why PLS

1. **The ability of PLS models to deal with both reflective and formative indicators.** While the use of CBSEM method has been found to lead to a number of incorrect specifications with formative measurement models, the PLS path modelling algorithm allows the employment of both reflective and formative indicators in the same model (Gotz, Liehr-Gobbers, & Kraft, 2010). (Diamantopoulos & Winklhofer, 2001). This means that the PLS model is suitable for theory development as well as explorative analysis (Gotz et al., 2010).

   The author has also tried to conduct the analysis using CBSEM with AMOS software, however since the author's model includes a formative model, additional requirements needed to be added to the CBSEM model for the analysis to be performed correctly. Based on this limitation the author opines that PLS is more capable in analysing the proposed model.

2. **PLS is found to be suitable for use with small sample sizes**. Chin and Newsted (1999) indicate that the PLS method best suits studies with small sample sizes. Barclay, Higgins & Thompson (1995) and Chin (1998b) suggesting that the 'rule of thumb' for PLS sample size is to use ten samples per indicator, while study by Sathye (1999) highlighted that most experienced researcher would consider a sample size between 200 to1000. This study comprises 37 indicators and has obtained 351 samples for the online survey. Considering the

above guideline, the sample acquired is considered sufficient for PLS analysis.

3. **PLS path modelling can be used when distributions are highly skewed**. Based on Bagozzi (1994), PLS path modelling is also used to analyse data with highly skewed distributions. Before the analysis was conducted, the skewness of the collected data was tested. It was found that the sample data were somewhat skewed, which justifies that the PLS method better suits the data rather than the CBSEM approach.

4. **PLS models support complex models**. It is also indicated that PLS models are able to support a complex model with many latent and manifest variables without leading to estimation problems (Wold, 1985). Even though the proposed model is not complex, having 37 indicators would make PLS model one of the best options for the data analysis.

PLS method is suitable for research focussing on exploratory models and theory development (Bulgurcu, & Bensabat, 2009). Since this thesis explores the existing theory developed on knowledge management practices which are mostly cited in the western literature, the exploratory nature of the research is seen as a suitable fit for a PLS analysis method. This research explores whether the KM practice theory developed, based on the western environment, also applies to the Malaysian higher educational context.

7.2.3 Evaluation of PLS Analysis

The evaluation of the PLS model quality follows a two-step process (Chin, 1998b; Gotz et al., 2010; Henseler et al., 2009): 1) the evaluation of the measurement model, and; 2) the evaluation of the structural model. The evaluation of the reflective and formative measurement model should be done separately, followed by the assessment of the structural model. At the beginning of the process, the evaluation of PLS estimates reveals the reliability and validity of the measurement model (both reflective and formative model). The structural model is evaluated when the latent variables scores show evidence of sufficient reliability and validity (Henseler et al.,

2009). These processes are pictured in Figure 7.2 and will be described in detail below.

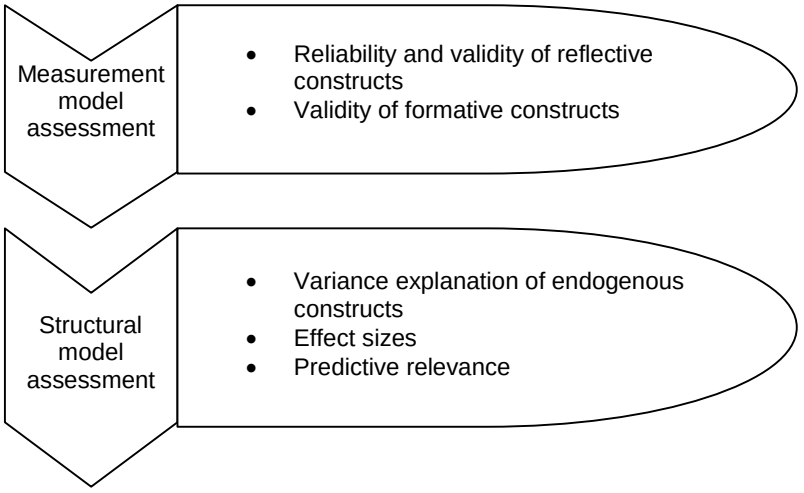


Figure 7.2: A two-step process of PLS path model assessment (Adapted from Henseler et al. (2009))

7.2.4 Evaluating Reflective Measurement Model

Internal consistency reliability

The common criterion used to assess the reliability of the model is by checking the internal consistency reliability (Henseler, et al., 2009). The internal consistency reliability is measured based on the Cronbach's alpha value, which provides the estimate of the reliability based on the indicator intercorrelations (Henseler et al., 2009). However, it is also argued by some researchers that the Cronbach's alpha value tends to provide a severe underestimation of the internal consistency measures, and therefore composite reliability (CR) reading is often suggested and regarded as more important than Cronbach's alpha in measuring the internal consistency reliability (Henriksen & Pedersen, 2007; Henseler et al., 2009). An internal consistency reliability value above 0.7 is generally accepted as satisfactory, whereas values below 0.6 indicate a lack of reliability.

Composite reliability > 0.7

Another measure of reliability is to assess the indicator reliability. The indicator reliability shows the absolute correlation between a construct and each of its indicators. The indicator reading (also refers to the factor loading of the construct) of 0.6 and higher is acceptable (Henseler et al., 2009). Some researchers recommend eliminating the reflective indicators if their outer standardized loadings are smaller than 0.4 (Gotz et al., 2010; Henseler et al., 2009). However, Henseler et al. (2009)

Indicator reliability > 0.6

reminded us that only if the indicator's reliability is low and eliminating this indicator is going along with a substantial increase of composite reliability, does it make sense.

Convergent validity

AVE > 0.5

Following the assessment of the model's reliability, the validity of the measurement model is assessed. There are two types of validity that are usually examined in PLS research, the convergent validity and the discriminant validity. Convergent validity signifies that a set of indicators represents one and the same underlying construct, which can be demonstrated through their unidimensionality (Henseler et al., 2009). It is based on the correlation between responses obtained by maximally different methods of measuring the same construct (Gotz et al., 2010). Some researchers argue that indicators of a reflective construct can be treated as different methods to measure the latent construct (Gotz et al., 2010). Fornell and Larcker (1981, p. 45) suggest using the Average Variance Extracted (AVE) as a criterion of convergent validity. An AVE value of at least 0.5 indicates sufficient convergent validity, which means that a latent variable is able to explain more than half of the variance of its indicators on average (Gotz et al., 2010).

Discriminant validity

Another evaluation of measurement model validity is the discriminant validity, which is defined as the dissimilarity in a measurement tool's measurement of different constructs (Gotz et al., 2010). The validity indicates the extent to which a given construct is different from other constructs and addresses the potential problem of having measures for one construct overlapping the conceptual territory of another construct (Uddin, Quaddus, & Islam, 2010). The condition used to evaluate discriminant validity is that the shared variance between the latent variable and its indicator should be larger than the variance shared with other latent variables (Gotz et al., 2010). Fornell and Larcker (1981, p. 46) indicate that the discriminant validity of a construct is proven, if the AVE of each latent variable is greater than the latent variable's highest squared correlation with any other latent variable. Another liberal criterion used to assess discriminant validity is by examining the loading of each indicator (Henseler et al., 2009). The discriminant validity is acceptable if the loading of each indicator for its construct is greater than all of its cross-loadings for other constructs (Gotz et al., 2010; Henseler et al., 2009).

Table 7.1 summarizes the criterion used to assess a reflective measurement model. The table was adopted from Henseler et al. (2009).

Criterion	Description
Composite reliability (ρ_c)	$\rho_c = (\sum \lambda_i)^2/[(\sum \lambda_i)^2 + \sum Var(\varepsilon_i)]$, where λ_i is the outer (component) loading to an indicator, and $Var(\varepsilon_i) = 1 - \lambda_i^2$ in case of standardized indicators. The composite reliability is a measure of internal consistency and must not be lower than 0.6.
Indicator reliability	Absolute standardized outer (component) loadings should be higher than 0.7.
Average variance extracted (AVE)	$AVE = (\sum \lambda_i^2)/[\sum \lambda_i^2 + \sum Var(\varepsilon_i)]$, where λ_i is the component loading to an indicator and $Var(\varepsilon_i) = 1 - \lambda_i^2$ in case of standardized indicators. The average variance extracted should be higher than 0.5.
Fornell–Larcker criterion	In order to ensure discriminant validity, the AVE of each latent variable should be higher than the squared correlations with all other latent variables. Thereby, each latent variable shares more variance with its own block of indicators than with another latent variable representing a different block of indicators.
Cross-loadings	Cross-loadings offer another check for discriminant validity. If an indicator has a higher correlation with another latent variable than with its respective latent variable, the appropriateness of the model should be reconsidered.

Table 7.1 Assessing Reflective Measurement Models (Adopted from Henseler et al. (2009))

7.2.5 Evaluating Formative Measurement Models

Formative measurement models reverse the direction of causality in the latent variable. The causality reversal demands a different interpretation and evaluation of the measurement model. Traditional validity assessments and classical test theory do not apply to manifest variables that are used in formative measurement models and the concepts of reliability (i.e. internal consistency) and construct validity (i.e. convergent and discriminant validity) are not meaningful when a formative mode is employed (Henseler et al., 2009). Due to the assumption of error-free measures in formative measurement models, as well as the fact that the formative indicators do not have to be correlated, the assessment of model reliability makes little sense and becomes less important (Gotz et al., 2010; Henseler et al., 2009). This therefore makes it more pivotal for the validity measures to be secured (Henseler et al., 2009).

Formative indicators are best referred to as weight rather than factor loading as they are compared to determine their relative contribution to the relevant construct. These indicator's weights are compared to determine which indicators contribute most substantially to the construct (Gotz et al., 2010). Formative indicator weights are frequently smaller than reflective item loadings (Gotz et al., 2010). The PLS approach optimises the indicator's weight to maximize the explained variance of the dependent

variable in the model (Gotz et al., 2010). Therefore the small absolute weight of the formative construct should not be misinterpreted as a poor measurement model (Chin, 1998b, p. 307; Henseler et al., 2009). As theoretical and conceptual considerations have led to these indicators being assigned to the construct, indicators with small loadings should not be eliminated as is always done with a reflective measurement model. Since formative indicators do not have to be correlated, an elimination of indicators with small weight could lead to an omission of a substantial part of the latent construct (Bollen & Lennox, 1991; Jarvis, Mackenzie, & Podsakof, 2003).

Multicolinearity

VIF < 10

Another condition is used to evaluate whether the formative indicator should be removed or not. Formative indicators should be checked for multicolinearity, which indicates the indicator's degree of linear dependency (Gotz et al., 2010). The term colinearity implies that two variables are near perfect linear combinations of one another (UCLA, 2010). When more than two variables are involved it is often called multicolinearity, although the two terms are often used interchangeably. The primary concern is that as the degree of multicolinearity increases, the regression model estimates of the coefficients become unstable and the standard errors for the coefficients can get wildly inflated (Gotz et al., 2010; UCLA, 2010). The Variance Inflation Factor (VIF) is used as a metric to evaluate multicolinearity and is calculated as the inverse of the tolerance value (Gotz et al., 2010). The term VIF is derived from the fact that its square root is the degree to which the standard error has been increased due to multicolinearity (Gotz et al., 2010). There is no threshold value for VIF; however, as a rule of thumb, the VIF should not exceed the value of 10 (Gotz et al., 2010; Henseler et al., 2009).

7.2.6 Evaluating Structural Model

R^2 >=0.10

Structural model covers the relationship among the hypothetical constructs (Gotz et al., 2010). The essential criterion in assessing the structural model is the coefficient of determination (R^2) of endogenous variables (Henseler et al., 2009). The determination coefficient reflects the level or share of the latent construct's explained variance and therefore measures the regression function's goodness of fit against the empirically obtained manifest items (Gotz et al., 2010). Falk and Miller (1992) recommended that R^2 must be at least 0.10 in order for the latent construct to be deemed adequate. Chin (1998b) describes the R^2 values of 0.67, 0.33 and 0.19 as substantial, moderate and weak. If the inner path models explain only a few

exogenous latent variables, moderate R^2 is acceptable (Henseler et al., 2009). However, if the endogenous variables rely on several exogenous variables, the R^2 must at least be substantial (Henseler et al., 2009).

Effect size (f^2)

Another new paradigm in reporting the success factor is by evaluating the sum of direct effect and all indirect effects of a particular latent variable on another (Albers, 2009; Henseler et al., 2009). This new paradigm copes with the observation that the standardized inner path model coefficient declines with an increased number of indirect relationships, especially when mediating latent variables have a suppressor effect on the direct path (Henseler et al., 2009). This makes the direct relationship become insignificant after including indirect relationships. In this situation, the total effect provides more reasonable grounds for conclusion of the inner path model relationships (Henseler et al., 2009). The effect size (f^2) can be calculated as the increase in R^2 relative to the proportion of variance of the endogenous latent variable that remains unexplained. The value of f^2 of 0.02, 0.15 and 0.35 signify small, medium and large effects respectively (Chin, 1998b; Henseler et al., 2009).

Stone Geisser's Q^2 >=0

Another assessment of the structural model involves the capability to predict (Gotz et al., 2010; Henseler et al., 2009). The measure of predictive relevance is the Stone-Geisser's Q^2, which can be obtained by performing the blindfolding procedures (Gotz et al., 2010; Henseler et al., 2009). Blindfolding procedure is only applied to endogenous latent variables that have a reflective measurement model operationalization (Henseler et al., 2009). If the value of the Q^2 is larger than zero, its explanatory variable provides predictive relevance, otherwise the model cannot be granted predictive relevance (Gotz et al., 2010; Henseler et al., 2009). The predictive relevance can be assessed based on the values of 0.02, 0.15 and 0.35 that reveal a small, medium, or large predictive relevance respectively (Henseler et al., 2009). Table 7.2 summarizes the criteria used to assess structural models.

Criterion	Description
R^2 of endogenous latent variables	R^2 values of 0.67, 0.33, or 0.19 for endogenous latent variables in the inner path model are described as substantial, moderate, or weak by Chin (1998, p. 323).
Estimates for path coefficients	The estimated values for path relationships in the structural model should be evaluated in terms of sign, magnitude, and significance (the latter via bootstrapping).
Effect size f^2	$f^2 = (R^2_{\text{included}} - R^2_{\text{excluded}})/(1 - R^2_{\text{included}})$; values of 0.02, 0.15, and 0.35 can be viewed as a gauge for whether a predictor latent variable has a weak, medium, or large effect at the structural level.
Prediction relevance (Q^2 and q^2)	The Q^2 is calculated based on the blindfolding procedure: $Q^2 = 1 - (\sum_D \text{SSE}_D)/(\sum_D \text{SSO}_D)$. D is the omission distance, SSE is the sum of squares of prediction errors, and SSO is the sum of squares of observations. Q^2-values above zero give evidence that the observed values are well reconstructed and that the model has predictive relevance (Q^2-values below zero indicate a lack of predictive relevance). In correspondence to f^2, the relative impact of the structural model on the observed measures for latent dependent variables can be assessed: $q^2 = (Q^2_{\text{included}} - Q^2_{\text{excluded}})/(1 - Q^2_{\text{included}})$.

Table 7.2 Assessing Structural Models (Adopted from Henseler et al. (2009))

7-3 Instrument Development

7.3.1 Gathering Information from Literature and Interviews

The objective of this study was to identify the factors affecting knowledge management practices in higher educational administration and further find the relationship between these factors. Since there were no well-established scales for most of the proposed constructs in the knowledge management discipline (Holste & Fields, 2010; Lu, Leung, & Koch, 2006), the items that constitute knowledge management practices in organizations and the seven cultural factors that affect these knowledge management practices were constructed in conjunction with the existing literature and interview findings to form the survey instrument.

Knowledge Management Practices. In order to determine whether knowledge management practices have been put in place in an organization, the definition of what constitutes these practices needs to be defined. Based on the literature, this is normally judged by the processes of knowledge management that occur in the organization. Mertins et al. (2003) suggest that knowledge management promotes and integrates core knowledge processes with the minimum of at least four activities. Observing other definitions of knowledge management comprising these knowledge processes, most other authors also list at the very least five knowledge management processes (American Productivity and Quality Center (APQC), 1996; Magnier-Watanabe & Senoo, 2008; Mum Wai & Dominic, 2008; Larrabure, 2007). Table 7.3

shows the knowledge management processes categorization used in the questionnaire and the sources of the literature.

Knowledge Management Processes categorization developed used in the questionnaire	KM processes activities
Knowledge Acquisition (Alavi, 1997; Magnier-Watanabe & Senoo, 2008; Mum Wai & Dominic, 2008)	i. Identification (American Productivity and Quality Center (APQC), 1996; Andersen, 1996; Bollinger & Smith, 2001; Mum Wai & Dominic, 2008; Larrabure, 2007) ii. Creation (Alavi, 1997; Andersen, 1996; Bhatt, 2001; Chai, 1998; Davenport & Prusak, 1998; Mum Wai & Dominic, 2008; Pentland, 1995; Larrabure, 2007; Wiig, 1993) iii. Generation (Davenport & Prusak, 1998; Mertins, et al., 2003; Pentland, 1995) iv. Development (Alavi, 1997; Mum Wai & Dominic, 2008) v. Validation (Bhatt, 2001)
Knowledge Retention and Retrieval (Davenport & Prusak, 1998; Pentland, 1995)	i. Codification (Davenport & Prusak, 1998; Pentland, 1995) ii. Capture (American Productivity and Quality Center (APQC), 1996; Chai, 1998; Larrabure, 2007) iii. Storing (Andersen, 1996; Chai, 1998; Magnier-Watanabe & Senoo, 2008; Mertins, et al., 2003; Larrabure, 2007) iv. Organization (Andersen, 1996) v. Preservation (Mum Wai & Dominic, 2008) vi. Communication (Bollinger & Smith, 2001)
Knowledge Distribution (Alavi, 1997; Bhatt, 2001; Mertins et al., 2003; Larrabure, 2007)	i. Transfer (American Productivity and Quality Center (APQC), 1996; Davenport & Prusak, 1998; Pentland, 1995; Wiig, 1993) ii. Sharing (Chase, 1997; Davenport & Prusak, 1998; Magnier-Watanabe & Senoo, 2008; Mum Wai & Dominic, 2008; O'dell & Grayson, 1998; Pentland, 1995) iii. Diffusion (Magnier-Watanabe & Senoo, 2008) iv. Dissemination (Chai, 1998)
Knowledge Application (Andersen, 1996; Jennex & Olfman, 2008; Mertins et al., 2003; Mum Wai & Dominic, 2008)	i. Implementation (Larrabure, 2007) ii. Use (Wiig, 1993) iii. Leverage (American Productivity and Quality Center (APQC), 1996)

Table 7.3 Knowledge management processes referred to in the literature

Cultural Factors. A conceptual framework of cultural factors affecting knowledge management practices was developed earlier based on a study of the relevant literature (see Chapter 4). The key informant interviews were then conducted to investigate the existing culture in the chosen Malaysian higher educational administrative departments. A thematic analysis followed the interviews to gather the relevant themes obtained. These themes were further combined with the terms gathered from literature studies for the purpose of the questionnaire development.

This study investigates seven cultural factors. The definitions of each of these factors were given earlier in Chapter 4. The seven cultural factors investigated are:

i. Knowledge sharing culture;
ii. Cooperative culture;
iii. Involvement and participation culture;
iv. Trust culture;
v. Problem seeking and solving culture;
vi. The culture of adaptability to change; and
vii. The sense of vision and mission culture.

The themes gathered from the literature and the interviews were used to measure the above cultural factors. These themes are presented in Tables 7.4a to 7.4g. The tables summarized the sources where the themes were obtained (literature or interviews), and indicate which themes were further used in the questionnaire.

Theme: Knowledge Sharing	**Literature**	**Interview**	**Included in questionnaire**
1. Exchange of tacit knowledge such as working experiences	(Rivera-Vazquez, Ortiz-Fournier, & Flores, 2009)	√	√
2. Exchange of explicit knowledge such as knowledge obtained from workshop and training	(Rivera-Vazquez et al., 2009)		√
3. Monetary benefits like bonuses as rewards	(Bartol & Srivastava, 2002; Lam & Lambermont-Ford, 2010)		√
4. Non-monetary benefits like promotion, certificate or public recognition as rewards	(Bartol & Srivastava, 2002; Lam & Lambermont-Ford, 2010)		√
5. Intrinsic reward (the satisfaction and pleasure derived from performing a task)	(Bartol & Srivastava, 2002; Lam & Lambermont-Ford, 2010)		√
6. A learning goal orientation (i.e. to demonstrate one's competency)	(Swift, Balkin, & Matusik, 2010).	√	√

7. A performance goal orientation (i.e. to gain positive evaluation from others)	(Swift et al., 2010)		√
8. Sense of confidence and competence with others (trust)	(Argote, McEvily, & Reagans, 2003; Barachini, 2009; Dasgupta & Gupta, 2009; Holste & Fields, 2010; Politis, 2003; Swift et al., 2010)	√	√
9. Self-efficacy (the perceptions of one's ability to make useful contributions)	(Lu et al., 2006)	√	√
10. Existence of appropriate technology and training	(Jain, Sandhu, & Sidhu, 2007; Lu et al., 2006)	√	√
11. Existence of management support	(Jain et al., 2007; Lu et al., 2006)	√	

Table 7.4a: Knowledge sharing items collated from literature and interviews

Theme: Cooperation	**Literature**	**Interview**	**Included in questionnaire**
1. Sense of confidence and competence with others (trust)	(Barachini, 2009; Goh, 2002; Holste & Fields, 2010; Liao, 2006; Lucas, 2005; Smith, Stephen, & Susan, 1995)		√
2. Self-efficacy (the perceptions of one's ability to make useful contributions)	(Lu et al., 2006)	√	√
3. People actively support and assist each other in work related matters	(Md Zahidul Islam, Hanif Mahtab, & Zainal Ariffin Ahmad, 2008; Tjosvold & Tsao, 1989)		√
4. Monetary benefits like bonuses as rewards	(Goh, 2002; Smith et al., 1995; Tjosvold & Tsao, 1989)	√	√
5. Non-monetary benefits like promotion, certificate or public recognition as rewards	(Goh, 2002; Smith et al., 1995; Tjosvold & Tsao, 1989)	√	√
6. Intrinsic reward (the satisfaction and pleasure derived from performing a task)	(Goh, 2002; Smith et al., 1995; Tjosvold & Tsao, 1989)		√
7.Leaders play important roles to encourage employees to cooperate	-	√	

Table 7.4b: Cooperation items collated from literature and interviews

Theme: Involvement and Participation	**Literature**	**Interview**	**Included in questionnaire**
1. Existence of open communication channels	(Rezgui, 2007)		√
2. Sense of commitment to participate in organizational activities	(Jantan, Mohd Nasurdin, & Ahmed Fadzil, 2003)		√
3. Monetary benefits like bonuses as rewards	-	√	√
4. Non-monetary benefits like promotion, certificate or public recognition as rewards	-	√	√
5. Leaders play important roles to encourage employees to be involved and participate	-	√	

Table 7.4c: Involvement and participation items collated from literature and interviews

Theme: Trust	**Literature**	**Interview**	**Included in questionnaire**
1. Confidence in the ability, reliability and competence of others	(Abrams, Cross, Lesser, & Levin, 2003; Ko, 2010; Niu, 2010; Politis, 2003)	√	√
2. Faith in the trustworthiness of others' intentions	(Politis, 2003)		√
3. Trustworthiness in terms of personal attachment and relationship (benevolence trust)	(Holste & Fields, 2010; Ko, 2010)	√	√
4. Caring leaders and their openness to discuss problems and negative feelings	-	√	

Table 7.4d: Trust items collated from literature and interviews

Theme: Problem Seeking and Solving	**Literature**	**Interview**	**Included in questionnaire**
1. Leader's role and encouragement	(Goh, 2002; Gray, 2001)		√
2. Organizations that are tolerant of mistakes	(Goh, 2002)		√
3. Equip staff with the necessary knowledge and skills though appropriate training	(Jantan et al., 2003)		√
4. Monetary benefits like bonuses as rewards	-	√	√
5. Non-monetary benefits like promotion, certificate or public recognition as rewards	-	√	√
6. Support from top management	-	√	

Table 7.4e: Problem seeking and solving items collated from literature and interviews

Theme: Adaptability to change	Literature	Interview	Included in questionnaire
1. Openness to changing demand	(Bartell, 2003)		√
2. Responsiveness to changing demand	(Bartell, 2003)		√
3. Open mindedness (people's willingness to accept new ideas)	(Calcantone, Cavusgil, & Zhao, 2002; Liao, 2006; Lucas, 2005)		√
4. Unlearning concepts	(Calantone, Cavusgil, & Zhao, 2002; Liao, 2006)		√
5. Learning from mistakes behaviour	(Denison, Haaland, & Goelzer, 2004)		√
6. Equip staff with the necessary knowledge and skills though appropriate training	(Jantan et al., 2003)	√	√
7. Leaders play important roles towards people's adaptability to change	-	√	

Table 7.4f: Adaptability to change items collated from literature and interviews

Theme: Vision and Mission	Literature	Interview	Included in questionnaire
1. Clear vision and mission	(Su & Lin, 2006)	√	√
2. Guide and regulate knowledge management practices (aligned with KM strategy)	(Su & Lin, 2006)		√
3. Shared vision and mission so that members know what is to be implemented (well conveyed to staff)	(Calantone et al., 2002)	√	√

Table 7.4g: Sense of vision and mission items collated from literature and interviews

7.3.2 Questionnaire Validation and Refinement

Careful attention needs to be given to the validation of the instrument developed (Axinn & Pearce, 2006). Following the development of the initial questionnaire, and based on the strategies outlined by Axinn and Pearce (2006), two methods were used to refine the questionnaire and to assess the external validity of the questionnaire:

Expert review

1. Expert review – This includes two subject matter experts (knowledge management area) and two other experienced researchers who agreed to comment on the questionnaire developed. Since the questionnaire was to be

further translated to Malay, following Axinn and Pearce's (2006, p. 48) suggestions, the expert reviewer group comprised both native speakers of the language to which the measures are being translated (i.e. Malay) as well as native speakers of the language from which the measures are being translated (i.e. English). The expert review conducted thus satisfied this condition by having the panel from English native speakers as well as Malay native speakers.

Pretesting

2. Pretesting data collection - A mock data collection procedure was conducted on two groups: a) Six research students from various areas of expertise; and 2) Ten administrative staff from private higher education in Malaysia. This pretest was conducted to explore any problems with regard to the ambiguity and clarity of the questionnaire. This pretest was also used to make sure that the knowledge management terms and definitions used in the questionnaire could be understood by both practitioners and non-practitioners of the knowledge management discipline.

Clarity of language

Unclear and difficult definitions. Based on the feedback obtained from the expert review and the pretest, the questionnaire design was refined. It was stated that the definition given in the questionnaire was quite difficult and might give problems of understanding to the respondent. Therefore the definition was refined, to be simpler, and layman's words were used to describe knowledge management. The following definition was used in the questionnaire:

> *Knowledge management refers to the processes of using the individual and organizational previous knowledge and experiences to help perform future knowledge activities in your institution. These processes involve:*
>
> *i. Knowledge acquisition – that is the activities that involve the identification, creation and generation of knowledge such as creation of documents or gathering work-related experiences among colleagues.*
> *ii. Knowledge retention and retrieval – refers to the process of storing the knowledge either in the form of documents, in the information system or by telling others, in which the same knowledge can be retrieved for later usage.*
> *iii. Knowledge distribution – refers to the process of sharing the existing knowledge and the transfer of knowledge to others in order to help the other party in performing their job.*
> *iv. Knowledge application – refers to the activities where the knowledge obtained is applied and utilized for business processes such as problem solving, or performing one's job.*

10-point Likert-scale

The choice of Likert-scale point. It was stated that the use of a 5-points Likert scale was unfavourable since the respondent would be most likely to choose the 'neutral' point. This comment was highlighted by one of the expert review panel, and a research student. Both of them claimed to have experience in conducting research in the Malaysian environment and found that Malaysian people tend to reduce the response effort. Observing the data collected during the pretest, the researcher also found that a number of respondents tended to choose the 'neutral' option for most of the questions asked. This is supported by the literature where "sit the fence" in an odd item Likert-scale point is viewed as a commonly arising problem (Brown, 2000; Coelho & Esteves, 2007). Brown (2000) and Coelho & Esteves (2007) suggest the use of an even number of options from which the respondents must choose either in the positive or negative direction. Based on these suggestions and upon reviewing the literature in scale development, the researcher chose to use an even 10-point Likert scale with options ranging from (1) disagree very strongly to (10) agree very strongly. In addition, Dawes (2008) and Coelho & Esteves (2007) contend that the use of more scale points provides more options for the respondent and therefore improves the data metric, enriches the data analyses and further facilitates calculation in multivariate data analysis. Cummins (2002) also indicates that more scale points can be intuitively meaningful and provide a higher degree of precision.

Further literature was studied to investigate any differences in the use of 5-point, 7-point and 10-point Likert-scales in research. It is stated by Dawes (2008) that there seems to be little documented knowledge about scale in academic research. The researcher found one study in the knowledge management discipline (Southon & Todd, 2001) and three other studies in the information system discipline (McAlister-Kizzier, Hunt, & Regan, 2002; Reimers, 2003; Schubart & Einbinder, 1999) that used the 10-point Likert-scale items in their questionnaire, however no justification was given of why the scale was chosen.

In relation to structural equation modelling, Dawes (2008) indicates the importance of understanding how the scale format might influence the data. Dawes (2008) conducted an experiment to investigate the influence of scale format on data characteristics like means and variance. Dawes (2008) found that all 5-, 7-, and 10-Likert-scale are comparable for analytical tools such as confirmatory factor analysis or structural equation modelling. In relation to structural equation modelling, Ceolho & Estevas (2007) evaluate the use of a 10-point Likert-scale in a European Customer Satisfaction Index (ECSI) model (which is developed using Structural Equation

Modeling) and found that their result tended to favour the choice of a 10-point scale over others. Their findings showed that:

- A 10-point scale had a lower proportion of non-responses
- The tendency of concentration of responses in the middle point was lower in a 10-point scale
- The use of a 10-point scale resulted in a higher nomological validity for the scale
- The use of a 10-point scale resulted in a higher convergent validity for the construct
- The use of a 10-point scale resulted in a higher discriminant validity for the construct

In another study, Cummins (2002) states that a 10-point scale also demonstrates an equivalent reliability to scales with fewer points. Therefore the questionnaire was designed to comprise 10-point Likert scale with the value *[1] Disagree very strongly, [2] Disagree strongly, [3] Generally disagree, [4] Disagree somewhat, [5] Disagree a little, [6] Agree a little, [7] Agree somewhat, [8] Generally agree, [9] Agree strongly, and [10] Agree very strongly.*

Double-barrelled questions. A comment was received from one of the expert panel of the existence of double-barrelled questions in the questionnaire. In response to this, the wordings to those questions were rephrased and wherever necessary the questions were separated into two questions.

The importance of research. Aside from providing the purpose and outcome of the study, it was suggested that the importance of the research was given in the questionnaire to emphasize why the study is important. Hence a statement that showed research importance was added in the questionnaire.

Wording ambiguity. A few questions were subject to comments with regard to wording ambiguity. These questions were later revised and changed to improve the clarity and understanding.

7.3.3 Final Questionnaire Structure

The refined questionnaire was then translated into Malay, and once again sent to experts whose native language is Malay to ensure that the translations was correct and that all terms were explained clearly. The final questionnaire consisted of 3 sections: 1) Items on the elements of knowledge processes constituting knowledge management practices; 2) Items on cultural factors affecting knowledge management practices; and 3) Items used for demographic information. This resulted in the development of a 41-item questionnaire. Among these 41 items, 4 items were used for measuring knowledge management practices, 10 items for knowledge sharing culture, 6 items for cooperative culture, 4 items for involvement and participation culture, 3 items for trust culture, 5 items for problem seeking and solving culture, 6 items for the culture of adaptability to change, and 3 items for vision and mission culture. Table 7.5 provides the scale content used for measuring the cultural factors in the questionnaire, while the four items of knowledge management processes used to measure the existence of knowledge management practices in the higher educational administration are as listed below:

i. Knowledge acquisition;
ii. Knowledge retention and retrieval;
iii. Knowledge distribution; and
iv. Knowledge application.

Constructs	**Number of items**	**Scale content**
Knowledge sharing	10	i. We exchange knowledge obtained from training and workshop with others ii. We exchange our working experience with others iii. We received monetary benefits like a bonus as rewards for sharing knowledge iv. We received non-monetary benefits like recognition, certificates or promotions as rewards for sharing knowledge v. We feel satisfied and pleasure upon sharing our knowledge vi. We share to know new skills vii. We share to show others our competency and gain positive evaluation viii. We share to show our trust in others ix. We share in order to make useful contributions x. We have adequate and appropriate technology and training that enable us to share

Cooperation	6	i. We cooperate with others because we trust them ii. We cooperate because we can make useful contributions iii. We actively support and assist each other in work related matters iv. We received monetary benefits like a bonus as rewards for cooperating with others v. We received non-monetary benefits like recognition, certificates or promotions as rewards for cooperating with others vi. We feel satisfied and pleasure upon cooperating with others
Involvement and participation	4	i. Open communication channels exist in our working environment ii. We are committed to involve, participate, contribute and help in organizational activities iii. We received monetary benefits like a bonus as rewards for our involvement and participation iv. We received non-monetary benefits like recognition, certificates or promotions as rewards for our involvement and participation
Trust	3	i. We are confident of others' ability, reliability and competence in our work environment ii. We have faith in the trustworthiness of others' intentions iii. We have a good personal relationship with others
Problem seeking and solving	5	i. We are encouraged by our leaders towards the behaviour of problem seeking and solving ii. Our organization is tolerant to mistakes iii. We were provided with appropriate training and skills to help us anticipate and solve problems iv. We received monetary benefits like a bonus as rewards for providing solutions to problems v. We received non-monetary benefits like recognition, certificates or promotions as rewards for providing solutions to problems
Adaptability to change	6	i. People in our organization are open to changing demand ii. People in our organization are responsive to changing demands iii. People in our organization are willing to accept new ideas iv. People are willing to forget old capabilities and accept new ones v. People in our organization are encouraged to learn from mistakes vi. We were provided with appropriate training and skills to help us adapt to changes
Vision and mission	3	i. Our institution has a clear vision and mission ii. Our institution has aligned its organizational strategy to knowledge management iii. Institutional mission and vision are well conveyed to all levels of staff

Table 7.5: Cultural factors scale content of the questionnaire

7-4 Data Collection and Sampling

Sampling method – purposive random sample

As previously discussed in Chapter 6, the data for this study were drawn from a purposive random sample of administrative department's staff and managers from Malaysian public universities. This was used based on the involvement of the participants with administrative tasks in a higher educational environment. The purposive sampling was chosen due to informational considerations and to maximize the information (Lincoln & Guba, 1985, p. 202) with the objective to ensure that all relevant types of respondent were included in the sample so that the study would obtain the most productive sample (Bock & Sergeant, 2002). The managers and staff were identified from the administrative departments common to higher educational institutions such as finance, student services, international office, information technology, human resource and examination units.

The instrument developed for the quantitative data collection was produced by using an a-priori model produced through a combination of the information gathered from the literature review and the findings from the qualitative study (as discussed in Chapter 6). Five Malaysian public universities participated in the first phase of the study with 12 interviews conducted. These interviews were transcribed and analysed using a thematic analysis approach. The refinement of the thematic analysis of the interviews and the factors gathered from the literature resulted in 7 factors with 37 variables.

In the second phase of the study, an online survey was used to collect the data from participants. The online survey was developed by using the Google Docs software and distributed in two language versions – English and Malay. Eight Malaysian universities agreed to participate in the quantitative phase of the study. All these universities are Malaysian public universities among which one of these universities were established after the year 1990, one were established after the year 2000, and the other were established more than 25 years ago. The surveys were distributed to staff and managers in the administrative departments of these universities.

Data collection procedure

The data collection for this stage took place over 2 months, starting from 9 January 2011 until 11 March 2011. The participant lists were obtained directly from the university's human resource department. However, for some universities where the lists of staff were available on their website, permissions were obtained from the universities in order to use the published list. The participants were first approached

by email requesting their participation in the online survey. An approval letter or email from their universities was attached for their reference. A cover letter and consent form were also sent to them electronically explaining the importance of their participation, as well as ensuring that their personal information provided would not be identified and published. Within the two-month duration while the survey was conducted, two friendly reminders were sent to them in order to remind them to participate in the survey. The first reminder was sent two weeks after the introductory email, and another reminder were sent two weeks following the first reminder. These reminders were sent as a way to increase participation in the survey.

337 used responses
33.7% response rate

Conducting the survey online provides the researcher with the advantage to get a high speed of return of the questionnaire (Fowler, 2009, p. 83). However, one problem detected with sending invitations to participate through emails, is that some email addresses are no longer valid, resulting in the email being bounced back to the sender. A total of 1000 participants were contacted, of which 114 emails bounced (i.e. 11.4%), and resulted in 351 participations, which yielded a response rate of 35.1%. 316 participants answered the Malay survey, while 35 participants answered the English survey. Of all the 351 responses, 14 responses were eliminated from the analysis due to the doubtful reliability of the responses. The main reason that these responses were identified as doubtful is due the same responses given throughout all questions (e.g. such as all ‘0’ responses, or all ’10’ responses). There were no incomplete responses since the online survey was controlled in a manner that all questions must be answered. The final sample of 337 usable responses was included in the actual analysis, giving an effective response rate of 33.7%.

Sample size

According to the statistics given by the Ministry of Higher Education Malaysia in July 2010, the number of non-academic staff in public higher educational institutions in Malaysia is 49,200 in total. Most work on sampling and measurement used the table provided by Krejcie and Morgan (1970) to determine the sample size for quantitative research (see Bartlett et al. (2001) and Johnson and Christensen (2008, p. 242)). However, since this study is using SEM, the literature suggests that a minimum sample of 200 is required in order to get a statistically significant result and a better performance analysis. Taking this rule into consideration the sample of 337 obtained for this study is therefore sufficient. This also satisfies Sathye (1999) who highlighted that for populations of 10,000 and more, most experienced researchers would normally consider a sample size between 200 and 1000 respondents. Since the questionnaire survey was formed from the interview findings which has also reached

its saturation with 12 samples in the previous qualitative study (refer to Section 6.3), the sample size use for quantitative study is justified.

7.4.1 Demographic Information

The demographic information is presented in Table 6 below indicating the frequency and percentage of participants based on various categorization and characteristics.

Demographic features	Frequency	Percent
Institution		
1. UUM	33	9.80
2. UM	53	15.72
3. UMK	49	14.54
4. UNIMAS	47	13.95
5. UTM	51	15.13
6. UITM	40	11.86
7. IIUM	31	9.20
8. UPSI	33	9.80
Total	**337**	100%
Gender		
Male	141	41.84
Female	196	58.16
Total	**337**	100%
Qualification		
PhD	1	0.30
Master degree	51	15.13
Bachelor degree	145	43.03
Diploma or Certificate	109	32.34
High school or lower	31	9.20
Total	**337**	100%
Job Function		
Manager/Head of Department/Director	26	7.72
Assistant Manager/Assistant Head/ Assistant Director	23	6.82
Registrar and Officers	99	29.38
Assistant officers	71	21.07
Secretary/Assistant Secretary	14	4.15
Administrative Assistant/Clerk	71	21.07
Others	33	9.79
Total	**337**	100%

Department		
Student Services	106	31.46
Finance	97	28.78
Examination Unit	19	5.64
Quality Assurance and Audit	18	5.34
Registrar	49	14.54
Human Resource	6	1.78
Marketing	6	1.78
Others	36	10.68
Total	**337**	100%
Age Group		
18 – 25	38	11.28
26 – 35	174	51.63
36 – 45	75	22.26
46 – 55	48	14.24
56 or older	2	0.59
Total	**337**	100%
Years of experience in university environments		
Less than 1 year	25	7.42
1 – 3 years	81	24.04
3 – 5 years	57	16.91
6 – 10 years	64	18.99
10 – 20 years	68	20.18
More than 20 years	42	12.46
Total	**337**	100%

Table 7.6: Demographic Information

7-5 PLS Evaluation

The model developed in this study examines the relationship between seven factors: knowledge sharing, cooperation, trust, involvement, problem solving, adaptability to change, and sense of vision and mission. The model also examines the effect of these seven constructs on knowledge management practice in higher educational administration. The model is shown in Figure 7.3.

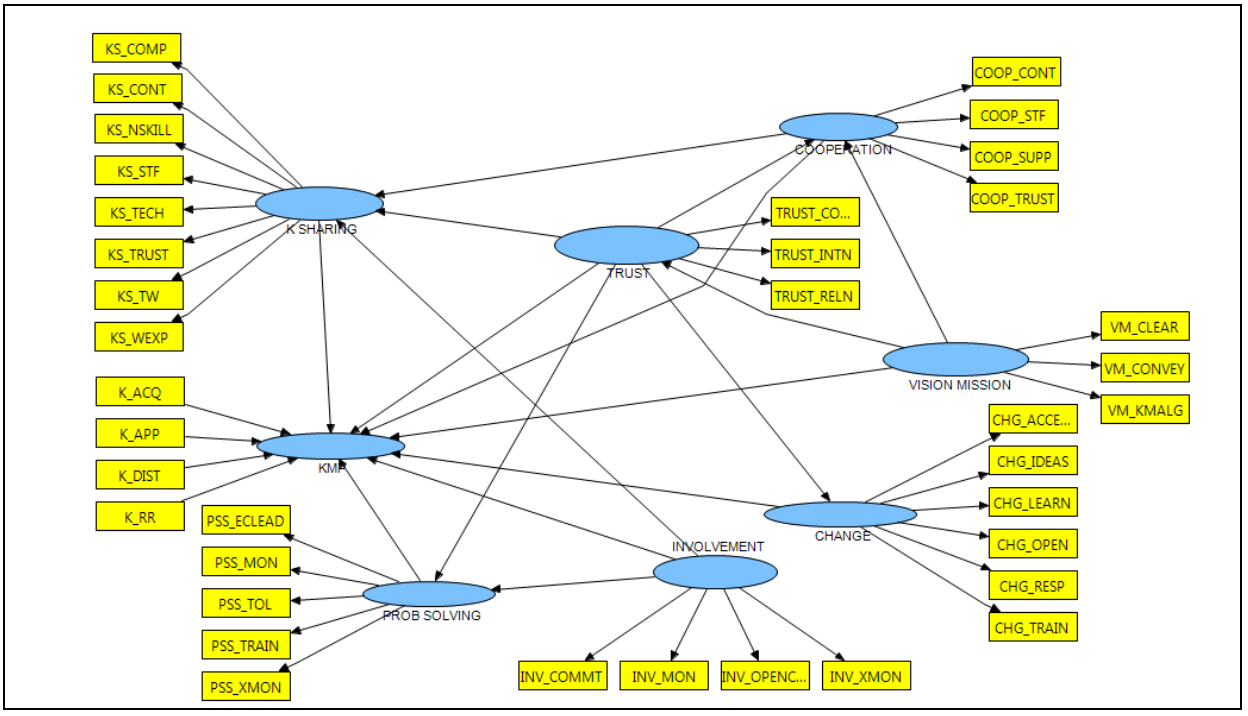


Figure 7.3 PLS model

The seven factors included in the model (knowledge sharing, trust, involvement, problem solving, adaptability to change, and sense of vision and mission) were measured by means of reflective items, while knowledge management practices was measured by four formative indicators. The indicators used for these constructs are presented in Table 7.7a – Table 7.7h.

Observed variable name	Indicator item
KS_TW	We exchange knowledge obtained from training and workshops with others
KS_WEXP	We exchange our working experience with others
KS_MON	We received monetary benefits like a bonus as rewards for sharing knowledge
KS_XMON	We received non-monetary benefits like recognition, certificates or promotions as rewards for sharing knowledge
KS_STF	We feel satisfied and pleasure upon sharing our knowledge
KS_NSKILL	We share to know new skills
KS_COMP	We share to show others our competency and gain positive evaluation
KS_TRUST	We share to show our trust in others
KS_CONT	We share in order to make useful contributions
KS_TECH	We have adequate and appropriate technology and training that enable us to share

Table 7.7a: Explanation of observed variables names and items for knowledge sharing factor

Observed variable name	Indicator item
COOP_CONT	We cooperate because we can make useful contributions
COOP_STF	We feel satisfied and pleasure upon cooperating with others
COOP_SUPP	We actively support and assist each other in work related matters
COOP_TRUST	We cooperate with other because we trust them

Table 7.7b: Explanation of observed variables names and items for cooperation factor

Observed variable name	Indicator item
INV_OPENCOM	Open communication channels exist in our working environment
INV_COMMT	We are committed to participate, contribute, help and be involved in organizational activities
INV_MON	We received monetary benefits like bonuses as rewards for our involvement and participation
INV_XMON	We received non-monetary benefits like recognition, certificates or promotions as rewards for our involvement and participation

Table 7.7c: Explanation of observed variables names and items for involvement and participation factor

Observed variable name	Indicator item
PSS_ECLEAD	We are encouraged by our leaders towards the behaviour of problem seeking and solving
PSS_TOL	Our organization is tolerant of mistakes
PSS_TRAIN	We were provided with appropriate training and skills to help us anticipate and solve problems
PSS_MON	We received monetary benefits like bonuses as rewards for providing solutions to problems
PSS_XMON	We received non-monetary benefits like recognition, certificates or promotions as rewards for providing solutions to problems

Table 7.7d: Explanation of observed variables names and items for problem seeking and solving

Observed variable name	Indicator item
CHG_OPEN	People in our organization are open to changing demands
CHG_RESP	People in our organization are responsive to changing demands
CHG_IDEAS	People in our organization are willing to accept new ideas
CHG_ACCEPT	People in our organization are willing to forget old capabilities and accept new ones
CHG_LEARN	People in our organization are encouraged to learn from mistakes
CHG_TRAIN	We were provided with appropriate training and skills to help us adapt to changes

Table 7.7e: Explanation of observed variables names and items for adaptability to change

Observed variable name	Indicator item
TRUST_COMP	We are confident of others' ability, reliability and competence in our work environment
TRUST_INTN	We have faith in the trustworthiness of others' intentions
TRUST_COMP	We have a good personal relationship with others

Table 7.7f: Explanation of observed variables names and items for Trust factor

Observed variable name	Indicator item
VM_CLEAR	Our institution has a clear vision and mission
VM_KMALG	Our institution has aligned its organizational strategy to knowledge management
VM_CONVEY	Institutional mission and vision are well conveyed to all level of staff.

Table 7.7g: Explanation of observed variables names and items for Vision and Mission

Observed variable name	Indicator item
K_ACQ	Knowledge acquisition
K_RR	Knowledge retention and retrieval
K_DIST	Knowledge distribution
K_APP	Knowledge application

Table 7.7h: Explanation of observed variables names and items for KM Practice

The developed model was intended to test the following hypotheses:

H1: The existence of a knowledge sharing culture positively affects knowledge management practices in the administrative department of Malaysian public universities

H2: The existence of a cooperative culture positively affects knowledge management practices in the administrative department of Malaysian public universities

H3: The existence of an involvement and participation culture positively affects knowledge management practices in the administrative department of Malaysian public universities

H4: The existence of a trust culture positively affects knowledge management practices in the administrative department of Malaysian public universities

H5: The existence of a problem seeking and solving culture positively affects knowledge management practices in the administrative department of Malaysian public universities

H6: The existence of the culture of adaptability to change positively affects knowledge management practices in the administrative department of Malaysian public universities

H7: The existence of a sense of vision and mission culture positively affects knowledge management practices in the administrative department of Malaysian public universities

H8: The involvement and participation culture positively affects the knowledge sharing culture

H9: The involvement and participation culture positively affects the problem seeking and solving culture

H10: The trust culture positively affects the knowledge sharing culture

H11: The trust culture positively affects the problem seeking and solving culture

H12: The trust culture positively affects the culture of adaptability to change

H13: The trust culture positively affects cooperative culture

H14: The sense of vision and mission positively affect the trust culture

H15: The sense of vision and mission positively affect the cooperative culture

H16: The cooperative culture positively affects the knowledge sharing culture

Before these hypotheses were tested, the model was first assessed for reliability and validity following suggestions and guidelines obtained from Henseler et al. (2009) and Gotz et al. (2010). The evaluation of the measurement model was done separately for both the reflective model and formative model. Following the evaluation of the measurement model, the structural model was evaluated, and the results of the sixteen hypotheses were assessed. The results are discussed in the following sub sections.

7.5.1 Evaluation of Reflective Models

7.5.1.1 Indicator Reliability

Factor loading >0.6 accepted

The loadings of the reflective indicators were examined in order to assess the indicator reliability. The initial model was first tested using 33 reflective indicators. A minimum value of 0.6 was used to accept the reliability of the individual item. Indicators with loading less than 0.6 were removed from the model. It was observed that all indicators, which were removed from the initial model, have a factor loading less than 0.5. The PLS analysis was further conducted using the revised model with

29 reflective indicators. Tables 7.8a to 7.8g show the factor loadings for both initial and revised model of the reflective measurement models.

CHANGE CONSTRUCT	Initial Model	Revised Model
CHG_ACCEPT	0.891394	0.891404
CHG_IDEAS	0.919386	0.919379
CHG_LEARN	0.770057	0.770124
CHG_OPEN	0.900583	0.900558
CHG_RESP	0.917333	0.917304
CHG_TRAIN	0.796886	0.796881

Table 7.8a: Factor loading for the CHANGE construct

COOPERATION CONSTRUCT	Initial Model	Revised Model
COOP_CONT	0.873673	0.915288
COOP_MON	0.232506	-
COOP_STF	0.819870	0.851985
COOP_SUPP	0.816455	0.838502
COOP_TRUST	0.850778	0.865247
COOP_XMON	0.387276	-

Table 7.8b: Factor loading for the COOPERATION construct

INVOLVEMENT CONSTRUCT	Initial Model	Revised Model
INV_COMMT	0.680138	0.698785
INV_MON	0.670107	0.648793
INV_OPENCOM	0.735415	0.750882
INV_XMON	0.738760	0.721721

Table 7.8c: Factor loading for the INVOLVEMENT construct

KNOWLEDGE SHARING CONSTRUCT	Initial Model	Revised Model
KS_COMP	0.632989	0.637693
KS_CONT	0.714679	0.774184
KS_MON	0.344835	-
KS_NSKILL	0.851350	0.880783
KS_STF	0.811026	0.833024
KS_TECH	0.629322	0.623143
KS_TRUST	0.716955	0.736009
KS_TW	0.698879	0.684098
KS_WEXP	0.798580	0.787746
KS_XMON	0.473542	-

Table 7.8d: Factor loading for the KNOWLEDGE SHARING construct

PROBLEM SEEKING AND SOLVING CONSTRUCT	Initial Model	Revised Model
PSS_ECLEAD	0.699304	0.704819
PSS_MON	0.640085	0.633218
PSS_TOL	0.721979	0.726127
PSS_TRAIN	0.787082	0.790042
PSS_XMON	0.731755	0.726167

Table 7.8e: Factor loading for the PROBLEM SEEKING AND SOLVING construct

TRUST CONSTRUCT	Initial Model	Revised Model
TRUST_COMP	0.905450	0.905602
TRUST_INTN	0.944387	0.943977
TRUST_RELN	0.880533	0.880804

Table 7.8f: Factor loading for the TRUST construct

SENSE OF VISION AND MISSION CONSTRUCT	Initial Model	Revised Model
VM_CLEAR	0.888196	0.889190
VM_CONVEY	0.901365	0.901030
VM_KMALG	0.896264	0.895782

Table 7.8g: Factor loading for the SENSE OF VISION AND MISSION construct

In the initial model evaluation, the factor loading range from 0.796 to 0.919 for the CHANGE construct, 0.670 to 0.738 for the INVOLVEMENT construct, 0.640 to 0.787 for the PROBLEM SEEKING AND SOLVING construct, 0.880 to 0.994 for the TRUST construct, and 0.888 to 0.901 for the SENSE OF VISION AND MISSION construct. Three constructs, CHANGE, TRUST and SENSE OF VISION AND MISSION were found to show very good indicator reliability.

For the KNOWLEDGE SHARING construct, the accepted factor loading ranging from 0.629 to 0.851, while the value of 0.816 to 0.873 were the accepted factor loading for the COOPERATION construct. Four indictors were removed due to very low factor loadings (i.e. with values less than 0.5) – COOP_MON (0.344), COOP_XMON (0.473), KS_MON (0.232) and KS_XMON (0.387).

It was observed that the removed indicators were all related to reward factors. The removed indicators were relating to whether the monetary benefits affect cooperation (COOP_MON), whether the non-monetary benefits affect cooperation (COOP_XMON), whether the monetary benefits affect knowledge sharing (KS_MON) and whether the non-monetary benefits affect knowledge sharing (KS_XMON). It was also observed that even though the indicator related to monetary and non-monetary

benefits was also being investigated for the PROBLEM SEEKING AND SOLVING construct, it was found that the factor loadings for PSS_MON (whether problem seeking and solving affected by monetary benefits) and PSS_XMON (whether problem seeking and solving affected by non-monetary benefits) were acceptable and therefore were retained in the model.

The assessment of the revised model, with the indicators with factor loading less than 0.5 removed, showed a slight improvement in the factor loading. Further evaluation on the model was conducted with the revised model.

7.5.1.2 Internal Consistency Reliability

CR > 0.7

Cronbach alpha >0.7

Internal consistency reliability (or referred to by some researchers as construct reliability) was assessed by using the Composite Reliability (CR) and Cronbach alpha tests. Both these readings are presented in Table 7.9 below. Following the guidelines by Henseler et al. (2009) the value of composite reliability of > 0.7 and the value of Cronbachs alpha of > 0.7 is acceptable. Table 7.9 shows acceptable CR values for all the constructs ranging from 0.798 to 0.948. Cronbach's alpha value ranged from 0.666 to 0.933. Considering that the value 0.666 is close to the cut-off value of 0.7, it is concluded that all generated values for both CR and Cronbach's alpha show acceptable internal consistency reliability for the PLS model.

Construct	Composite Reliability (CR)	Cronbach's Alpha
CHANGE	0.948038	0.933458
COOPERATION	0.924449	0.890663
INVOLVEMENT	0.798578	0.666106
K SHARING	0.910081	0.886211
PROB SOLVING	0.841004	0.762744
TRUST	0.935620	0.896669
VISION MISSION	0.923804	0.876859

Table 7.9: Composite Reliability and Cronbach's alpha reading for each reflective construct

7.5.1.3 Convergent validity and discriminant validity

AVE >0.5

Convergent validity of the model is assessed based on the value of Average Variance Extracted (AVE). The acceptable standard is that the AVE of the constructs should exceed 0.5 which means the items share at least half of their variance with the construct. Table 7.10 shows that the AVE values of the reflective measurement

model of the research are all above 0.5 with values ranging from 0.515 to 0.829. These values provide evidence that the convergent validity was achieved, and indicates that the measures used were robust.

CONSTRUCT	AVE (Average Variance Extracted)
CHANGE	0.753403
COOPERATION	0.753842
INVOLVEMENT	0.498485
K SHARING	0.561784
PROB SOLVING	0.515296
TRUST	0.829008
VISION MISSION	0.801646

Table 7.10 AVE values of reflective measurement models.

The discriminant validity of the model is evaluated by examining the cross loading for each indicator. It was found that the loading of each indicator with its own construct are all higher than its loading for other constructs. Therefore it is concluded that the discriminant validity was achieved. Table 7.11 shows the cross loading of all reflective indicators in the model.

	CHANGE	COOPERATION	INVOLVEMENT	K SHARING	PROB SOLVING	TRUST	VISION MISSION
CHG_ACCEPT	0.891404	0.403260	0.468394	0.444670	0.468336	0.508684	0.464423
CHG_IDEAS	0.919379	0.469977	0.522082	0.461061	0.522309	0.573166	0.501345
CHG_LEARN	0.770124	0.461144	0.435843	0.476100	0.486426	0.447699	0.487007
CHG_OPEN	0.900558	0.461674	0.531098	0.469397	0.524162	0.527401	0.450730
CHG_RESP	0.917304	0.453358	0.529813	0.485826	0.537805	0.501577	0.491142
CHG_TRAIN	0.796881	0.415105	0.519898	0.438960	0.632653	0.464679	0.551232
COOP_CONT	0.423904	0.915288	0.457390	0.744843	0.344855	0.548265	0.444866
COOP_STF	0.361025	0.851985	0.467417	0.773556	0.307250	0.507432	0.424633
COOP_SUPP	0.540494	0.838502	0.498701	0.640779	0.433307	0.631582	0.462509
COOP_TRUST	0.449016	0.865247	0.479733	0.677000	0.373985	0.600960	0.485045
INV_COMMT	0.463112	0.654603	0.698785	0.624003	0.400371	0.582328	0.499675
INV_MON	0.229423	0.093954	0.648793	0.142367	0.574647	0.208542	0.160241
INV_OPENCOM	0.543894	0.514443	0.750882	0.492109	0.547972	0.621562	0.527849
INV_XMON	0.353990	0.218027	0.721721	0.290779	0.633341	0.264271	0.311540
KS_COMP	0.264025	0.423210	0.319757	0.637693	0.261355	0.232604	0.321656
KS_CONT	0.296974	0.708596	0.308789	0.774184	0.218300	0.400450	0.348618
KS_NSKILL	0.413094	0.748845	0.476032	0.880783	0.400327	0.485417	0.474511
KS_STF	0.401656	0.727109	0.483047	0.833024	0.349827	0.498200	0.430918
KS_TECH	0.448812	0.506329	0.396454	0.623143	0.378952	0.396700	0.367828
KS_TRUST	0.357563	0.593515	0.371557	0.736009	0.303063	0.500102	0.359381
KS_TW	0.438284	0.504469	0.466128	0.684098	0.451577	0.475897	0.377420
KS_WEXP	0.534461	0.610589	0.543727	0.787746	0.511175	0.573999	0.465653
PSS_ECLEAD	0.482793	0.535059	0.533682	0.532593	0.704819	0.494014	0.534568
PSS_MON	0.243786	0.036008	0.561570	0.123646	0.633218	0.180350	0.150095
PSS_TOL	0.552869	0.394603	0.465127	0.433722	0.726127	0.500822	0.432740
PSS_TRAIN	0.577238	0.399553	0.532550	0.431280	0.790042	0.458765	0.485601
PSS_XMON	0.320706	0.133438	0.616466	0.211410	0.726167	0.242397	0.241543
TRUST_COMP	0.528470	0.663857	0.569793	0.626311	0.472786	0.905602	0.552259
TRUST_INTN	0.525465	0.589707	0.582016	0.536331	0.506314	0.943977	0.514955
TRUST_RELN	0.539280	0.538544	0.520818	0.486398	0.447866	0.880804	0.479460
VM_CLEAR	0.421075	0.470442	0.443613	0.424956	0.402408	0.439212	0.889190
VM_CONVEY	0.517143	0.445142	0.491377	0.463841	0.466644	0.540240	0.901030
VM_KMALG	0.560694	0.489686	0.533605	0.523912	0.508614	0.535194	0.895782

Table 7.11 The cross loading for reflective indicators in the measurement model.

7.5.2 Evaluation of Formative Models

VIF < 10

The weight of the formative indicators of the revised measurement model is given in Table 7.12. The indicator weights for the Knowledge Management Practice (KMP) construct ranged from 0.144 to 0.330. As discussed in section 7.23 above, the weights obtained are rather smaller than the reflective model item's loadings. Further evaluation was conducted to obtain the Variance Inflation Factor (VIF) for the formative indicators. The VIF values are presented in Table 7.13. Following the general guidelines, with the observed VIF values less than 10 for all the formative indicators (VIF values range from 2.281 to 3.548), all formative indicators in this measurement model are retained.

KMP CONSTRUCT	Revised Model
K_ACQ	0.330552
K_APP	0.257264
K_DIST	0.397921
K_RR	0.144817

Table 7.12: Formative indicator individual weights

Formative Indicators	Collinearity Statistics	
	Tolerance	VIF
K_ACQ	.282	3.548
K_RR	.370	2.706
K_DIST	.438	2.281
K_APP	.387	2.581

Table 7.13: VIF reading for formative indicators of KMP construct

7.5.3 Evaluation of the Structural Equation Model

The structural model comprises the hypothesised relationship between exogenous and endogenous variables in the model. The structural model provides information as to how well the theoretical model predicts the hypothesized paths. The coefficient of determination (R^2), effect size (f^2), and the predictive relevance measure (Q^2) were obtained in order to assess the structural model.

Table 7.14 shows that the R^2 for the dependent variable are 0.339 (CHANGE), 0.467 (COOPERATION), 0.689 (KNOWLEDGE SHARING), 0.579 (PROBLEM SOLVING),

0.322 (TRUST) and 0.233 (KNOWLEDGE MANAGEMENT PRACTICE). These values show that:

- adaptability to change was 33.9% determined by its predictors (CHG_ACCEPT, CHG_IDEAS, CHG_LEARN, CHG_OPEN, CHG_RESP);
- cooperation was 46.7% determined by its predictors (COOP_CONT, COOP_STF, COOP_SUPP, COOP_TRUST);
- knowledge sharing was 68.9% determined by its predictors (KS_COMP, KS_CONT, KS_NSKILL, KS_STF, KS_TECH, KS_TRUST, KS_TW, KS_WEXP);
- problem solving was 57.9% determined by its predictors (PSS_ECLEAD, PSS_MON,PSS_TOL, PSS_TRAIN, PSS_XMON);
- trust was 32.2 % determined by its predictors (TRUST_COMP, TRUST_INTN, TRUST_RELN); and
- knowledge management practices was 23.3% determined by its predictors (VM_CLEAR, VM_CONVEY, VM_KMALG).

The above results show significant R^2 with all values greater than 0.10 in all cases and satisfy the criteria suggested by Falk and Miller (1992). Based on Chin's (1998b) guidelines three constructs show moderate values of R^2 (Cooperation, Knowledge Sharing, and Problem Solving), while another three constructs (Change, Trust and KMP) shows weak values of R^2. As the model only has two exogenous variables, based on Henseler (2009) the R^2 values are acceptable.

Construct	**R^2**
CHANGE	0.339648
COOPERATION	0.467291
INVOLVEMENT	-
K SHARING	0.689445
KMP	0.233161
PROB SOLVING	0.579615
TRUST	0.322590
VISION MISSION	-

Table 7.14 : The R^2 values for the structural model

Table 7.15 shows the effect size of the model generated using SmartPLS. The effect size values are range from 0.05 to 0.70. These values are range from small effect to large effect.

Path	Path Coefficient	Effect Size	Result
CHANGE → KMP	0.192500	0.192500	M
COOPERATION → KMP	-0.159300	-0.048222	S
INVOLVEMENT → KMP	0.017771	0.089038	S
K SHARING → KMP	0.159226	0.159226	M
PROB SOLVING → KMP	0.006775	0.006775	S
TRUST → KMP	0.157618	0.258704	M
VISION MISSION → KMP	0.137642	0.273967	M
COOPERATION → K SHARING	0.697615	0.697615	L
INVOLVEMENT → K SHARING	0.153760	0.153760	M
INVOLVEMENT → PROB SOLVING	0.700623	0.700623	L
TRUST → CHANGE	0.582793	0.582793	L
TRUST → COOPERATION	0.534183	0.534183	L
TRUST → K SHARING	0.053000	0.425654	L
TRUST → PROB SOLVING	0.093139	0.093139	S
VISION MISSION → COOPERATION	0.220042	0.523442	L
VISION MISSION → TRUST	0.567970	0.567970	L
VISION MISSION → PROB SOLVING	-	0.052900	S
VISION MISSION → K SHARING	-	0.395263	L
VISION MISSION → CHANGE	-	0.331009	M

Table 7.15 : Effect Size of the structural model

Predictive validity was obtained by conducting the blindfolding procedure in SmartPLS. The Q^2 values obtained show predictive relevance for all constructs with all values of Q^2 greater than 1. Table 7.16 shows the Q^2 values for all the constructs in the model.

Construct	Q^2	Result
CHANGE	0.240809	Medium
COOPERATION	0.345409	Large
INVOLVEMENT	0.176360	Medium
K SHARING	0.369119	Large
KMP	0.160103	Medium
PROB SOLVING	0.256057	Medium
TRUST	0.263611	Medium
VISION MISSION	0.571752	Large

Table 7.16: The Stone-Geisser's test result conducted on the structural model

7.5.4 Hypothesis Testing

Bootstrapping was applied to obtain the path coefficients and their corresponding t-values. This will enable inferences to be made to determine significance of the path coefficient. Table 7.17 shows the value of path coefficients and the t-values for the model.

		Path Coefficient	T Statistics	Supported
H1	K SHARING -> KMP	0.159226	0.575213	No
H2	COOPERATION -> KMP	-0.159300	0.656541	No
H3	INVOLVEMENT -> KMP	0.017771	0.073353	No
H4	TRUST -> KMP	0.157618	0.648893	No
H5	PROB SOLVING -> KMP	0.006775	0.352199	No
H6	CHANGE -> KMP	0.192500	0.900186	No
H7	VISION MISSION -> KMP	0.137642	0.636733	No
H8	INVOLVEMENT -> K SHARING	0.153760	1.960428	Yes*
H9	INVOLVEMENT -> PROB SOLVING	0.700623	6.740369	Yes**
H10	TRUST -> K SHARING	0.053000	0.483547	No
H11	TRUST -> PROB SOLVING	0.093139	0.739560	No
H12	TRUST -> CHANGE	0.582793	7.196566	Yes**
H13	TRUST -> COOPERATION	0.534183	5.043668	Yes**
H14	VISION MISSION -> TRUST	0.567970	6.035997	Yes**
H15	VISION MISSION -> COOPERATION	0.220042	2.091220	Yes*
H16	COOPERATION -> K SHARING	0.697615	7.563509	Yes**

Table 7.17: Hypotheses testing result showing the path coefficients and t-values (* significant at p< 0.01 with t-value > 1.96; ** significant at p<0.05 with t-value > 2.58)

From Table 7.17 it can be seen that all the seven factors (knowledge sharing, cooperation, involvement, trust, problem seeking and solving, adaptability to change, and, vision and mission) influence on knowledge management practice in higher educational administration is not supported. The t-values show an insignificant result and therefore H1 to H7 are not supported. However, the hypotheses testing revealed that:

- H8: Involvement and participation affects knowledge sharing in higher education administration with p-value < 0.01 (t-value = 1.96)
- H9: Involvement and participation affects problem seeking and solving in higher education administration with p-value < 0.05 (t-value = 6.74)
- H12: Trust affects adaptability to change in higher education administration with p-value < 0.05 (t-value = 7.20)
- H13: Trust affects cooperation in higher education administration with p-value < 0.05 (t-value =5.04)
- H14: Vision and mission affects trust in higher education administration with p-value < 0.05 (t-value = 6.04)
- H15: Vision and mission affects cooperation in higher education administration with p-value < 0.01 (t-value = 2.09)
- H16: Cooperation affects knowledge sharing in higher education administration with p-value < 0.05 (t-value = 7.56)

Another two hypotheses proved to be insignificant, i.e.:

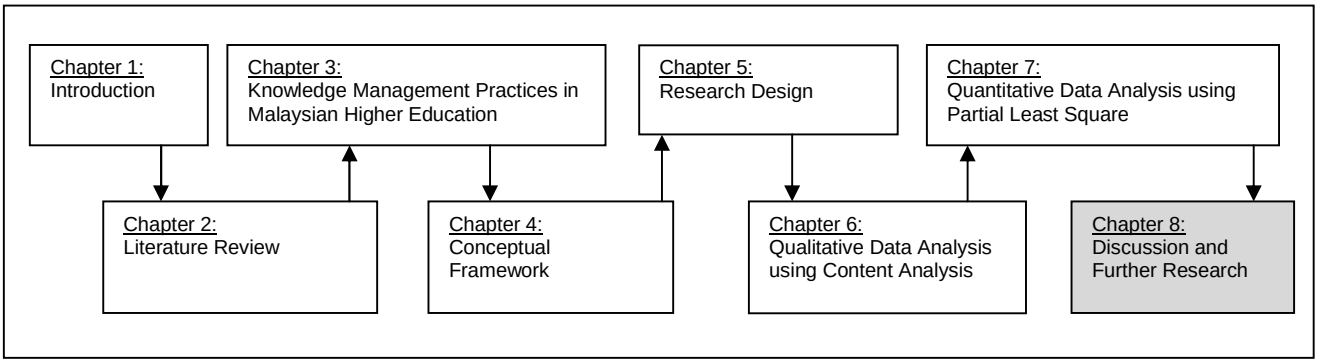
- H10: Trust does not affect knowledge sharing in higher education administration; and
- H11: Trust does not affect problem seeking and solving in higher education administration.

7-6 Chapter Summary

This chapter presents the results obtained from the quantitative data collection. The data collection was conducted by distributing the questionnaires through email links to the research participants. The questionnaire was developed based on the literature review and the result from the qualitative study conducted earlier. The data were then analysed by using the Partial Least Squares method in order to investigate the relationship between all the investigated factors with knowledge management practices.

8 Discussion and Further Research

Good ideas are not adopted automatically.
They must be driven into practice with courageous patience.
(Hyman Rickver 1900-1986)



8-1 Introduction

This chapter will conclude the study which was conducted using both qualitative and quantitative methods. In order to investigate knowledge management practices in Malaysian higher educational institution, the first phase of the study was conducted using a qualitative research method whereby key informant interviews were used to address the research questions. These interviews were completed by the knowledge management experts, managers and staff in Malaysian public universities. Information gathered from the literature and the interviews were used to form the questionnaire which was distributed to the managers and staff in administrative departments of Malaysian public universities. The following sections describe and conclude the results of the study.

8-2 Qualitative Findings Discussion

KM implementation in Malaysian HE

The first stage data collection was conducted by interviewing KM experts, administrative managers and staff in Malaysian public universities. The interview findings reveal that administrative staff and managers in HE administration show understanding of knowledge management concepts. In line with theory they agree that knowledge management practice covers the activities of collecting and coordinating knowledge among staff, so that it can be easily accessed and used at a later time by others in the same organization. Interviews also reveal that the staff are aware of the knowledge management processes (i.e. creating, acquiring, collecting,

capturing, classifying, storing, retrieving, distributing, sharing, exchanging, disseminating and reusing knowledge).

However, looking at results from the implementation point of view, recurring issues mentioned by the staff concern knowledge sharing activities in the organization. It can be said that knowledge sharing is widely practiced in HE administration in Malaysia. The concern as to whether documentation is accessible online or not is still observed to be an issue discussed in some HE administrators involved in the research. Therefore, the extent of the knowledge sharing practice in HE administration is still a subject open for further research to be explored, since the issue is closely related to the available infrastructure of the organization. Even though the participants of the research do indicate the availability of such systems used to share knowledge among staff, the systems available are mainly repositories of students' work, systems for staff communication with others, and systems provided for staff to provide their ideas and opinions to the university. The activities of sharing lessons learnt, tacit knowledge and experience among staff are still not widely practiced, and some staff are not aware whether such practices exist in their universities.

While knowledge sharing becomes the central topic in the discussion, it is observed that the information sharing activities do not involve the administrative staff. Information sharing activities were only conducted for management and academic staff of the universities. Considering that the administrative staff are those who, most of the time, are dealing with customers (i.e. the students as well as the staff from other departments), sharing their experiences in performing their daily work is regarded as important, particularly because they are involved a lot with the related documentation. This makes capturing their experiences and knowledge a necessary process.

KM as innovation

Accepting knowledge management as innovation is seen as willingness of staff to adopt these new ideas and actions in their organization. It is observed from the interview that the knowledge management idea is well known to the staff interviewed. They positively view the implementation as giving advantages such as reducing redundant work, reducing the time to locate important knowledge that they require, and also as a reliable way to get sources of information. However, it is stated by most respondents that the support given by the university is not sufficient, especially when it involves the administrative department. While lecturers on the academic side are

widely implementing knowledge management for their academic work, the same situation does not happen to many administrative departments.

Cultural factors

The interviews explored the cultural factors that occur in the administrative departments that may affect the knowledge management practices in their institutions. The result shows that, all seven factors investigated (knowledge sharing, cooperation, involvement and participation, trust, problem seeking and solving, adaptability to change, and, sense of vision and mission) exist in the institutions.

Emerging issues - leadership

The interviews also revealed other aspects that the respondents feel are affecting the knowledge management practices in their institutions. It was stated that leadership and top management are the main factors that determine whether the practice can take place. As discussed in various literature, encouragement and support from management plays an important role to ensure the practice is embraced by all staff in the universities. Many studies in KM agreed that a successful KM practice requires a leader near the top of the organization to provide a strong and dedicated leadership and to lead by example. Values, assumptions and belief from these leaders are often transmitted to the organizational members through mentoring and coaching (Pooja & Ruby, 2002). Clear instructions from leaders also contribute to the act of sharing tacit knowledge among employees (Syed Omar Sharifuddin & Rowland, 2007). This shows that organizations play an important role in encouraging employees to share the tacit knowledge they have by providing them with sufficient time and resources.

Emerging issues - Language

Language is also perceived as one factor that becomes a barrier to the implementation of knowledge management practices in the higher education environment in Malaysian public universities. Existence of resources and systems developed in English became a limitation for staff to understand and implement the KM practices in their organization. It might be important for universities to publish relevant knowledge management research in Malay for the benefits of those staff with some limitation in understanding English.

Emerging issues - Religion

Connecting the religious practice to knowledge sharing and knowledge distribution is another issue raised by a few participants. Since the majority of staff working in the public university come from Malay ethnic background whose religion is Muslim, the participants link the knowledge sharing behaviour in their working environment with the Muslim teaching that knowledge should be shared with others. To them this behaviour should then come naturally for every Muslim.

8-3 Quantitative Findings Discussion

This study was conducted with the aim to investigate how knowledge management practices in higher educational administration are affected by the seven indicated factors – knowledge sharing, involvement and participation, cooperation, trust, problem seeking and solving, adaptability to change, and sense of vision and mission. The study also investigated how each factor affects the others in implementing knowledge management practices. A questionnaire developed based on literature study and qualitative findings obtained from interview sessions with KM experts in Malaysian universities, Malaysian higher education's managers and administrative staff were utilized for this investigation. The Partial Least Squares method was then used to analyse the results of the study.

The results obtained from the PLS analysis revealed that all seven factors being investigated (knowledge sharing, cooperation, problem seeking and solving, involvement and participation, trust, adaptability to change, and vision and mission) do not influence knowledge management practices in higher educational administration in Malaysia (refer to section 7.5.4). However, another nine hypotheses tested for the relationships among those seven factors showed that the following factors do affect other factors in knowledge management implementation:

- That **involvement and participation** affect **knowledge sharing** in higher education administration;
- That **involvement and participation** affect problem **seeking and solving** in higher education administration ;
- That **trust** affects **adaptability to change** in higher education administration;
- That **trust** affects **cooperation** in higher education administration;
- That **vision and mission** affect **trust** in higher education administration;
- That **vision and mission** affect **cooperation** in higher education administration;
- That **cooperation** affects **knowledge sharing** in higher education administration;

Two other hypotheses were found not to be supported:

- ***Trust does not affect knowledge sharing*** in higher education administration; and
- **Trust does not affect problem seeking and solving** in higher education administration.

Awareness and understanding

The above results show that the seven investigated factors do not directly affect knowledge management practices as indicated in most western literature. This may be for various reasons, among which might be the differences of practice between western culture and Malaysian culture. Another possibility that is worth for future attention is that these results were drawn from HEI administrators rather than HEI academics. Since there are no studies conducted previously in the administration area of HEI, these results emerge due to the differences in perspectives and viewpoints between administrators and academics. People's awareness and understanding of the activities that comprise knowledge management practices is also other reason that might reflect the above results. At the time of the study it was observed that most participants relate knowledge management to knowledge sharing and distribution. There is a bigger picture of what comprises knowledge management that should be exposed to these administrative staff of the Malaysian higher educational institutions.

Reward factors – monetary and non monetary

The study however, shows that positive relationships detected between the investigated factors. It is however observed that, while literature indicates that rewards is an important item in determining staff willingness to cooperate and share, this study shows that these items were not reliable and hence needed to be removed from the cooperation and knowledge sharing factors investigated. On the other hand, reward factors are found reliable to determine another two factors – involvement, and, problem seeking and solving. This indicates some ambiguity in the practice of rewarding the staff and its relationship with the knowledge management culture in organizations.

8-4 Implication for Practice

This study offered several implications for research and practice. First, the study reveals that despite some limitation in the literature on knowledge management implementation in Malaysia, knowledge management is known to all participants of the research and that knowledge management culture already exists in the Malaysian context. It shows that knowledge management is no longer a new concept, but it has already been embraced in the higher educational institutions in Malaysia. While the KM concept is well known and embraced by academicians, the practice and

awareness should be improved so that it is also embraced by the administrative staff of the higher educational institutions.

The study also contributes to the knowledge management literature in the Malaysian context, in that knowledge sharing, cooperation, trust, involvement, change, problem seeking and solving, and vision and mission do not directly affect knowledge management practice in higher education administration as indicated in the western literature. However, the study shows that each of these factors do affect one another in the implementation of knowledge management in the administrative environment for higher education. Viewing the contribution from an information system research perspective, the study also shows that technology is closely related to knowledge management practice. The staff were aware and are most likely to use the knowledge management system when it is closely linked to technology that simplifies the process.

As for practitioners, qualitative research shows managerial implications, where it reveals that leaders and management of the institutions play an important role to encourage the administrative staff to embrace knowledge management practices in the administrative working environment. The leaders hold the authority to influence the staff to enhance the existing knowledge management practices in place. The leader's role is also seen as important to influence the vision and mission factor, and the change factor in the organization. The understanding of vision and mission of the KM implementation should be initiated from the institutional leaders, which may further lead to a culture of adaptability to change within the institution.

8-5 Limitation and Future Research

The study had some limitations. It covers only the scope of administrators in higher educational administrations in Malaysia. The findings are therefore bound to the perspectives of administrators rather than the academics and managements perspective in higher educational institutions. The study was also limited to the public university context in Malaysia and therefore this limits its generalization. Thus future research may carry out an investigation to study the KM implementation in private higher educational institutions. Since private universities are profit making institutions, conducting the study in private institutions may reveal a new finding to investigate how they use knowledge management to increase their organizational benefits and performance.

This study only selects seven cultural factors (i.e. knowledge sharing, cooperation, involvement and participation, trust, problem seeking and solving, adaptability to change, and sense of vision and mission) to be investigated in relation to the knowledge management practices. While there are bigger scopes of organisational culture which can be explored, future studies should consider other cultural issues that affect knowledge management practices in organizations.

The study revealed four important issues during the interviews conducted. These issues were not discussed in further detail as this was not the focus of the study, but instead are viewed as opportunities for further research especially in the context of Malaysian higher education. These emerged issues are:

Leadership. It was found that the leader is perceived as the most important person who will make any changes in the organization. The respondents also perceived leadership factors as affecting the implementation of any new practice or new initiative in the organization. During the interviews, most of the administrative staff and managers indicated that they would support knowledge management practices provided sufficient support and enforcement were given by the leader or management of the university. The author believes further studies on the leadership issues are required in the context of Malaysian higher education.

Technology. While most universities reported that they have proper technology to implement knowledge management systems for administration jobs, they still stress that the technology equipment is important for such practice to occur. Future studies should explore the extent to which adequate technology is in place for Malaysian universities to implement knowledge management practices.

Language. Some of the respondents indicated that language factors became a barrier for staff to support knowledge management. This may be due to the fact that most public university staff in Malaysia are Malay, and are using Malay as their medium of communication. The extent to which language factors affect knowledge management practices may require further investigation.

Religion. The interview findings also show that few respondents associate the necessity to share and distribute knowledge in their organization with any religion factors. Since most Malaysian public universities staff are Malays whose religion is

Islam, they relate the existing practice with their religion. A few respondents indicated that knowledge is a fundamental principle of Islam. They further added that distributing and sharing knowledge is a good deed promoted by their religion and that the act of storytelling was also demonstrated in their religion. Whether or not religion is a factor affecting people's willingness to practice knowledge management from a cultural perspective is another opportunity for future research.

While the above themes emerge from the qualitative study, the quantitative study shows other findings. While the literature indicates that reward factors is an important aspect for the existence of knowledge management practices, the study shows that monetary and non-monetary reward is not a reliable indicator for knowledge sharing and cooperation factors. This is another opportunity to investigate the contribution of rewards factors in the Malaysian knowledge management context. Again, this might have a different impact if it were to be investigated in a different organizational environment, such as that of public universities and private universities.

The study also relied on self report's findings from the participants. Since the study investigates the attitudes, values and beliefs of participants, validation check measure is not applicable as there are no external sources to be compared with. However, since the questions being explored in the study can be considered as non-sensitive questions, and that the participation are voluntary in nature, the self-reporting findings of the study can be accepted as true. This therefore does not limit the findings of the study.

The author also opines that there are also future opportunities to refine the measurement of the study in order to strengthen the findings that the seven investigated factors do not affect knowledge management practices in the administrative departments of Malaysian higher educational institutions. Items investigating participants' behaviour towards each construct could be enhanced to further understand the above results.

Based on the above limitations of this research the author would propose that an extension of the study conducted in this thesis can be conducted in terms of a comparison study looking at the differences in the knowledge management practices in public higher educational institutions and private higher educational institutions. Focus should be given to enhance the awareness of knowledge management practices that occur in the above mentioned HEIs among their staff.

8-6 Chapter Summary

This chapter concludes the study of knowledge management practices in the administrative departments of Malaysian higher educational institutions. The study shows that the seven indicated factors: knowledge sharing, cooperation, involvement, adaptability to change, trust, problem seeking and solving, and vision and mission do not have a direct impact on the knowledge management practice. However the study shows that these factors affect one another. The study also reveals new emerging themes which open new opportunities for further research in knowledge management – that leadership and technology are the most common concerns of the participants when knowledge management practice is discussed, and that language and religion might affect knowledge management practice in Malaysia. It is also interesting that reward factors which were indicated as one of the factors that affect knowledge management practices, were found not to be reliable in this study, and therefore open another possibility for future research on knowledge management implementation in Malaysia.

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Appendix A: Key Informant Interview Script

Thank you for agreeing to participate in this study. I anticipate the interview will last for about 30-40 minutes. Your answers are completely confidential and will be coded and recorded without names. Is it possible for this conversation to be tape?

The purpose of this interview is to explore the current knowledge management scenario and cultural factors in the higher educational institution in Malaysia focusing on the practices in administrative departments.

General Information:

Group: Expert _____ Managers _____ Staff _____

Interviewee Name: _____ Institution: _____

Date: _____ Start time: _____ End Time: _____

Method of interview: Email ☐ _____ (email address)

In Person ☐ _____ (venue)

Phone ☐ _____ (phone number)

Questions:

1. Knowledge Management

    i. What is your understanding about the knowledge management concept?

    ii. What are the practices that you categorize as KM practice that exists in your university/department?

    iii. List any available tool that helps you practice KM in your institution/department.

    iv. How do you rate the **state of implementation** of KM practice in your university – planning, beginner (embrace), intermediate (development stage) or expert (established stage)? Is there any other word that you use to describe this stage?

2. KM as innovation

    i. Do you believe that KM practice is one type of innovation in your organization/working area?
    If Yes, what is your contribution to support this practice?
    If No, please state the reason why.

    ii. Do you think your university support KM practice and how?

3. Knowledge Sharing
    i. What is your comment on the **knowledge sharing culture** that exists in your university (within and inter-department)?

    ii. How do you explain your willingness to share what you know with others?

    iii. Are there any barriers for you to share knowledge with others?

    iv. Is there anything that encourages you to share knowledge with others?

    v. To what extent do you think knowledge sharing contribute to KM practice?

4. Cooperation and Collaboration

    i. Can you explain the behavior of **cooperation and collaboration** culture that exists in your university (within and inter-department)?

    ii. How do you explain your willingness to cooperate and collaborate with others?

    iii. Are there any reasons that hinder you from cooperating and collaborating with others?

    iv. Are there any factors that encourage you to cooperate and collaborate with others?

    v. To what extent do you think cooperation and collaboration contribute to KM practice?

5. Adaptability to change
    i. Do you think you / your colleagues are prepared for **changes** in your university/department?

    ii. If any new change is introduced or enforced, how do you describe your willingness to support or participate?

    iii. Do you have any reason not to support these changes?

    iv. Will there be any benefits that you anticipate from these changes?

    v. Will there be any disadvantages that you anticipate from these changes?

    vi. To what extent do you think adaptability to change contribute to KM practice?

6. Involvement and participation
    i. What can you say about **involvement and participation** culture in your university and department (with regard to knowledge practice)?

    ii. Is there any encouragement of participation existing?

iii. Is there any encouragement for information sharing?

iv. Is there any open communication channel?

v. Are there any factors that hinder you from participating?

vi. To what extent do you think the involvement and participation contribute to KM practice?

7. Trust

i. How do you explain the **trust** behavior in your university and department?

ii. What is your comment on the level of trust within employees?

iii. What is your comment on the level of openness within employees?

iv. Are there any factors that encourage trust in your workplace?

v. Are there any factors that hinder trust in your workplace?

vi. To what extent do you think does the trust factor contribute to KM practice?

8. Problem seeking and solving

i. Does the culture of **problem seeking and solving** exists in your university and department? Can you give some example?

ii. Do you/your colleague support this culture and why?

iii. Does your university encourage problem seeking and solving culture?

iv. To what extent do you think problem seeking and solving contribute to KM practice?

9. Vision and Mission

i. Is KM practice embedded in the university's or department's **vision and mission** – If yes, how and for what purpose that it is stated as important?

ii. Describe your behaviour in trying to achieve this vision and mission.

iii. Can you explain how the current practice supports this vision and mission?

iv. To what extent do you think the vision and mission contribute to KM practice?

10. Other factors

i. Do you think there are **other related cultural issues** with regard to knowledge and KM practice within your department and institution?

ii. What factors encourage employees to support/implement KM processes/practices?

iii. What factors deter employees from supporting /implementing KM processes/practices?

11. Is there anything important you think I missed?

Thank you very much for your time.

It is normal that individuals have additional comments they would like to make after the interview session. If you feel there is any additional information you would like to share, feel free to email me at roshayu.mohamad@live.vu.edu.au or call me at +614 2273 1499.

Appendix B - Knowledge Management Cultural Factors Survey (English)

The following is use to define knowledge management in the context of this research: Knowledge management refers to the processes of using the individual and organizational previous knowledge and experiences to help perform future knowledge activities in your institution. These processes involve: i. Knowledge acquisition – that is the activities that involve the identification, creation and generation of knowledge such as creation of documents or gathering work-related experiences among colleagues. ii. Knowledge retention and retrieval – refers to the process of storing the knowledge either in the form of documents, in the information system or by telling others, in which the same knowledge can be retrieved for later usage. iii. Knowledge distribution – refers to the process of sharing the existing knowledge and the transfer of knowledge to others in order to help the other party in performing their job. iv. Knowledge application – refers to the activities where the knowledge obtained is applied and utilized for business processes such as problem solving, or performing one's job.

Question 1: Based on the above definition, how do you rate the existence of the following KNOWLEDGE MANAGEMENT PROCESSES in your department?

(a) Knowledge acquisition

(b) Knowledge retention and retrieval

(c) Knowledge distribution

(d) Knowledge application

Question 2: How do you agree with the following statements about KNOWLEDGE SHARING CULTURE in your department?

SCALE: (1) Disagree very strongly (2) Disagree strongly (3) Generally disagree (4) Disagree somewhat (5) Disagree a little (6) Agree a little (7) Agree somewhat (8) Generally agree (9) Agree strongly (10) Agree very strongly

(a) We exchange knowledge obtained from training and workshops with others.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(b) We exchange our working experience with others.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(c) We have received monetary benefits like bonus as rewards for sharing knowledge.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(d) We have received non-monetary benefits like recognition, certificates or promotions as rewards for sharing knowledge.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(e) We feel satisfied and pleasure upon sharing our knowledge.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(f) We share because we want to know new skills.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(g) We share because we want to show others our competency and gain positive evaluation.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(h) We share knowledge because we trust others.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(i) We share because we believe we can make useful contributions.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(j) We share because we were provided with adequate and appropriate technology and training.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

Question 3: How do you agree with the following statements about COOPERATION in your department?

SCALE: (1) Disagree very strongly (2) Disagree strongly (3) Generally disagree (4) Disagree somewhat (5) Disagree a little (6) Agree a little (7) Agree somewhat (8) Generally agree (9) Agree strongly (10) Agree very strongly

(a) We cooperate with other because we trust them.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(b) We cooperate because we can make useful contributions.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(c) We actively support and assist each other in work related matters.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(d) We have received monetary benefits like bonus as rewards for cooperating with others.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(e) We have received non-monetary benefits like recognition, certificates or promotions as rewards for cooperating with others.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(f) We feel satisfied and pleasure upon cooperating with others.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

Question 4: How do you agree with the following statements about INVOLVEMENT and PARTICIPATIVE CULTURE in your department?

SCALE: (1) Disagree very strongly (2) Disagree strongly (3) Generally disagree (4) Disagree somewhat (5) Disagree a little (6) Agree a little (7) Agree somewhat (8) Generally agree (9) Agree strongly (10) Agree very strongly

(a) Open communication channels exist in our working environment.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(b) We are committed to participate, contribute, help and be involved in organizational activities.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(c) We have received monetary benefits like bonuses as rewards for our involvement and participation.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(d) We have received non-monetary benefits like recognition, certificates or promotions as rewards for our involvement and participation.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

Questions 5: How do you agree with the following statements about TRUST in your department?

SCALE: (1) Disagree very strongly (2) Disagree strongly (3) Generally disagree (4) Disagree somewhat (5) Disagree a little (6) Agree a little (7) Agree somewhat (8) Generally agree (9) Agree strongly (10) Agree very strongly

(a) We are confident of others' ability, reliability and competence in our work environment.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(b) We have faith in the trustworthiness of others' intentions.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(c) We have a good personal relationship with others.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

Questions 6: How do you agree with the following statements about PROBLEM SEEKING and SOLVING culture in your department?

SCALE: (1) Disagree very strongly (2) Disagree strongly (3) Generally disagree (4) Disagree somewhat (5) Disagree a little (6) Agree a little (7) Agree somewhat (8) Generally agree (9) Agree strongly (10) Agree very strongly

(a) We are encouraged by our leaders towards the behavior of problem seeking and solving.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(b) Our organization is tolerant of mistakes.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(c) We were provided with appropriate training and skills to help us anticipate and solve problems.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(d) We have received monetary benefits like bonuses as rewards for providing solutions to problems.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(e) We have received non-monetary benefits like recognition, certificates or promotions as rewards for providing solutions to problems.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

Questions 7: How do you agree with the following statements about the culture of ADAPTABILITY TO CHANGE in your department?

SCALE: (1) Disagree very strongly (2) Disagree strongly (3) Generally disagree (4) Disagree somewhat (5) Disagree a little (6) Agree a little (7) Agree somewhat (8) Generally agree (9) Agree strongly (10) Agree very strongly

(a) People in our organization are open to changing demands.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(b) People in our organization are responsive to changing demands.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(c) People in our organization are willing to accept new ideas.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(d) People in our organization are willing to forget old capabilities and accept new ones.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(e) People in our organization are encouraged to learn from mistakes.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(f) We were provided with appropriate training and skills to help us adapt to changes.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

Questions 8: How do you agree with the following statements about the sense of university's MISSION and VISSION in your institution?

SCALE: (1) Disagree very strongly (2) Disagree strongly (3) Generally disagree (4) Disagree somewhat (5) Disagree a little (6) Agree a little (7) Agree somewhat (8) Generally agree (9) Agree strongly (10) Agree very strongly

(a) Our institution has a clear vision and mission.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(b) Our institution has aligned its organizational strategy to knowledge management.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(c) Institutional mission and vision are well conveyed to all level of staff.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

Question 9: Overall, how do you rate the existence of the following CULTURE towards KNOWLEDGE MANAGEMENT PRACTICES in your institution?

(a) Knowledge sharing culture

(b) Cooperative culture

(c) Involvement and participation

(d) Trust culture

(e) Problem seeking and solving culture

(f) Adaptability to change

(g) Sense of vision and mission

(h) Is there any other issue you would like to add or comment on relating to the knowledge management culture in the administrative department of your institution?

To finish this questionnaire, I have a few questions about you.

1. Your age:

2. Your gender:

3. Your highest qualification:

4. Your institution:

5. What area best describes your job function/position within your university?

If other, please speficy your job title:

6. Which of the following administrative departments best describes your work responsibilities?

If other, please speficy your department:

7. How many years have you worked in the university environment?

Appendix C - Survey Budaya Pengurusan Pengetahuan di IPTA Malaysia

Berikut adalah definisi Pengurusan Pengetahuan (Kowledge Management) dalam konteks kajian ini: Pengurusan Pengetahuan adalah proses penggunaan pengetahuan (knowledge) dan pengalaman (experience) individu dan organisasi untuk membentuk aktiviti organisasi insitusi di masa hadapan. Proses ini merangkumi: i. Pengumpulan pengetahuan (knowleddge acquisition) – aktiviti mengenalpasti dan mencipta pengetahuan seperti membuat dokumen2 dan menyimpan serta mengumpulkan pengetahuan berkaitan perkerjaan anda serta rakan sekerja lain. ii. Penyimpanan dan capaian semula pengetahuan (Knowledge retention and retrieval)– aktiviti penyimpanan pengetahuan samada didalam bentuk dokumen, sistem maklumat ataupun dengan menyampaikan kepada orang lain, yang membolehkan pengetahuan tersebut dicapai semula untuk digunakan di masa hadapan. iii. Penyebaran pengetahuan (knowledge distribution) – aktiviti berkongsi pengtetahuan sedia ada serta memindahkan pengetahuan tersebut kepada oang lain bagi membantu pihak lain menjalankan kerja mereka. iv. Penggunaan pengetahuan (knowledge application) – aktiviti dimana pengetahuan yang diperolehi digunakan dalam melaksanakan proses-proses perniagaan seperti menyelesaikan masalah, atau membantu seseorang pekerja menyelesaikan tugas mereka.

Soalan 1: Berdasarkan kefahaman anda tentang pengurusan pengetahuan (knowledge management), bagaimanakah anda mengkelaskan kewujudan PROSES-PROSES dibawah di institusi anda?

(a) Pengumpulan atau perolehan pengetahuan(knowledge acquisition)

(b) Penyimpanan dan capaian semula pengetahuan(knowledge retention and retrieval)

(c) Penyebaran pengetahuan(knowledge distribution)

(d) Penggunaan pengetahuan sedia ada(knowledge application)

Soalan 2: Nyatakan sejauh mana anda bersetuju dengan pernyataan berikut mengenai budaya PERKONGSIAN ILMU (knowledge sharing) di jabatan anda.

SCALE: (1) Disagree very strongly (2) Disagree strongly (3) Generally disagree (4) Disagree somewhat (5) Disagree a little (6) Agree a little (7) Agree somewhat (8) Generally agree (9) Agree strongly (10) Agree very strongly

(a) Kami saling bertukar-tukar pengetahuan yang diperolehi dari bengkel2 latihan.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(b) Kami saling berkongsi pengalaman kerja.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(c) Kami ada menerima ganjaran berbentuk kewangan (seperti bonus) dari organisasi sebagai imbuhan kerana berkongsi pengetahuan

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(d) Kami ada menerima ganjaran bukan-kewangan sebagai imbuhan berkongsi pengetahuan (antara contohnya seperti sijil pengiktirafan serta kenaikan pangkat).

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(e) Kami merasakan suatu kepuasan hasil dari berkongsi pengtetahuna dengan orang lain.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(f) Kami berkongsi kerana kami juga ingin memperoleh pengetahuan yang baru.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(g) Kami berkongsi kerana kami ingin menonjolkan keupayaan kami serta pandangan positive orang lain.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(h) Kami berkongsi dengan orang lain kerana kami percaya pada mereka.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(i) Kami berkongsi kerana kami merasakan kami mampu untuk menymbangkan sesuatu yang berguna untuk organisasi dan orang lain.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(j) Kami berkongsi kerana kami mempunyai teknologi yang sesuai dan mencukupi.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

Soalan 3: Nyatakan sejauh mana anda bersetuju dengan pernyataan berikut mengenai budaya BEKERJASAMA (cooperation) di jabatan anda.

SCALE: (1) Disagree very strongly (2) Disagree strongly (3) Generally disagree (4) Disagree somewhat (5) Disagree a little (6) Agree a little (7) Agree somewhat (8) Generally agree (9) Agree strongly (10) Agree very strongly

(a) Kami bekerjasama dengan orang lain kerana kami mempercayai mereka.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(b) Kami bekerjasama kerana kami merasakan kami mampu untuk menymbangkan sesuatu yang berguna untuk organisasi dan orang lain.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(c) Kami sangat memberi sokongan serta membantu satu sama alain dalam urusan kerja.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(d) Kami ada menerima ganjaran berbentuk kewangan (seperti bonus) dari organisasi sebagai imbuhan kerana bekerjasama dengan orang lain.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(e) Kami ada menerima ganjaran bukan-kewangan sebagai imbuhan bekerjasama dengan orang lain (antara contohnya seperti sijil pengiktirafan serta kenaikan pangkat).

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(f) Kami merasakan suatu kepuasan hasil dari berkongsi pengetahuan dengan orang lain.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

Soalan 4: Nyatakan sejauh mana anda bersetuju dengan pernyataan berikut mengenai budaya MELIBATKAN DIRI serta MENGAMBIL BAHAGIAN (involvement and participative) di jabatan anda.

SCALE: (1) Disagree very strongly (2) Disagree strongly (3) Generally disagree (4) Disagree somewhat (5) Disagree a little (6) Agree a little (7) Agree somewhat (8) Generally agree (9) Agree strongly (10) Agree very strongly

(a) Terdapat saluran komunikasi terbuka di dalam persekitaran kerja kami.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(b) Kami bersungguh-sungguh dalam melibatkan diri, mebantu dan melibatkan diri dalam aktiviti-aktiviti organisasi.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(c) Kami ada menerima ganjaran berbentuk kewangan (seperti bonus) dari organisasi sebagai imbuhan kerana melibatkan diri dan mengambil bahagian.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(d) Kami ada menerima ganjaran bukan-kewangan sebagai imbuhan untuk melibatkan diri dan mengambil bahagian. (antara contohnya seperti sijil pengiktirafan serta kenaikan pangkat).

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

Soalan 5: Nyatakan sejauh mana anda bersetuju dengan pernyataan berikut mengenai budaya SALING PERCAYA (trust) di jabatan anda.

SCALE: (1) Disagree very strongly (2) Disagree strongly (3) Generally disagree (4) Disagree somewhat (5) Disagree a little (6) Agree a little (7) Agree somewhat (8) Generally agree (9) Agree strongly (10) Agree very strongly

(a) Kami yakin dengan kebolehan, kemampuan, serta kebolehpercayaan (reliability) orang lain di dalam persekitaran kerja kami.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(b) Kami yakin serta percaya terhadap keihlasan niat orang lain.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(c) Kami mempunyai hubungan peribadi yang baik sesama kami.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

Soalan 6: Nyatakan sejauh mana anda bersetuju dengan pernyataan berikut mengenai budaya MENCARI dan MENYELESAIKAN MASALAH (problem seeking/solving) di jabatan anda.

SCALE: (1) Disagree very strongly (2) Disagree strongly (3) Generally disagree (4) Disagree somewhat (5) Disagree a little (6) Agree a little (7) Agree somewhat (8) Generally agree (9) Agree strongly (10) Agree very strongly

(a) Ketua kami menggalakkan kami untuk mencari dan menyelesaikan masalah.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(b) Organisasi kami mengamalkan sikap bertolak ansur dengan kesilapan yang berlaku.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(c) Kami diberikan latihan serta kemahiran yang bersesuaian untuk kami bersedia menghadapi dan menyelesaikan sebarang masalah.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(d) Kami ada menerima ganjaran berbentuk kewangan (seperti bonus) dari organisasi sebagai imbuhan kerana mencadangkan penyelesaian terhadap sesuatu masalah.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(e) Kami ada menerima ganjaran bukan-kewangan (contohnya seperti sijil pengiktirafan serta kenaikan pangkat) sebagai imbuhan imbuhan kerana mencadangkan penyelesaian terhadap sesuatu masalah.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

Soalan 7: Nyatakan sejauh mana anda bersetuju dengan pernyataan berikut mengenai budaya MENERIMA PERUBAHAN (adaptability to changes) di jabatan anda.

SCALE: (1) Disagree very strongly (2) Disagree strongly (3) Generally disagree (4) Disagree somewhat (5) Disagree a little (6) Agree a little (7) Agree somewhat (8) Generally agree (9) Agree strongly (10) Agree very strongly

(a) Kakitangan di organisasi kami bersikap terbuka terhadap permintaan yang berubah-ubah (changing demands).

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(b) Kakitangan di organisasi kami bertindak segera terhadap permintaan yang berubah-ubah (changing demands).

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(c) Kakitangan di organisasi kami bersedia menerima idea baru.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(d) Kakitangan di organisasi kami bersedia melupakan amalan yang lama, dan menerima yang baru.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(e) Kakitangan di organisasi kami digalakkan belajar dari kesilapan.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(f) Kami diberikan latihan serta kemahiran yang sesuai untuk bersedia dan membiasakan diri dengan perubahan.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

Soalan 8: Nyatakan sejauh mana anda bersetuju dengan pernyataan berikut mengenai penghayatan MISI dan VISI (mission and vision) universiti di institusi anda?

SCALE: (1) Disagree very strongly (2) Disagree strongly (3) Generally disagree (4) Disagree somewhat (5) Disagree a little (6) Agree a little (7) Agree somewhat (8) Generally agree (9) Agree strongly (10) Agree very strongly

(a) Institusi kami mempunyai visi dan misi yang jelas.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(b) Institusi kami mepunyai strategi organisasi yang selari dengan amalan pengurusan pengetahuan (knowledge management).

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

(c) Misi dan visi institusi disampaikan dengan jelas kepada semua lapisan kakitangan.

	1	2	3	4	5	6	7	8	9	10	
Disagree very strongly	○	○	○	○	○	○	○	○	○	○	Agree very strongly

Soalan 9: Secara keseluruhan bagaimana anda kelaskan kewujudan faktor budaya berikut di institusi anda?

(a) Budaya perkongsian pengetahuan

(b) Budaya bekerjasama

(c) Budaya melibatkan diri serta mengambil bahagian

(d) Budaya saling mempercayai

(e) Budaya mencari dan menyelesaikan masalah

(f) Budaya menerima perubahan

(g) Penghayatan misi dan visi

(h) Apakah terdapat sebarang isu lain yang ingin anda tambah atau komen berkenaan budaya pengurusan pengetahuan di jabatan pendatadbiran di organisasi anda?

Sebagai penutup kajian ini, saya mempunyai beberapa soalan tentang diri anda.

(b) Jantina:

(c) Kelayakan tertinggi:

(a) Umur anda:

(d) Institusi anda:

(e) Apakah kategori jawatan paling hampir dengan jawatan anda di universiti?

Jika jawapan anda lain-lain, sila nyatakan jawatan anda:

(f) Jabatan pentadbiran yang manakah paling sesuai dengan bidang kerja anda?

Jika jawapan anda lain-lain, sila nyatakan jabatan anda:

(g) Sudah berapa lamakah anda bekerja dalam industri pendidikan (universiti)?