KNOWLEDGE MANAGEMENT IN HIGHER EDUCATION IN THAILAND

by

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Presented to the Faculty of the Graduate School of

The University of Texas at Arlington in Partial Fulfillment

of the Requirements

for the Degree of

DOCTOR OF PHILOSOPHY

THE UNIVERSITY OF TEXAS AT ARLINGTON

DECEMBER 2012

ACKNOWLEDGEMENTS

This dissertation would not have been possible without the kind support and help from a number of people. I would first like to extend my heartfelt gratitude to Dr. Rod Hissong my supervising professor for constantly motivating and encouraging me, and also for the invaluable advice that he has provided throughout the course of my doctoral study. I appreciate his limitless patience, profound insights and excellent guidance with this research. He has helped me tremendously. I also wish to thank my committee members, Drs. Alejandro Rodriguez, and Colleen Casey for their expert advice while writing this dissertation as well as for their interest in my research and for joining my dissertation committee.

There are also other SUPA faculty members who deserve my deep respect and appreciation for their assistance while completing my doctoral program. I would like to thank the following SUPA faculty: Drs. Maria Martinez-Cosio, Sherman M. Wyman, and Darla Paulson.

I also want to express my appreciation to the Royal Thai Government for providing financial support for my doctoral studies. Without their support my studies would not have been possible.

My special thanks go to my Thai colleagues for collaborating on data collection. This includes Drs. Kesara Vamasiri, Bundit Thipakorn, Wanna Temsiripoj, Siriwit Pongsakornrungsilp, Valla Tantayothai, Gannaga Satittada, Sittichai Seangatith. I would like to thank Kanokporn Suwanmart, Kittiya Fuangchunuch, Jira Jokthong, Chongchaya Weerachai, Kasemsri Kongmeelab. Furthermore, I would also like to thank a group of Thai students at UTA for their friendship and also for making my life here more pleasurable.

I would also like to sincerely thank the university administrators and the university staff members in Thailand who have contributed to this dissertation. I would like to extend my

appreciation to Dr. Irish, for helping me with my English and for giving advice on my education. This made my life easier while I was in the program.

Finally, I would like to express my deepest gratitude to my parents and my sisters who have encouraged, inspired and supported me for so many years, especially during my graduate studies. Without unconditional love and relentless support from my parents, I would not be where I am today

November 26, 2012

ABSTRACT

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The University of Texas at Arlington, 2012

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This study examines how knowledge management (KM) is applied to higher education in Thailand, and it will also examine whether higher education in Thailand is ready to combine KM with their educational missions in terms of teaching, research, administration, and strategic planning. Knowledge creation and social networking frameworks are used to help understand approaches that higher education institutions in Thailand have used with KM in their day to day operations. The qualitative method is used to explore and understand KM applications within four autonomous universities in Thailand. In-depth interviews were used in this study and the narrative method is used to analyze data.

The results of this research were developed from a study of four autonomous universities. The results of the research study findings include the following 1) the four universities have tried to create new knowledge in both tacit knowledge and explicit knowledge. New methods for improving teaching, research, administration, and strategic planning have been created; 2) it is difficult to answer the question of whether the four universities are ready to combine KM with their missions. KM has been successfully applied within various sections and departments. This study also found that there are nine factors that lead to successfully applying KM with Thai universities. These ingredients are comprised of the following: understanding KM

meanings; the importance of leadership in KM; the community of practices; tools; incentives and recognition; training programs; learning from other's experience; volunteers; and storytelling; In addition, the four universities also have difficulty when applying KM. The factors that delay KM involve issues of workload and time constraints. Some of the university staff members do not want to share their knowledge if they do not have a problem with their work. Information and knowledge will be installed in staff offices and it is difficult for other university staff members to access it. Information and knowledge will be shared among close friends. Some of the university staff members do not want to take notes and this will impact KM utilization.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

Figure Page

LIST OF TABLES

CHAPTER 1

INTRODUCTION

1.1 Problem Statement

Knowledge management (KM) was introduced in 2006 to Thai universities in order to improve their performance in management. At that time, KM was new to Thai society and only a few people understood it. The Office of Public Sector Development Commission of Thailand (OPDC) required public organizations as well as Thai universities to put knowledge management strategies into their respective strategic plan. KM was considered a crucial indicator in measuring a university's performance. The university's annual report showed that the performance of the university on KM was progressing slowly due to the fact that it was an initial experiment to test the process within higher education institutions. The implementation of KM lacked clear and objective goals, including a good business plan for KM. The major problem that still exists in many universities is that the university's staff members need more skills and needs to better comprehend how to implement KM effectively

1.2 Purpose of Study

The purpose of this dissertation is to examine how KM is applied to higher education institutions in Thailand, and it will also examine whether higher education institutions in Thailand are ready to combine KM with their educational missions in terms of teaching, research, administration, and strategic planning. This research is important because it will help identify how to utilize KM within higher education institutions in Thailand. The university that implements KM will foster its development at both the individual as well as the organizational levels. This will help the university to improve its foundations for organizational improvement (Sinclair, 2010; Intree, 2008). This includes discerning the factors that will help universities implement and merge KM with their day to day functioning. Greenwood and Levin state that a

higher education institution produces knowledge systems (Greenwood & Levin, 2008), including offering degrees to both undergraduate and graduate students. A university also conducts research and provides academic services to serve the needs of the community and society (Raksasataya, 2002). If KM works effectively, it will bring change to the universities. KM is expected to drive the universities in Thailand to provide relevant and effective services to their clients. KM is anticipated to help reduce the time needed to provide services to organizational clients (students, university staff members, and external university stakeholders). This will lead to better decision making, an improvement in services in academic and administrative areas, reduced administrative costs, improved organizational learning and a sustainable competitive advantage.

1.3 Theoretical Framework

To discuss the theory of KM it is necessary to define a number of critical concepts and terms. The first step when analyzing KM is to understand the definition of "knowledge" (Morton, 1997). KM scholars often classify knowledge as explicit knowledge or implicit (tacit) knowledge. Explicit knowledge is knowledge that the knower can make clear by means of a verbal statement: someone has explicit knowledge of something if a statement of it can be elicited from him by suitable enquiry or prompting. The examples of explicit knowledge include knowledge from books, pictures, movies, results from a test, and reports from an experiment (Endres, Endres, Chowdhury, & Alam, 2007). Explicit knowledge is easy to understand and it can also be codified and stored. An organization can make explicit knowledge accessible and available to all organizational members (Hawryszkiewycz, 2010). Implicit knowledge can then be defined simply as knowledge that is embedded in a person. This definition of implicit knowledge corresponds roughly to what Polanyi calls tacit knowing: we can know more than we can tell (Endres et al., 2007). Tacit knowledge usually refers to abilities, expertise, and conceptual thinking. This includes characteristics of what is known. This means that what individuals know has not been exchanged or it is not able to be exchanged (Geisler &

Wickramasinghe, 2009). An implicit knowledge example is knowledge that cannot be observed from books or any evidence such as know-how that it is embedded in people. If organizations can collect this knowledge in document forms then they can always utilize them at any time (Endres et al., 2007). Implicit knowledge is difficult to codify. Individuals can utilize tacit knowledge in many ways with their projects, by seeking suggestions, advice, and contributions. The opinions of individuals who provide knowledge contributions about various issues to others, would provide new insights to others (Hawryszkiewycz, 2010).

Knowledge can be defined as "facts, information, and skills acquired by a person through experience or education. Knowledge consists of facts and information in a particular field and includes awareness or familiarity gained by experience of a fact or situation" (Oxford Dictionary, 1989; Liebowitz & Beckman, 1998). Knowledge involves an ever-changing mix of frame experience, values, contextual information and expert insight. This mix provides a way to evaluate and adopt new data and experience. The authors assert that organizational knowledge is frequently an integral part of repositories and is also found in group routines, processes and norms. They also claim that the human dimension of experience, context and analysis give knowledge deeper value (Davenport & Prusak, 1998). Nonaka, Byosiere, and Borucki (1994) are concerned that knowledge is related to meaning and whether it is context-specific. Individuals who utilize knowledge must have experience with understanding the surrounding context and its influences (1994). Knowledge can be repository within a document, a computer, and embedded in individuals. Knowledge can be seen through an individual's behavior and action (Endres et al., 2007). This means that knowledge is created by individuals or groups of individuals through their experience, values, and insight. This will be combined with information and grounded to become knowledge. Knowledge can be managed through the process of organizational management by using computer technology which becomes entrenched in documents and in organizational members and this knowledge is reflected in the routines, the practices, and the norms of the group (Davenport & Prusak, 1998).

Organizations need to understand knowledge since it is related to data and information. Data are “a set of discrete, objective facts about events” (Davenport & Prusak, p. 2, 1998). Data are usually defined as raw facts and numbers that convey a specific issue. Data do not provide the relevant context (Frost, 2010). This means that data are only related to facts and figures that are very useful and relevant to something specific when put into context. Information is defined as a conclusion or fact that tells us about what we want to know. Information is different from data, in that data are viewed as facts and they may not be used as much as information since they are not informative. Information that can be used is derived from data that are processed (Struble, 1980). Exchanging information generally can be seen through a conversation and it seems to be everywhere (Fox, 1983). Information must be transformed into knowledge. This means that information needs to be selected, filtered, organized, engineered, and interpreted by using a process of utilizing some forms of frame of reference or theory. As a result, knowledge has permanent characteristics whereas information is fluid (Karlsson, Flensburg, & Hörte, 2004).

Two theoretical frameworks will be used in this study. These theories will help to understand the roles of KM and how they have been applied to higher education institutions in Thailand. The first approach is the organizational knowledge creation theory that focuses on creating knowledge through the conversion between tacit and explicit knowledge. The aim of this perspective is to understand how knowledge is dynamically created within organizations (Gottschalk, 2005). This theory was developed within the private sector in Japan. It may be useful to apply this theory when studying public organizations in Thailand as the organizational culture of both countries is fairly similar. The second approach is the social network theory and it focuses on the relationship between actors, individuals or organizations. The relationships between actors may affect the flow of knowledge. Some relationships may constrain the flow and some relationships may enhance the flow (Borgatti & Ofern, 2010) when these relationships are associated with various types of people (Johnson, 2008). Higher education

institutions will benefit from understanding that KM is not only data management but also a cycle that consists of action, data, information, and knowledge. Metcalfe (2006) states that KM will help to capture and then codify knowledge within higher education institutions into tangible assets by learning from private sector experiences. Knowledge is generated through the process of knowledge creation and knowledge is always discussed and distributed within small groups. Floyd and Wooldridge (1999) posit that social networks will help them to spread knowledge throughout an organization. Individuals start to share their knowledge within a group as well as with other groups within an organization (1999). From this view point, we can see how individuals agree to share their knowledge and also what helps them to access information. This includes what connects them to others within an organization in order to share experiences. This leads to the ability to build potential skills across the organization.

The organizational knowledge creation theory states that problems always occur within organizations. The problems will then be defined by organizations and existing knowledge will be applied to solve these problems. As a result, new knowledge will be developed through the process of problem solving. Creating new knowledge is considered more crucial than maintaining existing knowledge within an organization. The organization works not only as an information processing machine but it also creates new knowledge through action and interaction. The organization interacts fluidly with the environment and by doing so it reshapes both the environment and itself through the process of knowledge creation. This process is a perpetual process where one rises above the limits of the old self-identity by incorporating new context and thus a new view of the world through new knowledge (Gottschalk, 2005). Nonaka (2000) states that an organization continuously creates new knowledge out of existing knowledge and that this ability is an important issue when trying to ascertain an organization's knowledge capability. An organization's ability to build new knowledge is a dynamic capability and is thus more important than simply processing the pre-existing stock of knowledge that can be developed at any time. Gottschalk states that new knowledge helps to expand our sense of

self in new directions. It expands how we look at the world and it expands how we feel in the world. Individuals also change their view of the world by interacting with other individuals, and with their environment. Through knowledge creation our old sense of self acquires a new context and a new outlook on the world. Our sense of self is also transformed through the interaction we experience among other people and also with our physical surroundings (Gottschalk, 2005).

Organizations dynamically create knowledge by using a model of knowledge creation. This model consists of three elements. The first element is the *SECI* process: socialization, externalization, combination, and internalization. *Socialization* is the transformation of tacit knowledge into tacit knowledge. Knowledge is passed on through practice, guidance, imitation, and observation. *Externalization* is the transformation of tacit knowledge into explicit knowledge. *Combination* is the transformation of explicit knowledge into more complicated forms of explicit knowledge. *Internalization* is the transformation of explicit knowledge into tacit knowledge (Nonaka, 2000). Internalization is to be similar to learning by doing. Explicit knowledge and tacit knowledge will become valuable assets through the process of socialization, externalization, and combination which are then internalized into individuals as tacit knowledge embedded in the form of technical knowhow or shared mental (Daud, Abdul Rahim, & Alimum, 2008).

The second element is *ba. Ba* is the shared context for knowledge creation, including the place to create knowledge. The Japanese term *ba* means a place at a specific time. Knowledge cannot be created without a context. The context refers to participants and the way they participate. A physical context such as the cultural, social, and historical setting is needed in order to create knowledge. A physical context is important to knowledge workers. They will be able to understand and appreciate information under a context and then information will become knowledge (Nonaka, 2000). *Ba* is the mental ability to understand how information becomes new knowledge. Interaction is a crucial concept when trying to understand *ba*.

Knowledge creation is a dynamic process that helps to expand our sense of self and our sense of the world. Interactions among individuals and their environment or interactions between individuals help to create new knowledge. *Ba* is the key factor and context that helps individuals to interact with each other, and individuals who participate in *ba* start to create knowledge through self-transformation. Participants with *ba* are committed to it through interaction and action and they cannot only be an observer. Participants share space and time through *ba. Ba* is necessary in knowledge creation, especially in the stages of externalization and socialization where participants are able to share space and time. Participants are also able to share context and form a common language within their groups if there is a close physical interaction. *Ba* works in the same way as a platform for creating knowledge by collecting applied knowledge into a certain space and time and integrating it. This is because knowledge is intangible, dynamic, and unbound. *Ba* does not need to be bound to a certain space and time, but it can be a physical place as well as a virtual place (Gottschalk, 2005).

The third element is knowledge assets. Knowledge assets are the necessary resources that enable the knowledge creation process. Knowledge assets help to increase the value of the business firm. Knowledge assets that are very important require trust, roles, and routines. Trust is needed when knowledge is shared among workers. Trust will encourage workers to participate in a process of knowledge creation. Roles will be defined in order to assist knowledge workers in knowing how the knowledge creation process works. It is crucial to understand common routines in order to create a shared knowledge agreement which covers the issues of time, place and frequencies. Knowledge assets, in order to be truly useful and relevant, need to be generated and utilized internally (Nonaka, 2000).

Knowledge is created by the knowledge spiral formed by the interactions of the three aforementioned elements of knowledge. Organizational knowledge will be created when explicit and tacit knowledge interacts with each other. The interaction between explicit and tacit knowledge is called knowledge conversation. As a result of its interaction, organizational

knowledge both explicit and tacit knowledge, is expanded in quality as well as quantity (Nonaka, 2000). The SECI model was initially created to explain knowledge conversion and knowledge creation within an organization. It was initially designed at the organizational level. However, an actual instrument for measuring the SECI model is extremely rare.

The Social Networking Theory can be traced back to the ancient Greeks, while modern social network analysis can be seen from the work of Jacob Moreno, who wrote in the 1930s. The field of social network analysis was first called *sociometry* by Moreno. He states that the social links between individuals provide a means for the flow of ideas. This is a major key for understanding social structure for researchers in order to conduct future studies (Borgatti & Ofern, 2010). The social network theory focuses on networks by identifying the structure of relationship between actors (their nodes) as well as describing the relationships between them (Hatch & Cunliffe, 2006).

Actors are involved in networks with the purpose of producing a profit (wealth, power, and status). Resources or social capitals that are embedded in social networks will help to increase the outcomes of actions (Lin, 1999). Social capital has three dimensions; the structural dimension, the rational dimension, and the cognitive dimension. The structural dimension shows the connections between actors based on their abilities through information exchange within a community. This dimension helps to save the time and investment of an actor in terms of collecting information. The rational dimension helps to develop trust, shared norms, mutual commitments, and identification (Hatch & Cunliffe, 2006). Being able to trust the advice networks within an organization helps actors to understand their function as well as how they can identify the source of organizational problems. This includes the commitment of individuals to the jobs. These elements have tremendous ability to produce results (Krackhardt & Hanson, 2003). This includes the capacity to take advantage of weak ties between networks. The cognitive dimension helps to develop intellectual capital when actors exchange their information and share knowledge. People tie together and maintain their relationships if they share the

same language and codes. In contrast differences in those areas force them apart. Granovetter (1973) points out that in social network theory, the essential features that indicate what type of information is needed for a network are strong ties and weak ties. His work shows that students with high economic status will benefit from strong ties in terms of academic advancement. Students with low socioeconomic status will not see that the provided information can benefit them and offer a real opportunity. Granovetter posits in his seminal work, that weak ties give information beyond the formal information received from your usual circle. Weak ties may also connect similar people. He states that "empirical evidence is the stronger tie that connects two individuals, the more similar they are, in various ways'' (p. 1362). Therefore the way that actors with the weak ties communicate and exchange their knowledge, ideas, and opinions is different from actors with strong ties. Granovetter also states that weak ties are associated with social distance in academic settings. The weak ties in the academic arena could be relationships among advisors, faculty members, administrators, and financial aid officers. The weak ties also include opportunity, information and resources. For instance, those resources are fellowships, grants and internships to students who cannot access knowledge beyond those typically available (Granovetter, 1983).

Hatch and Culiffe (2006) state that social network theory will be used to analyze how organizations maintain their relationships within networks in order to receive information. This includes how they can compete with other organizations. Borgatti and Ofern (2010) indicate that the study of social network analysis provides an important advantage to educational research and policy, especially with policy that is related to teacher behavior. The social network theory also has limitations in that it can sometimes oversimplify otherwise complex relationships. This dissertation will examine only how higher education institutions establish their networks and receive information.

1.4 Methodology

The research design is qualitative as it studies information from documents about KM development in Thailand. University administrators and KM staff will be interviewed using a face to face structured protocol. The research will try to understand the KM issue clearly. This includes the understanding of realities as told from the interviewee's point of view (Miller & Glassner, 2004). Conducting research by interviewing relevant subjects helps the researcher understand the individual perspectives and behaviors within various contexts (Creswell, 2003) as they happened in Thailand.

Interviewees will be selected from a group of university administrators and the university support staff members who are involved with KM. The university administrators will be comprised of the Vice Presidents for Planning and Development, the Vice Presidents for Information and Technological Development or the Chief Knowledge Officers. The data will be collected from 40 interviewees. These interviewees are from four autonomous universities. The numbers and names of interviewees will be chosen from the list of participants who attended and shared their opinion on KM. The Chief Knowledge Officer and KM team will help to select interviewees who are the university staff members and work on KM. The number of participants from each university will total ten because of the limitation of time and funding to conduct this dissertation. The participants will be selected based on their job responsibilities such as administrators and staff members from the university level and the department levels. These participants know and understand KM since it is a government requirement that every Thai university must implement and manage KM within their organization.

The four universities are comprised of King Mongkut's University of Technology (KMUTT), Suranaree University of Technology (SUT), Walailak University (WU) and Mae Fah Luang University. (MFU), KMUTT is located in Bangkok and MFU is in the North. The location of SUT is in the East while WU is in the South. These universities are good for field study because: 1) they are an autonomous university and the results from this study can be used as a

lesson for other autonomous and public universities. 2) These four universities are actively applying KM with their functions and this can be seen from the results reported by the OPDC. This includes the KM activities and events which are held on their campuses.

Data collection: Data will be collected by using an audio recorder and by taking notes while having face to face structured interviews with the participants from the four universities in Thailand. Data will be coded in order to identify concepts and their dimensions, and these concepts will be connected based on their dimensions. There are two sets of questions. One is for the university administrators and another one is for the university staff members. The questions were developed based on the literature review and research questions. The Chef of Knowledge Management from KMUTT helped to review the questions.

Data analysis: Data will be classified into categories based on coding. Documents and academic papers such as books, reports, journals, and articles that are related to KM originating from the four universities, will be utilized in order to enhance information.

1.5 Key Terms

1.5.1 Autonomous Universities

Autonomous universities are higher education institutions that have their own self-government in order to promote operational flexibility. The autonomous universities are allowed to have their own administrative structure and budgeting system. The budget is allocated from the government. The university is also allowed to handle and make decisions on administrative and management matters. The flexibility of the administration and management will enhance the university capabilities and performance (The Office of the Higher Education Commission-The OHEC, 2008).

1.5.2 Management

Management can be considered an art (Murdick & Ross, 1971) that is fundamentally related to the process of planning, organizing, directing, and controlling activities in achieving organizational goals (Flippo & Munsinger, 1978). This includes a systematic gathering of

resources in order to utilize those resources to accomplish designated and developing organizational objectives (Flippo & Munsinger, 1982). Management is also viewed as the challenge of creating an effective environment. Individuals will be assigned to work together by using organizational resources in order to achieve organizational activities and goals (Fulmer, 1983; Huse, 1982; Holt, 1987).

1.5.3 Technology

Technology is a tool that can be used to facilitate and enable the processes of knowledge development, including transferring and utilization of knowledge. Technology simultaneously supports organizational improvement, innovation, and learning (Handzic, 2004). Technology is the types and patterns of activity, equipment and material, and knowledge or experience used to perform task (Gerloff, 1985). Technology covers broad areas of information, including common day to day procedures all the way to large organizations and their management. This includes modern and more efficient means of productions versus older less efficient method as well as sophisticated inquiries that help develop new products (Malecki, 1997).

1.5.4 Embeddedness

It is difficult to define the meaning of embeddeness but it can be explained by this example: the knowledge transfer relationships in the kinship network (family network). Assuming, there are 36 profit organizations, which include 14 organizations run by members of the family. They own knowledge, including technological advances and skills knowledge is embedded because of their familial relationship. The family members are the central actors in transferring both new and old knowledge within their network. The members of the family also prefer to receive new knowledge from outside their network. The remaining 22 organizations are run by nonfamily members. Knowledge is embedded in the members of the family more than knowledge is transferred to nonfamily members (Kilduff & Tsai, 2003).

1.5.5 Social Capital

Social capital can be defined as a form of capital that an actor who is embedded in the relationship, receives or inherits from the network. Social capital does not always mean money. Actors will utilize their social capital in different ways when they use their money or their human capital. Actors are able to use their social capital when they essentially collaborate with other actors. For example, actors may need suggestions related to their job from their colleagues. The way to increase social capital is through building the connection between groups (Kilduff & Tsai, 2003).

1.5.6 Knowledge Management

It is very difficult to define what knowledge management is exactly because it has many definitions and dimensions. Knowledge management was considered a systematic approach which is applied for capturing, structuring management, and disseminating of knowledge all over an organization. As a result, the organization's performance would increase in terms of working faster, reuse, and the use of best practices. This includes reducing the costs of reworking from project to project (Nanoka & Takeuchi, 1995). Knowledge management is defined as a discipline that focuses on an intellectual capital as an asset that can be managed. Rather than seeing knowledge management as the sum total of all the information held by an organization's employee, it is a better idea to think of it as a way to gain business insight from many employee sources, including websites, databases, and business partners (Honeycutt, 2000; Hislop, 2009). Knowledge management brings about a strategic policy formulation which helps to develop, improve, and apply knowledge for optimal use within an organization in order to achieve the organizational goals (Van Der Spek & Spijkervej, 1997).

1.5.7 Community of Practice (CoP)

The CoP is one type of social network and it has its own form of organization. Neither supervision nor interference is required for this CoP community. It is not part of an organizational structure. This characteristic of the CoP is attractive to its members (Bergeron,

2003). Pavlin (2004) states that interaction among the CoP members consists of face to face meetings, online communications, or the combination of both. Substantially, a collaborative meeting may be organized a few times a year. Bergeron (2003) indicates that the development of CoP is supported by the managerial system even though it is not a formal component of the organization. This is because its activities in sharing, transferring, and creating knowledge and innovations will benefit the organization. Hislop (2009) states that the characteristics of a CoP are comprised of three elements. First, a body of knowledge and practice which is shared by its members will be called a collective group or a collective knowledge. Second, a sense of shared identity will be developed within the CoP. Its members have been sharing their values, attitudes, and a common world view. Third, a sense of communal identity is developed among the CoP members. These elements can be seen through physical activities, language, and communications.

1.5.8 KM Chief Officer

The Chief Knowledge Officer is an important position for KM implementation. This position usually belongs to someone in senior management (Bergeron, 2003). His or her role is to integrate important issues when they occur within an organization and connect them with other important events that happen within the organization (Desouza and Awazu, 2005).

Knowledge management is defined as more than information technology and information systems. There are other elements that include social and cultural components. This means that KM is also related to innovation and other disciplines, for instance, organizational development and competitive intelligence. Organizations will be developed to become learning organizations that can adjust themselves to change (Grossman, 2007). Knowledge management is considered one of the most important factors in developing organizational competence. Knowledge management is the process of creating, sharing, capturing, practicing, applying, and using knowledge both tacit and explicit knowledge to enhance organizational performance. These uses are the reasons why knowledge

management will be used and implemented in public agencies, including higher education institutions in order to use knowledge management to develop organizational competitiveness.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Higher education institutions usually produce knowledge. Do higher education institutions still need to manage the knowledge that they have created? Do they need to apply KM with their academic functions? What makes it possible to utilize KM within higher education institutions? Higher education institutions need to manage knowledge by using KM, because higher education institutions are the biggest source of knowledge production. Knowledge is shared and transferred throughout the institution. Higher education institutions should leverage knowledge to improve their services and to enhance their ability to accomplish their organizational goals. KM will be applicable if higher education institutions have knowledge workers who share values, use team-working effectively, and learn together following organizational objectives. This review synthesizes previous research related to KM based on two theories, the knowledge creation theory and the social network theory, in order to understand the crucial roles of KM in higher education institutions. A few related articles were found that provide an advanced comprehension of knowing how higher education institutions develop their initiatives to complete their competitive advantages.

KM was initially generated in the past decade from theory and practice in the business sector (Ruth, Shaw, & Frizzell, 2003; Petrides & Nguyen, 2006). The KM practice has been used to transfer information in business. It may not be applicable to higher education institutions to use appropriate KM strategies but higher education institutions will gain more benefits from utilizing KM over the long term. Higher education institutions have been increasingly pressured by public demands for accountability to provide significant performance and outcomes. Educational institutions have realized that performance will be improved through a more

comprehensive, integrative, and reflexive understanding of the impact of information (Petrides & Nguyen, 2006).

The application and use of KM in the private sector has made benefits apparent. KM improves organizational performance and enables the organization to accomplish its goals by learning from past achievements and failures. Organizations can use, reuse, and modify their existing knowledge to develop their products, including creating new knowledge, new solutions, and new products. Applying KM within the organization helps to develop organizational competencies as well as skills of workers in a long term. This includes helping organizations to remove outdated knowledge, to enhance their ability to create new innovation, and to enhance their ability to preserve important knowledge and capabilities that could be duplicated and missing (Frost, 2010).

2.2 Organizational Knowledge Creation Theory

Knowledge creation is based on the interaction between tacit and explicit knowledge. A continual interaction between tacit and explicit knowledge creates new ideas, concepts, and knowledge. Organizations dynamically create knowledge by using a model of knowledge creation. This model consists of three elements. The first element is the interaction between tacit and explicit knowledge which is expressed by four different patterns (SECI): socialization, externalization, combination, and internalization (Nonaka, 2000).

Socialization is the conversion from tacit knowledge to tacit knowledge. Gaining new tacit knowledge can be done by sharing experience in the same environment and through this the tacit knowledge becomes concretized. Socialization occurs when new skills are transferred from skilled individuals to unskilled individuals. Socialization happens within the typical workplace and it requires persons to share their opinions and mental models. Socialization refers to the tacit knowledge that is shared through activities between persons rather than written or verbal instructions. For example, new employees know how to work by learning from the transferred ideas and images of experienced workers. Generating new knowledge is based

on the individuals' knowledge and also group knowledge, including the sharing of common understanding. Social processes facilitate the transition of knowledge among persons (Gottschalk, 2005). Interaction is usually the starting point of socialization. Organizational members are able to share their experiences through the process of interaction. The ideas initially generated through this process are able to create new projects and assignments in the classroom. Informal discussion could be an intermediation among students and the lecturer (Daud et al., 2008).

Externalization is the transformation of tacit knowledge into explicit knowledge. Explicit knowledge can be seen as words and numbers that can be shared in the form of data, scientific formulation, specifications, manuals, and the like. Explicit knowledge is formally and systematically communicated between individuals. Tacit knowledge can be transformed into explicit knowledge successfully depending upon the common knowledge space and the use of means. This means can be seen in the use of metaphors, analogy, and mental models (Gottschalk, 2005; Daud et al., 2008). These modes should be appropriate and help individuals to clearly identify hidden tacit knowledge. These modes may be often utilized to improve the ideas that are created during formal meeting or brainstorming session in the classroom (Daud et al., 2008). Externalization involves processes that help to transform ideas or images into words, concepts, visuals, or figurative language. These include deductive/inductive reasoning or creative inference (Gottschalk, 2005).

Combination is the transformation of explicit knowledge into more complicated forms of explicit knowledge. This knowledge becomes more intricate and systematic. Knowledge from outside and inside the departments within an organization is collected and then combined, edited, and processed to become new explicit knowledge. It is then circulated to organizational members. For example, financial information is collected from all parts of the organization, put together, and then synthesized to demonstrate the financial health of the organization. This report is new knowledge. Combination involves processes that create more complicated explicit

knowledge. Combination adds to group level and organizational knowledge by concentrating on communication, diffusion, and the systemization of knowledge. This means that the cooperation of groups within the organization is needed to support these processes, including aggregating technology and knowledge (Gottschalk, 2005; Daud et al., 2008). This can lead to new knowledge creation (Daud et al., 2008).

Internalization is the transformation of explicit knowledge into tacit knowledge. Explicit knowledge is converted into tacit knowledge when individuals such as new employees read documents or manuals about their jobs and then internalize this knowledge and start doing their jobs. This new knowledge becomes tacit knowledge or a part of existing mental models and know-how through internalization. This knowledge is also embedded as well as accumulated at the individual level. The sharing of new knowledge will be continuous as a new spiral of knowledge is created through socialization. Through internalization one is able to recognize the knowledge that is necessary to the individual within the overall context of the organization's explicit knowledge (Gottschalk, 2005). Internalization is similar to learning by doing. Explicit knowledge and tacit knowledge becomes valuable assets through the processes of socialization, externalization, and combination which are then internalized into individuals as tacit knowledge embedded in the form of technical knowhow or shared mental (Daud et al., 2008).

The impact of the SECI process utilization on higher education can be seen through the resulted innovation in academic performance. Students are able to improve their learning skills through knowledge creation (Daud et al., 2008). SECI is a continuous process of knowledge creation which occurs through the dynamic interactions of explicit and tacit knowledge (Gottschalk, 2005), as can be seen from the Figure 1. Explicit knowledge is knowledge that the knower can make clear by means of a verbal statement. Implicit knowledge can then be defined simply as knowledge that is embedded in a person (Endres et al., 2007).

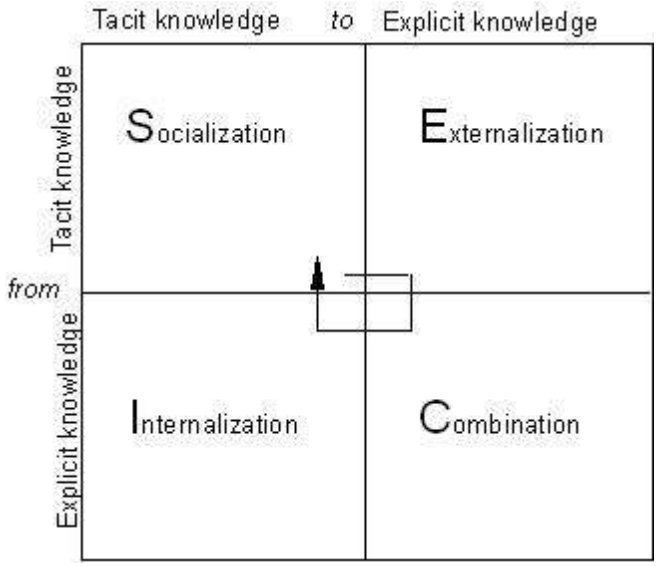


Figure 2.1 The engine of knowledge creation

The SECI shows that new knowledge can be created by converting existing knowledge. This can be in the form of either tacit or explicit knowledge. Nonaka, Byosiere, and Borucki (1994) study how organizations create knowledge through the processes found in four knowledge conversion patterns. These results found that new knowledge is created through the processes found in the three conversion patterns that are socialization, internalization, and externalization. These three patterns are involved with tacit knowledge. Another interaction pattern, combination, which is the conversion of explicit knowledge to more explicit knowledge, is an important factor in enhancing organizational performance (1994). In higher education institutions the internalization could be facilitated through documented knowledge. This includes the practice of producing notes by students on the particular subject under investigation. For classroom activities, it helps if the knowledge is verbalized or diagrammed into documents, manuals, or oral stories (Daud at al., 2008).

The second element is *ba. Ba* is the shared context for creating knowledge and the place to create knowledge. Ba is a Japanese term and it refers to a place at a specific time. Knowledge is always created within a context, and in this case it consists of participants and the

way they participate. A physical context is needed for creating knowledge. A physical context is very important to knowledge workers as it makes them understand and appreciate information. A physical context always refers to the cultural, social, and historical setting. There are four types of *ba*, a common place or space, for creating new knowledge. These four types of *ba* are related to four models of knowledge creation. The first *ba* is originating *ba*. It starts with the socialization mode where the process of organizational knowledge creation begins. The originating *ba* is where individuals communicate with others face to face at the same time and place. The second *ba* is interacting *ba*. It refers to a space and it is related to the externalization mode which is tacit knowledge converted to explicit knowledge. Knowledge is shared through the process of conversation and collaboration. The third *ba* is cyber *ba*, a virtual space. This *ba* is related to the combination mode. A virtual space is where individuals use it as a channel to communicate and share their knowledge. The final *ba* is exercising *ba*. It is related to the internalization mode of knowledge creation where explicit knowledge is converted to tacit knowledge. These four types of *ba* facilitate organizations to create knowledge (Nonaka & Takeuchi, 1995).

The third element concerns knowledge assets. Knowledge assets are very important in enabling the knowledge creation process, including increasing the value of the business firm. Knowledge assets involve trust, roles, and routines. Trust encourages knowledge workers to share their knowledge and participate in a process of knowledge creation. Trust should be reciprocal and this will make workers feel safe when they have to share their knowledge. Roles will help knowledge workers to understand how the knowledge creation process works. Roles should be defined and workers will be familiar with how knowledge creation takes place. Knowledge workers need to understand common routines and this will help them understand how to create and share knowledge. This is because workers in different roles and with different knowledge are able to handle time, place, and frequency when creating new knowledge (Nonaka, 2000).

Higher education institutions usually produce knowledge on a daily basis and this knowledge needs to be systemically managed. Higher education institutions are also required to provide accurate information and data on outcomes to the public. KM can be used to improve knowledge systems within educational institutions (Petrides & Nguyen, 2006). Using the knowledge creation theory to study KM within educational institutions is useful. Higher education institutions are able to leverage and distribute their knowledge to society. Knowledge creation is always applied with business. Grover and Davenport (2001) illustrate that firms have tried to convert raw data into usable knowledge. The KM initiative is to transform data into knowledge. This approach uses technology, such as computers and statistical analysis to help create new knowledge. New knowledge will be installed and used within an organization, and some knowledge will be provided for their customers.

In academic areas, such as universities, it is important to reward organizational members when they create and share knowledge. This is also related to the amount of knowledge they share and create. A possible reward includes a promotion. A promotion always depends on committees as well as recommendations given by experts from outside the university. Higher education institutions can learn how to reward their members from the industrial or business sector, but there are not many examples to learn from. To promote the work in a semi-academic area, it needs to be done with documentation and technical reports. The quality of the reports will be evaluated by experts both inside and outside the organization (Pasher & Ronen, 2011).

Knowledge is created by the knowledge spiral formed by the interactions of the three aforementioned elements of knowledge. Organizational knowledge will be created when explicit and tacit knowledge interacts with each other. The interaction between explicit and tacit knowledge is called knowledge conversation. As a result of its interaction, organizational knowledge both explicit and tacit knowledge, is expanded in quality as well as quantity. The four steps of knowledge conversation are comprised of tacit to tacit, tacit to explicit, explicit to

explicit, and explicit to tacit. These four steps are also known as socialization, externalization, combination, and internalization, or the SECI process (Nonaka, 2000). The SECI process will assist in developing academic performance in terms of innovation as well as enhancing students' learning process through knowledge creation. The utilization of these processes will allow innovation in academic performance and could help higher education institutions to enrich the learning process of students through knowledge creation and innovation (Daud et al., 2008).

Higher education institutions can learn from business when it applies and uses knowledge creation theory to improve their performance. The result of these studies will help higher education institutions enrich the learning process of students through knowledge creation and innovation.

2.3 Social Network Theory

Networking has taken an important role in education in recent years. There are several cooperative arrangements in local and national initiatives. Educational institutions or groups of schools have worked together in order to improve learning and other aspects of education that will impact learning. This means that at least two organizations have collaborated and worked together and these organizations have shared a common purpose. For example, these educational institutions need to improve their innovation and strategies to enhance the abilities of their students to learn. This includes the demand from political interests that require that educational institutions work to improve and highly educate its citizens. Educational institutions are increasingly improving networking capability in order to gain higher levels of achievement (Muijs, West, & Ainscow, 2010).

The social network theory draws attention to the link among actors (groups or organizations), when they aim to exchange information, opinions, ideas, advice, and knowledge. Actors will share more knowledge if they have a strong involvement with their connection. This gives an actor more knowledge, influence and power over other people in a social network (Sutherland, 2011). Social networks and relationships are related to exchange

models. The ties between individuals replicate a basic form of exchange. This form may depend on levels of social relationships. The relationships sometimes are weak ties if they are less frequent and have weak emotional involvement or moderately weak bonds. There will be strong ties if the relationships are more frequent interactions, and if individuals have a positive and strong emotional involvement. Relationships may end if they are involved with negative emotions (Johnson 2008; Krackhardt & Hanson, 2003), such as when the extrinsic-type rewards are less than the cost. The levels and types of social bonding can be considered a resource or social capital, including whether they are intense or casual, frequent or infrequent (Johnson 2008).

The social network theorists have been discussed, especially in terms of how they discuss the influences of strong and weak ties. These ties are excellent at bridging and bonding social capital (Sutherland, 2011). Social capital is defined as relationships where individuals can utilize their institutional support. Individuals can potentially deliver their knowledge to others within their relationships. Social capital has inherent resources derived from being in a social relationship and it then influences collective actions. Resources refer to trusts, norms, and networks that are comprised of those who share a common purpose (Stanton-Salazar & Urso Spina, 2000). This can be seen from these studies. Weck (2006) studied the management of collaborative R&D projects with customers. She found that the important success factors were an inter-firm knowledge creation process and the creation of a genuine 'win-win' situation. Also important are clear roles and responsibilities, a customer-oriented approach and the exchange of complementary specialist knowledge. Kaše, Paauwe, and Zupan (2009) examine the relationships among human resource (HR) practices, interpersonal relations, and intra-firm knowledge transfers by using the social network perspective. Their results found that the structure relationship is based on work design and training and the development of HR practices. These things also form and shape the cognitive relationships within a firm's social

network. The effects of work design, along with training and the development of HR practices on intra-firm knowledge transfer are primarily mediated by interpersonal relationships.

It is not possible to demonstrate the development of social networks in terms of information technology (IT) applications. IT is also the fastest growing application. The IT application is a tool and it helps to expand actor networking. IT is used in various areas, including higher education. Its use will be pertinent with learning and teaching. As an IT application, social networking is very important for students and teachers in order to communicate, learn, and teach. Social networking makes learning easier for both students and teachers. Lectures and their contents can be provided via social networks while students are able to learn, comment, discuss, and ask questions in the form of emails, web boards, Facebook, and blogs. Lectures and their contents can be uploaded on websites and students can often study outside classrooms (Skuflic, Galetic, & Herceg, 2011).

Social capital is closely related to the Actor Network Theory (ANT) which is concerned with not only the connections between humans but also the relationships between human and nonhuman networks. The social network theory is less similar to interpretation epistemology than the ANT. The ANT is also interested in what an organization consist of, as well as how knowledge is created. Actors can identify reality in their networks through their positions (Hatch & Cunliffe, 2006). Individuals in social networks will gain benefits and a good outcome from social capital. Actors in the network can suggest other actors to other networks in order to receive an important source of information. They also provide the additional benefits of validation and emotional support.

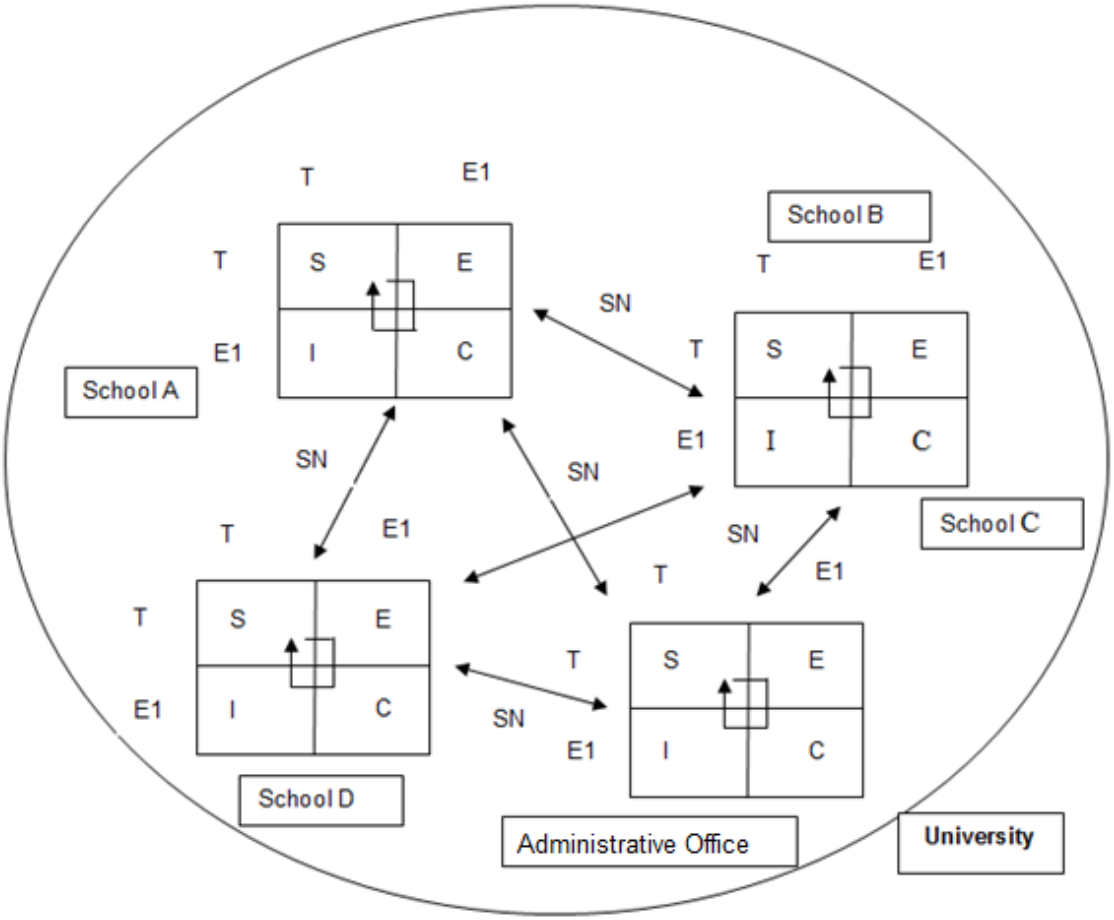
The major focus of the social network perspective is the relationship between actors. This viewpoint is dissimilar to the attribute-based approach of traditional social science. In traditional social science the distinguishing characteristics such as resource advantages will be used to explain the most successful organizations. The organizations with the best performance contain the best workers, technology, organizational structure, and strategy. The explanatory

mechanisms that are concerned with these elements allow them to perform better than others. In contrast, the bonds of actors in networks that can provide both opportunities and constraint are a major concern of social network theory. This theory aims to examine the characteristics of an organization and the relationships not only within its organization, but also the connections it has with other organizations. The emergence of social network analysis implies a very important change in the perspective of education research. Social network theorists have progressively tried to understand the process and conditions that support and inhibit change (Borgatti & Ofern, 2010). The study of social network analysis provides an important advantage to educational research and policy, especially in policy that is related to teachers' behavior. The social network theory also has limitations in that it can sometimes present a complex picture too simplistically (2010).

The organizational knowledge creation theory is different from the social network theory because it shows how knowledge is created and shared through the four patterns (SECI model) within the organizations. In this model the interaction between tacit knowledge and explicit knowledge is continuously converted. At the same time, organizational members learn and practice while knowledge is created, shared and transferred in a spiral process. This means that the organizational knowledge creation theory can explain how individual knowledge becomes organizational knowledge. This includes how knowledge is shared within a group. Social network theory is concerned with relationships between individuals. This includes illustrating the issue of how information flows through a social network and how different nodes impact different roles in the process of exchanging and transferring knowledge. An organization is a formal structure and it is related to a control and reward systems. An organization becomes larger and more complex and these force organizational members to communicate and interact with other actors and organizational units. This results in the development of a social network that carries out day to day work. This means that this theory is interested in how organizational members connect in order to share the same purpose. This includes crucial resources that can

be used to facilitate and bridge relationships in order to achieve novel information. This also demonstrates the evolution of social networks within an organization. This theory helps to understand organizational members' behavior through the context of social relationship. For example; in a social network if two individuals (A and B) have a friend (C) in common, both of them will probably be friends in the future. C and A may become close friends if both of them have the same interest whereas B and C may not be friends if B or C violates the relationship. Previous qualitative research on measuring a strong tie and weak tie between individuals and between individuals and groups is extremely rare. Granovetter (1983) does not develop psychological and sociological variables to measure these ties. There are reasons to believe that there are systematic differences between both relationships. He suggests that strong or weak ties will be reflected by time commitment and particularly by the amount of time spent within a network. The more time the individuals spend with friends, the stronger the relationship will be.

2.4 Adding Social Network to Knowledge Creation



Note: S = Socialization, E = Externalization, C = Combination, I = Internalization, T – Tacit Knowledge, E1 = Explicit Knowledge, SN = Social Network

Figure 2.2 Example of adding social network to knowledge creation

This model attempts to offer a more realistic over-view of KM that is applied to the university and whether it is ready to embrace KM with its functions. The four knowledge creation models (SECI model) are working within departments or schools. The SECI model demonstrates the process of how knowledge of the university members enters and becomes the university's knowledge. This includes how they share and transfer their knowledge within their schools. This means that the university is ready to use and apply KM with their routines. Relationships are built among schools in order to share knowledge, including obtaining some

scarce resources and important information. Resources that each school will receive are based on their relationships that are strong or weak. This model does not illustrate the details of tools that can be used to share knowledge.

For example; a professor from department A who has knowledge of computer technology wants to produce a cheap talking dictionary for Thai students. He asks other professors who are experts in electronics and mechanics to join his project. They have set the model for building the dictionary using Thai, English, and Chinese. Each professor shares his or her knowledge, which is tacit and explicit knowledge, in order to build the model. We can see how the SECI works from these stages. They have designed the model and programs but they are not expert in language. They do not have a budget for conducting their project. They have presented their project to the dean and have asked him if he can help to communicate with the dean of department B and C. Three of them have a good relationship with each other. Department B has many professors who are experts in Thai, English and Chinese. They want the dean of department A to talk to the manager of department C, which is implementing the university budget for funding the project. This project received an allowance from the university to build a pilot model of the dictionary. At this stage, we can see how a social network works through the relationship between the deans. We cannot justify why this project received funding but it shows how a social network works. This is a simple example that helps to understand how the two theories function.

2.5 Limitations of the SECI Model and the Social Network Theory

Japanese companies are the origin creators of the SECI model was originally created within. Employee work based heavily on tacit knowledge and Japanese culture is potentially much different from work done in other countries, especially western countries. Japanese employees are always donating their time to their companies and they often stay their entire professional life with one company. The SECI model is now applied to the study of the public

sector, especially to educational institutions. These organizations are naturally different from a private company.

The social network theory is related to many disciplines such the Actor Network Theory and information technology. The researchers need to define it clearly, including the meaning of arrows that is always confusing. It may sometimes mean power and it can be defined as an interaction.

CHAPTER 3

HIGHER EDUCATION IN THAILAND

Education in Thailand can be traced back to the latter half of the nineteenth century. Education was provided by the Buddhist monasteries and a small percentage of males were allowed to attend. In 1868 Thailand reformed the government bureaucracy system in order to modernize the country and consolidate Thailand's independence. Centers of higher education were established and the educational system incorporated elements of western education (The OHEC, 2008). This chapter will present the current state of higher education in Thailand in order to gain an understanding of the higher educational system in Thailand. The National Education Act 1999, which serves as the fundamental law for educational reform, will be presented. This Act addresses the issues of graduation, administration in higher education, and establishing and developing knowledge and learning based society. This chapter will provide an explanation of the challenging issues that face higher education institutions in Thailand. These issues are major factors that will impact higher educational administration in Thailand in the future.

3.1 The Current State of Higher Education in Thailand

Higher education institutions in Thailand include a large number and a wide variety of institutions: public and private universities (or institutions), colleges, and community colleges. These higher education institutions have a significant role in helping to develop Thai education. There are 173 higher education institutions and community colleges under the supervision of the OHEC, Ministry of Education. The 173 institutions are comprised of 65 public universities, 15 autonomous universities, 41 private universities, 9 private institutes, 22 private colleges, and 21 community colleges (The OHEC, 2012).

Currently, the number of students in higher education totals more than two million (The OHEC, 2012). Students who access higher education are between 18-22 years old. The OHEC has tried to deal with a number of students and the quality of Thai higher education. Higher education institutions should improve their competency in order to work in response to the needs of the Thai society and economy. Higher education institutions in Thailand are also required to develop their educational quality when compared to renowned universities both in Asia and the world. The country needs to produce and develop innovations, but the quality of the science and technology infrastructure is not good for promoting innovation. This is dissimilar to countries described as having advanced economies. Their higher education institutions play a crucial role in conducting research that is related to the national need. This is because their national research system is well developed. Other issues that facilitate the national research system are a strong national policy on research, the amount of funding for research, and a good research management mechanism. Relationships among higher education institutions, research agencies, and other social and economic sectors are strong. The universities are trusted and are expected to lead society to help solve societal problems (The OHEC, 2008).

The Second Fifteen Year Long Range Plan on Higher Education (2008-2022) has called for higher education improvements in four areas: the quality of graduates, the quality of faculty members, the quality of research, and the quality of educational provision. The OHEC (2008) states that "The Second Fifteen Year Long Range Plan on Higher Education focused mainly on the quality issues of the Thai higher education system. This system will lead to the production and development of graduates of quality, capable of life-long work, and adjustment. The major outcomes of the Plan included the development of knowledge and innovations that are basic and critical to the country's competitiveness and supportive of sustainable development of all sectors in Thailand. A quality system will be achieved through management mechanisms and measures of good governance, financing management, higher education

standards and university networking. The foundation to this is university academic freedom, diversity, and unity."

3.2 The National Education Act 1999

Section 81 of the 1997 Constitution of the Kingdom of Thailand says that "The State shall provide and promote the private sector to provide education to achieve knowledge alongside morality, provide law relating to national education, improve education in harmony with economic and social change, create and strengthen knowledge and instill right awareness with regard to politics and a democratic regime of government with the King as Head of the State, support researches in various sciences, accelerate the development of science and technology for national development, develop the teaching profession, and promote local knowledge and national arts and culture". The first National Education Act was promulgated in August 1999. The Act serves as the fundamental law for national education improvement in every aspect: educational administration and educational provision. Section 8 states that "Educational provision shall be based on the following principles: (1) Lifelong education for all; (2) All segments of society participating in the provision of education; (3) Continuous development of the bodies of knowledge and learning processes". Thais have the right to access free basic education for at least 12 years (The Office of the National Education Commission & Office of the Prime Minister, 1999). This Act represents the first movement of education reform and it also impacts the national education plans.

3.3 Challenging Issues

Higher education has played a crucial role in the development of society and the economy of the country. The universities, both public and private, were established across the country in order to help increase the work force continuously for several decades. The second long range plan on higher education that covers fifteen years (2008-2022) states that there are seven scenarios that are expected to have an impact on the development of higher education in Thailand. These scenarios also play an important role in social and economic development.

The seven scenarios involve demographic change, energy and the environment, future employment, decentralization of the country and development of local administrative bodies, peaceful conflict resolution, the post modern/ post industrial world, and His Majesty the King's initiative on "Sufficiency Economy" (The OHEC, 2008).

Demographic Change. The population of Thailand will slowly increase in the next fifteen years because of the success of family planning programs since the 1980s. As a result, the number of children and youth will decline and the number of aged people will increase. It is time for higher education institutes to focus on improving the quality of education as well as improving abilities in order to enhance social and economic productivity.

Energy and the Environment. The dependency of Thailand on imported fossil energy affects the national economy because of rising fuel prices. Using energy from fossil fuel brings about green house gases and also impacts all life forms. It is necessary for higher education institutions to take the lead in creating awareness of the conservation of energy and preserving natural resources and the environment. The mission of higher education institutions is to produce graduates, to produce knowledge and know-how on energy management and conservation, and to create alternative energy and renewable energy including bioenergy. Higher education institutions must make an effort to produce quality manpower with knowledge and awareness of natural resource management and the ecological system.

Future Employment. The factors that influence future employment will be comprised of the changes in the economic structure of Thailand, globalization, the development of technology, and the information-driven world. The economic growth of Thailand is based on the industrial and service sectors when considering the contribution from GDP and employment. Higher education institutions should strive to work in cooperation with sectors of production and comprehend the importance of economic drivers; for example, small and medium enterprises or SME's, family-controlled business, and transnational enterprises. Higher education institutions must work with a specific industrial group as well as an area-based industry cluster. Higher

education institutions must help to improve knowledge, skills, and productivity for farmers. Higher education institutions should help to prepare manpower that can work with the ASEAN Community by 2015 as well as improve skills in using technology, languages, information and communication.

Decentralization of the Country and Development of Local Administrative Bodies. This will impact the future of the country. Local administrative bodies (Or-Bor-Tor) will take the role of the central government and legally undertake various tasks. Local administrative bodies will receive 25-35% of the national budget and they are empowered to levy local taxes. Higher education institutions need to support these local administrative bodies in terms of designing administration and management, training personnel, and managing knowledge.

Peaceful Conflicts Resolution and Violence. Thailand has been confronted with conflicts directly and indirectly. Violence in the south of Thailand has occurred since 2004. The government has tried to solve the problems after centuries of underlying conflict reflected in the areas of history, culture, ethnicity, religion, poor quality of education, and poor economics. Higher education institutions should help to find the solutions. The educational system should be improved and this will help to resolve the problems in the long term.

The Post Modern/Post Industrial World. The Post Modern/Post Industrial world is driven by commercialization and global connectivity through information technology. The Post Modern/Post Industrial world will impact changes in studying and learning, changes in family, and changes in nature. Work in the future will be different from today and it will include having different work activities. Higher education institutions need to create new approaches for learning, building baseline competencies, and transcending disciplinary subjects. This is because the learning approach will not be limited to the universities.

Sufficient Economy. His Majesty the King has suggested that Thais seek and practice the middle path in their daily lives. The Sufficient Economy was addressed at every level (individuals, family, the community, and the nation). “The three underpinning principles of the

sufficient economy are self-immunity, moderation and rationale. The first basis of this is knowledge, knowledge of mankind, knowledge in technical disciplines, and knowledge with prudence. The second basis is moral principle and honesty. The third basis is perseverance. One needs to be steadfast, diligent and mindful in one's course of actions. It is through such words of wisdom that Thailand is shaping its self-sufficiency and sustainability in the dynamics of the changing world" Higher education should take the role in producing change agents.

These seven issues challenge higher education institutions in Thailand in terms of promoting a knowledge-based society, creating a new body of knowledge and transferring it to society, strengthening R&D activities, promoting lifelong learning, and utilizing information communication technology in continuing education programs. With KM utilization, higher education institutions are required to improve competencies and performance in order to deal with challenging issues.

CHAPTER 4

METHODOLOGY

This research addressed how KM was applied to universities in Thailand. Specifically, this study aimed to describe and explain how KM was implemented by four autonomous universities. The four universities are King Mongkut's University of Technology (KMUTT), Suranaree University of Technology (SUT), Walailak University (WU), and Mea Fah Luang University (MFU). These autonomous universities were developed over 10 to 20 years, except for MFU, which was developed over nine years. Three universities (SUT, WU, and MFU) were established as autonomous universities. SUT was established in 1990 and WU was built in 1998. MFU was established in 1998. KMUTT transferred from being a public university to an autonomous university in 1998. They were granted full autonomy within their administrative systems. They were allowed to manage and own property, control their budgets, and establish new academic programs. These autonomous universities are also required to work under the supervision of the OHEC to ensure that the quality of education is properly maintained.

4.1 Sample

The subjects of this study are four autonomous universities. The first university is KMUTT and it is located in Bangkok. KMUTT was first established as the Thonburi Technology Institute (TTI) in 1960, providing training programs for technicians, technical instructors, and technologists. TTI changed its name to King Mongkut's Institute of Technology (KMIT) in 1974, and has provided a higher educational program in science and technology. KMIT became KMUTT in 1998. KMUTT is a science and technology university and it offers excellent education and research degree programs in science, technology, and engineering. These also include training programs that contribute to communities and to society at large. KMUTT is comprised of three campuses and two of them are situated in Bangkok and the remaining campus is

located in western Thailand. Academic programs are offered in The Faculty of Industrial Education and Technology, The Faculty of Science, the Faculty of Engineering, The School of Architecture and Design, The School of Information Technology, The School of Energy, The Environment and Materials, the School of Liberal Arts, The School of Bioresources and Technology, The Graduate School of Management and the Innovation, and The Institutes of Field Robotics (KMUTT, 2012).

The second university is SUT and it is located in northeast Thailand. SUT has been an established university town since 1990, and it is also an autonomous university. SUT provides programs in science and technology in order to produce high level scientific and technological labor power and to serve the needs of national development. SUT schools and faculties include The Institute of Science, The Institute of Social Technology, The Institute of Agricultural Technology, The Institute of Engineering, The Institute of Medicine, and The Institute of Nursing (SUT, 2012).

The third university is WU and it is located in the south of Thailand. WU was established in 1998 as a comprehensive university. WU offers degrees in the arts, the humanities and social science, and in science and technology. Academic programs include The School of Agricultural Technology, The School of Allied Health Sciences and Public Health, The School of Architecture and Design, The School of Engineering and Resources Management, The School of Informatics, The School of Liberal Arts, The School of Management, The School of Medicine, the School of Nursing, The School of Pharmacy, and The School of Science (WU, 2012).

The fourth university is MFU and it is located in the North of Thailand. MFU was established as an autonomous university in 1998. Programs offered by the university are taught in English, except some subjects such as Thai Law and Nursing are primarily taught in Thai. Academic programs are comprised of The School of Liberal Arts, The School of Management, The School of Law, The School of Science, The School of Agro-Industry, The School of

Information Technology, The School of Cosmetic Science, The School of Health Science, The School of Nursing, and The School of Anti-Aging and Regenerative Medicine (MFU, 2012).

These four universities have shared some common issues, namely that they are state funded and are under the supervision of the OHEC. They are also given a high level of autonomy in performing their missions. These four universities also have different missions. For example, KMUTT and SUT are science and technology universities whereas WU and MFU are comprehensive universities. SUT and WU offer degrees in nursing and medicine whereas MFU offers a degree in health science that is related to applied Thai medicine. English is the primary language used to teach students at MFU, and the other three universities provide some academic programs in English. This also includes the school of Architecture and Design at KMUTT. KMUTT has a long history of development and evolution as it was originally a technical school and eventually changed it status to an autonomous university. The other three universities were founded as autonomous universities. Three universities – SUT, WU, and MFU- have the same administrative system. Their administrative system includes centralized services and coordinated missions. These universities are able to utilize and share their resources – staff (supporting staff members), classrooms, technology, teaching media, and laboratories - within their organizations. The KMUTT administrative system is decentralized and this means that each school has its own supporting staff members.

The following table is information of the number of students in 2011 of the four universities. This table contains of the number of students, divided into undergraduate and graduate students.

Table 4.1 Number of Students in Academic Year 2011

Number of Students 2011				
	KMUTT	SUT	WU	MFU
Undergraduate	12,005	9,796	6,941	8,688
Graduate	5093	1,606	746	935
Total	17,008	11,402	7,697	9,623

Sources: KMUTT Annual Report 2011; SUT Annual Report 2011; WU Annual Report 2011; MFU Annual Report 2011.

The total number of students in Academic Year 2011 at KMUTT and SUT exceeded 10,000 and the total number of students at WU and MFU was less than 10,000. KMUTT had the highest number of undergraduate and graduate students and they were higher than the number of students at WU, which was higher than 50% of the number of the total students.

Table 4.2 Number of the university staff members in Academic Year 2011

Number of Staff 2011				
	KMUTT	SUT	WU	MFU
Academic Staff Members	617	343 (4)	359 (9)	398 (30)
Administrative Staff Members	-	4	9	30
Support Staff Members	712	693	620	556
Total	1,329	1,040	997	984

Sources: KMUTT Annual Report 2011; SUT Annual Report 2011; WU Annual Report 2011; MFU Annual Report 2011

The university staff members are classified into three groups. The first group consists of an academic staff member who has an academic position such as professor, associate professor, and assistant professor. The second group consists of an administrative staff member who is an academic staff member and also has an academic executive position. They have managed and organized the university functions. The third group consists of university support staff members who work to support the first and the second group. In Academic Year 2011, KMUTT had the highest number of staff members at 1,329, followed by SUT 1,040, WU 997, and MFU 798. The ratio between academic staff members and university support staff members at KMUTT was 1:1 and MFU was 1:4 whereas it was 1:2 at SUT and WU. KMUTT does not have administrative staff members (KMUTT administrators are academic staff members and some university support staff members) whereas MFU has many of them (30) when compared with SUT and WU.

4.2 Data Collection

The research studied the background of the universities by accessing their websites in order to determine when they started applying KM. This study assessed KM plans, KM forums, and the key KM persons within each university. The research design was qualitative methods. Basic statistics were used only for analysis in order to compare basic information such as the

number of students, the number of staff, and the number of schools within those four universities. Open-ended questions were developed based on the research questions and the theoretical frameworks used in the study, as shown in an appendix A.

Documents. Data was collected from documents, academic papers, and in-depth interviews. The documents were comprised of the university strategic plan, KM publications, the university annual report, and the university websites. The documents also included books, journals, and articles that were related to KM written by the university administrators and the university staff members within the four universities. The research draw on information found at links provided by the respective websites of participating universities. The university strategic plan states the way the university has supported the development of KM as well as how to implement KM within the organization. Other publications produced by the university indicated how KM has been previously utilized. Data collection from documents showed the larger picture of the connection of KM utilization and in particular, the university performance since KM has been applied to day to day work.

Interviews. Interviewees were selected from university staff members having previously worked on KM. The Vice Presidents responsible for the university's KM, the Chief Knowledge Officers, and the KM staff members assisted the researcher in selecting the interviewees. This is because interviewees have very busy schedules due to their workload. Assistants would try to find interviewees who could participate in this study during a prescribed time. There were 40 interviewees and the number of interviewees from each university totaled 10. The interviewees consisted of 5 administrators and 5 university staff members. The university administrators were the Vice Presidents for Planning and Development, the Vice Presidents for Information and Technological Development, the Chief Knowledge Officers, Deans, and Directors. The university staff members consisted of university support staff members who had previously been involved with KM, including professors who did not take a role as university administrators. These professors were counted as university staff members. The interviewees

knew and understood KM due to the government requirement that every university needed to apply and use KM within their organization.

The in-depth interview procedures were conducted as follows. An audio recorder as well as note taking was utilized during face to face structured interviews. Subjects were asked for permission to record their interview and if some of them did not want to be recorded, note taking was applied. Only one interviewee asked to not be recorded. Each in-depth interview took place at the interviewee's office and the interview lasted 45 minutes on average. The researcher explained to each interviewee that he or she would be asked a set of either 9 or 11 questions. The first set was comprised of 11 questions and they were given to the university administrators. The next set contained 9 questions and they were given to the university staff members. The interviews were conducted from July 2012 to August 2012. Telephone and email communication was used from July 2012 to October 2012 in order to obtain answers to supplemental questions.

The interviewees selected were comprised of both university administrators and the university staff members. They were able to understand and respond to the questions. The following table shows the number of participants from the four universities

Table 4.3 Description of Interviewees

University	Administrators	Staff
KMUTT	VP of Education Development and Chief Knowledge Management; Director of Library; Director of Planning Division and Head of Policy Innovation Center; Head of Research and Intellectual Property Promotion Center; Secretary of Graduate School of Management and Innovation.	Technical Services and Training Officer; Information Technology System Officer; Professor; Learning Developer; Information Technologist.
SUT	Vice President for Planning; Dean of Institute of Engineering; Dean of Institute of Nursing; Assistant Dean of Institute of Science; Chief of Correspondence, Document and Legal Affairs Division; Chief of Planning Division.	Four General Administration Officers.

Table 4.3 - *Continued*

WU	Assistant to the President for Organizational Development and Communication Office of the President; Dean of School of Nursing; Head of Procurement Office; Head of Organizational Development.	Professors; Five General Administration Officers.
MFU	Vice President for Quality Development; Dean of School of Science; Dean of School of Information Technology; Vice-Dean School of Nursing.	Professor; System Analyst; Four General Administrative Officers.

4.3 Data Analysis

Data derived from documents and interviews were analyzed. Information from each university was analyzed by using basic statistics in order to help to understand the data collected from the four universities. Information derived from interviews was analyzed by using the content analysis approach. The analysis was based on the interview questions. Analysis was required of the information that was received from interviews as well as the types of interviewees, either administrators or university staff members. The first step of data analysis included reviewing the transcribed audio recording. The second step involved information categorization and data triangulation, as codes were given to sets of information in order to identify themes, ideas, terminology, and incidents. The third step was assigning a descriptive label for each group of themes or concepts. The results will be presented in Chapter 5.

CHAPTER 5

KNOWLEDGE MANAGEMENT IN HIGHER EDUCATION IN THAILAND

The Thai government requires that Thai universities should improve their teaching capacity, strengthen their research productivity, and administrative competency. Universities in Thailand have started to implement KM based on these requirements since 2006. All four universities have also applied and used KM in their missions as KM is used as a performance indicator. The university administrators and the university support staff members have been trained to use KM. This research has found important information that helps to understand how KM is used within higher education institutions. This chapter will begin by identifying the factors leading to successful KM followed by a discussion of a set of factors that lead to unsuccessful KM. The experience of the four universities with KM will be discussed, followed by a discussion of how KM has been applied to university functions. Finally, this chapter will discuss whether the universities are ready to embrace KM in their day to day operations.

5.1 Factors for Successful KM

Organizations have tried to use KM to drive organizational functioning and this always impacts their day to day operations. The activities of sharing, transferring, and reusing data and information have been undertaken within organizations. The utilization of KM is involved with best practices that usually show a likelihood of success (Bergeron, 2003). KM cannot be the sole approach that is capable of embracing the whole system of how organization works. KM activities always include technology to facilitate sharing information and document management (Petrides & Nguyen, 2006). Organizations are required to make knowledge sharing and transfer happen, and this will enable KM. Knowledge sharing and transfer is comprised of: 1) organizational policy that will support management process which will help to encourage organizational members to create innovation; 2) accessibility to information within and outside

the organization should be provided; 3) organizations should identify what knowledge is needed to capture and store and where the knowledge needed can be found. 4) processes that can be used to capture knowledge which will encourage innovations; 5) standard measurement should be in an ongoing process, especially for measuring new product development; 6) technology that facilitates KM implementation and innovative processes and; 7) a social structure that helps to identify the responsible role of people in the process (Hawryszkiewycs, 2010). There are four illustrative KM facilitators. The first facilitators are psychological or human factors. Individuals have an ego-driven desire to accept the challenges of the KM system. Individuals also have a previously positive experience with the IT system. The second facilitators are economic or financial factors. Individuals realize that applying KM is cost-effective and if they decide to not apply KM, this will be an expensive choice. The third facilitators are organizational factors. Organizations have a supportive culture for sharing knowledge as well as anecdotal information that is supported for KM development. Organizations provide an adequate system of rewards and incentives to members. The fourth facilitators are technological factors. Individuals should be trained with an adequate program for implementing KM and this should include training to use anecdotal experience with the technological systems (Geisler & Wickramasinghe, 2009).

The four universities realize the necessity to apply KM to their day to day operations. This mission will be successful if the university staff members are cooperative. Many techniques were used to facilitate KM implementation. The universities found that networking is one of the elements pushing KM. The university administrators state that social networking will tie the university staff members together. This demonstrates a powerful combination of various factors such as trust and cooperation among the university staff members. Nemes and Mo (2004) argue that trust and team work can encourage staff to participate in implementing KM. Trust and teamwork should be recognized as being essential to all the actions involved in networking. Human relationships are more difficult to develop than creating new technology. Management should pay more attention to goals, consensus, and the role of the leaders. Teams or networks

should agree and share common goals. Consensus between networking members should be built. The role of the leaders should be defined because they are going to lead a multidisciplinary team. Their responsibilities will be related to knowledge codification and practice (2004). There are many factors that lead to successful KM that are found within the four universities. Some of the factors are the same factors that were discovered in the previous research.

5.1.1 Understanding KM Definitions

Individuals who practice KM firstly need to understand KM meanings. Scholars have numerous definitions of KM. Fundamentally, KM is the utilization of the collective knowledge of an organization to accomplish specific organizational goals. Organizations should apply KM to their most important body of knowledge. It is not necessary to apply KM to manage all organizational knowledge. Organizational members have to be assured that they can have access to organizational knowledge whenever they need it. As Honeycutt states "the right information to the right people at the right time (Honeycutt, 2000, p XVI; Chun, Williams, & Granados, 2007), provides them with the tools for analyzing that information, and gives them the power to respond to the insight they glean from that information, all at lightning speed" (Honeycutt, 2000, p XVI). Knowing the meaning of KM is very important for KM practitioners. The university staff members should understand the KM definitions as they are a key factor and their effort will help the universities to achieve their goals. The KM training program is an obvious resource provided to keep the university staff member skills up to date. The university administrators and the university support staff members understand the meanings of KM as it has been previously introduced. Both groups define KM in a different way based on their experiences and their roles.

> University administrators have stated that "*KM is the process of exchanging, capturing, learning, creating, reusing, repositing, and leveraging both explicit knowledge and implicit knowledge. Explicit knowledge is knowledge gained from books, documents,*

websites, and other experience. Implicit knowledge is a stock of knowledge and experience that is embedded in a person. Explicit and implicit knowledge will be analyzed and then distributed to other university members in the form of shared knowledge". The university support staff members describe KM as "*exchanging knowledge (implicit knowledge and explicit knowledge) and experience when working with their coworkers*".

The KM definition used by the university administrators is broader than the meaning given by the university staff members. The KM definition used by the university staff members is very practical and understandable. The KM definition given by the administrators covers aspects of KM, especially leveraged knowledge derived from research and innovations. This means that the universities are able to gain more benefits from knowledge assets in terms of intellectual property. A few universities seek to commercialize their innovations. Desouza and Awazaru (2005) indicate that organizations should develop knowledge through a systematic process as well as a well through a regulated method. The organizations must continually improve the process and learn how to refine and commercialize knowledge at the same time. Honeycutt (2000) states that this is a way for knowledge to be used to maximize productivity. KM was previously developed and defined by the private sector. Now KM is being implemented in the public sector and it will be used to capture knowledge assets. The knowledge assets will then be codified into tangible objects. However, higher education institutions that utilize KM are not necessary to apply business values that require codifying knowledge for profit. However, some administrators such as the Deans will not give an importance to the meaning of KM. They state that:

"It is difficult for the coworkers if KM is explained to them with those technical terms (for instance; exchanging, capturing, learning, creating, reusing, repositing, and leveraging). We will implement KM in our own style. Our KM will also help the universities achieve their goals because we know what the university wants us to do. We will have a lunch

talk and it will be an informal meeting, discussing jobs, problems, and solutions. Knowledge and experience will be shared and transferred within our school. We will have someone take notes during the discussion and then the report will be circulated across the school. We will have a lunch talk once a week and the faculty members will voluntarily participate if they are available. We will not force anyone to come. This method works within our school."

Knowing the meanings of KM is essential to organizational members. There are various ways to convey KM definitions to practitioners, and they will then identify the path to implement KM. It is necessary for organizations to identify their core competency and the knowledge needed for creating this core competency by the private sectors. This will lead to action that will help organizations improve and develop faster.

5.1.2 The Importance of Leadership in KM

The involvement of the senior management is needed in order to ensure the success of KM efforts (Desouza and Paquette (2011). The administrators of the four universities support the utilization of KM. They indicated that:

"*We want our staff to share and transfer their knowledge with their coworkers. We have invited a KM speaker from outside the university to help to train the staff in KM process and how to use it with their jobs. We also support using technology and computers as a way to help them to share knowledge faster. We expect that what we plan to do will impact university performance"*

The universities have invested in KM in three areas: the university staff members, the KM process, and technology. First, the university staff members are given support to practice KM. The universities have appointed the Chief Knowledge Officer (CKO) and the KM team to facilitate schools and departments to develop the KM strategic plan. The CKO and the KM team also facilitate those schools and department in KM activities. The university staff members are encouraged to establish the CoP network in order to be a center for exchanging information,

knowledge, and experience and increase collaboration among the university staff members. The Chief Knowledge Officer and KM team are selected based on their job responsibilities related to KM. Second, the university staff members are trained to constantly learn from their academic environment in order to support knowledge creation. They are taught the process of KM implementation. The universities will provide knowledge on KM, KM training programs, leaning space, and incentives for KM best practices. Third, the universities have invested and improved information and communication technologies. KM websites were established to support the university staff members to set up their blogs and share their experience with colleagues.

> University support staff members were asked why they attended KM seminars and why they applied KM principles to their jobs. Some of them stated that "…*it is the university policy on educational quality assurance and we are required to do it. At first we were commanded to go to the seminars to learn KM things like its definitions, KM process, and so on. We had to work on too many documents. We didn't really like it (KM). We had too much work to do. Our routine job was killing us. However, since we have practiced it and applied it to our jobs, we work faster and have time to do something else. We have made new friends from other departments. Our bosses usually support us to do KM."*

The role of the university administrators, in leadership positions, positively impacts the KM of the university. It shows that the university administrators are concerned not only about the performance of the university, but also with the attitudes and behavior of the university staff members. The university administrators will exert their authority if their workers do not want to attend seminars. The university administrators believe that KM should be used and administered to every department to encourage systematic utilization. When every school and department learns to know how to share knowledge with each other, the process of KM and learning has been established. KM helps universities to be stable and to continuously learn new

things as well as to adjust themselves. The university administrators are aware that their schools have not yet completely embraced KM. They keep working on KM implementation. The university administrators practice strategic leadership. This is the same leadership that Hislop (2009) mentioned. He states that organizational leaders, both in business and academic areas, are strategic leaders and managers of people. As strategic leaders, they will develop an organization with a long term vision. As people managers, they will motivate their subordinates by providing them an inspiring vision as well as intellectual stimulation. Furthermore, they will try to develop a new vision for sustaining development and long term competitiveness. Pratriotta (2003) also indicates that an organizational development study recently focused on endogenous issues that help to explain how organizations achieve superior performance. Managers are able to understand the workers' skills and the motivation needed for improved performance. More importantly, they are able to deal with organizational constraints that reduce the effectiveness of employees who work within those organizations. This has led organizational theorists to develop strategies based on a knowledge perspective.

What is the best way to implement KM given the choice between a top down or a bottom up approach? The administrative systems of these four autonomous universities are still top down. The university staff members have utilized KM in accordance with their university's policy. As university leaders, administrators focus on how the actions of the university staff members impact the organization of the university. They have the authority to manage, control, and evaluate the university staff members. In the case of KM implementation, the university administrators have deployed the KM policy and have allowed schools and departments to implement KM under their supervision. The university staff members state that *"our bosses fully support us to work on KM and they accept our new ideas in helping to develop our operations. We believe that our performance will be better and better"* This means that the universities have built trust with the university staff members, both trust in KM and trust in their leaders.

5.1.3 Community of Practice

The collaborative groups within the universities have been called different names, the most common being “community of practices (CoPs).” The CoPs work in order to facilitate knowledge development. CoPs are a place that helps to identify, create and harvest organizational knowledge. CoPs also work as a mechanism for knowledge application when their members are able to share, adopt, and execute knowledge and transfer it to business sectors (Smith & McKeen, 2004). The university administrators encouraged the university support staff members to share their knowledge by introducing them to KM, and later on to knowledge sharing and its implications. Knowledge sharing should be a tool that is used to help develop the working skill of the university support staff members to enable them to be lifelong learners. This should help to drive the university to achieve its goals. KM CoPs were established and are expected to be a medium for exchanging information and knowledge. The CoPs’ focus is to encourage staff to share and transfer knowledge. CoPs are both formal and informal. The formal CoPs include the Strategy CoP, the Research and Development CoP, and the Management CoP. The topics that are discussed include urgent and emerging issues that are happening within and outside the university. These include analyzing the university’s strategic issues, discussing research topics and setting up new research and development clusters. The new ideas received from the CoP discussions are presented to the university administrators. Once the administrators have received the reports, they can start to develop strategies to work on the issues brought up in the discussions. The members of these three CoPs are comprised of faculty and university support staff members.

Recently a few activities were held by the CoPs but the members have continually updated KM news, KM activities, and KM blogs on the online CoPs. The university administrators are trying to encourage the university staff members to share and transfer their knowledge with others with the expectation that the university staff members will be knowledgeable people and they will help support the university to accomplish its goals.

Ghaznavi, Perry, Logan, & Toulson (2011) find that individuals can transfer and share knowledge better within an informal interaction. Collaborative learning is the main reason for the informal exchange of knowledge among employees. Chun, Williams, and Granados (2007) state that collaborative learning helps KM staff to understand KM practices. This will help them to assist each other to retain organizational knowledge assets, including reducing the loss of knowledge from retired staff. The biggest challenge to the universities is how to encourage the university staff members to participate in KM CoPs.

5.1.4 Tools

The universities provide tools for KM implementation in order to support their staff with sharing and creating new knowledge. KM tools that are used include information and communication technologies, equipment, and space that facilitate KM activities. Technology is considered to be a major facilitator of knowledge creation. Many activities can be developed and performed through an electronic network. By doing so, it helps to save costs and time (Geisler & Wickramasinghe, 2009). Technology enables an organization to manage knowledge effectively (Hislop, 2009).Technology will be useful if there is information to convey and an individual who conveys it (Fuller, 2002). KM is integral among individuals, processes, and technology. These parts drive the ongoing dynamic process of KM and individuals are the most significant KM factor. They are the ones who “know” and the ones who can manage the policies, priorities, and processes. These can be used to support KM implementation, in terms of the utilization of data, information, and knowledge (Petrides & Nguyen, 2006). Each university has provided a KM website that consists of with following KM issues; KM news, KM knowledge, the KM team, and the KM board for sharing information. This includes KM blogs that belong to KM members who want to share their experience with others. The www.GotoKnow.com is another source that brings KM people together to participate and exchange more knowledge based on their interests. Some universities have created a university Facebook account in order to be a space for the university staff members who want

to share their information and experience. Some university staff members have also shared their knowledge with KM people outside the universities via the GotoKnow community. GotoKnow is a large online KM community where its members are able to share their experiences (tacit knowledge) through their blogs (GotoKnow, 2012).

5.1.5 Incentives and Recognition

Everyday work routines can have a great effect on the exchange and sharing of information. The most senior administrative level will usually make decisions within an organization. The decision making process requires appropriate information and if it is not provided it is because individuals lack the motivation to share information. Organizations can utilize KM strategies in order to encourage organization members to share information, improve decisions, and create new knowledge. KM strategies also help organizations to identify knowledge gaps as well as facilitate organizational members to access the information they need (Petrides & Ngugen, 2006). The universities have tried to pull out knowledge that is entrenched in the university staff members, both the academic staff and the university support staff members. The knowledge gained is based on types of university staff members and their specializations. Desouza and Awazu (2005) state that organizational workers are classified into two types of knowledge workers. The first type is made up of workers who perform standardized jobs and their work is related to routine tasks. The second type consists of workers who use their knowledge to generate new technology and innovations. Knowledge that belongs to both groups requires different managerial criteria. The universities use KM to manage knowledge but they cannot order their staff to share needed information, experience, and knowledge. Sometimes the universities motivate their staff to do knowledge sharing by offering them incentives; rewards and recognition.

The university administrators state that sometimes "…*we offer incentives to the university staff members to utilize KM and participate in KM activities*…". Given incentives may vary. For example, one of the four universities requires their support staff members to transfer

their tacit knowledge to explicit knowledge. The university support staff member are required to write workflow procedures and this task takes at least three months to finish. As a result, only a few university support staff members can finish writing the workflow procedures. The university administrators then extended an extra three months for the university support staff members to continue writing the workflow procedures. The university staff members have also been offered a reward, an extra bonus, if this assignment is done on time. Sometimes rewards are not appreciated; however, recognition is sometimes felt to be more acceptable. The university owns large amounts of valuable information, knowledge, and innovations. Some of them are in the form of explicit knowledge; publications, books, and journals. Some of these have not been codified. This implicit knowledge should be written and transferred to other university members. The university requires making this implicit knowledge explicit in order to transfer it to university knowledge. The university will invite a person who owns implicit knowledge to be a speaker and to present their knowledge. The university also invites them to work in synergy with other staff so that knowledge will be shared and transferred to others. The people who own implicit knowledge sometimes do not want a reward but do value recognition from the university and their coworkers. This feeling is shared by the university staff members. They agree that rewards and recognition are needed to help to persuade the university staff members to share their experiences. The rewards can be applied in the beginning of KM implementation and in the long term they prefer formal recognition by their colleagues and the university.

What is needed are rewards and recognition that can be used to motivate workers to coordinate with other organizational members. The university administrators point out that rewards can be used to motivate the university staff members when starting KM practices. Bergeron (2003) indicates that motivation is required with KM initiatives and this will encourage workers to provide the highest quality of knowledge to the organization. Reward and recognition play a crucial role in helping organizations to develop a loyal and dedicated workforce. Managers recognize that there are various criteria to motivate and encourage workers to

participate in KM utilization. Monetary compensation is a primarily incentive but formal recognition is a better method that provides more value to knowledge contributors. The contributions of knowledge workers are often intangible and this challenges managers to know how to reward and recognize knowledge workers. It is difficult to interpret and quantify a contribution if there is an issue of intellectual property. Sometimes the organization may have less value added from using too much knowledge, and conversely less knowledge may add value to the organization.

5.1.6 Training Programs

Fundamentally, organizations are required to educate employees and managers in KM in order to better perform their job. Both groups need to be trained in the KM process in order to be able to apply it when having a specific problem (Bergeron, 2003). The four universities provided a KM training program to their staff after it was first introduced to the universities. They have invited KM speakers from outside the universities to give a lecture to their staff in order to prepare and support them to learn KM as well as to implement it. The university staff members have been trained to utilize KM in their jobs. For example, by using the KM process, the university staff members have written workflow descriptions and workflow procedures. They have created new methods in teaching, research, and administration and have also improved and updated old working procedures. They have contributed their knowledge to strategic planning. They have applied KM methods to improve their office environment. Besides various training programs, the universities also provide a learning space in order to support the staff's learning skills. Learning spaces are located within the library where the university staff members and students are able to practice their learning skills. Learning spaces also reside within departments and their staff can utilize them as an informal place for sharing and transferring their information, experience, and knowledge. The knowledge shared within an informal place sometimes may not add value to the universities. Calile (2002) indicates that KM training programs help to assure that the workers obtain the knowledge need for their jobs. Workers will

be trained to capture valuable information that is useful for organizational development. Bergeron (2003) states that KM training programs are needed even though workers are willing to share and transfer their knowledge to other members and to organizations. Some training programs help to reduce inefficiency and costly errors; for instance, training in the process of how to use technology for managing knowledge.

The university staff members are supported to attend KM training programs both inside and outside the universities. The universities have more KM knowledgeable staff. After the KM training programs, there were many informal networks established within the universities. This leads to collaboration among the university staff members. Arroyo and Chang (2004) state that collaboration among workers is required when applying the KM process because it eases knowledge dissemination and sharing. Hislop (2009) also says that networking is important for the process of knowledge creation. Organizations have created new innovations and these activities require intra-organizational collaboration within staff from various departments and functions. Furthermore, collaboration may be needed to expand and connect with external organizations. The relevant Knowledge possessed by one organization may not effectively implement innovations.

5.1.7 Learn from Other's Experience

One of strategies that the four universities have implemented is experience of learning from others. The universities have learned KM from case studies and best practices. This is the fastest way to learn how to apply KM. The university administrators state that;

> *"We are new to KM and we think we should learn from other organizations that have been performing KM successfully. Many case studies that show lessons and best practices are from the business sector. Case studies and best practices help us to understand a problem and other factors that we need to pay attention to. We only need to read case studies and best practices and this will give us insight into the KM story. Sometimes we have invited people who have utilized KM in their operations, to give a*

lecture to our staff. We ended up understanding how they solve problems as well as what strategies to use for change. This includes any unexpected problem that could happen while applying KM. Who knows? We may have a similar problem that also affects to them so that learning from them is an improvement. Sometimes we also learn from our staff too; for example, one of our professors received a reward for her best practice in teaching. We invited her to come to talk to other professors. We then learned new teaching techniques. It is not only instruction but we also learn from others on research, administration, and other issues related to university functions. This is not costly. It is cheaper than learning by doing and saves a lot of time. In the case of research and administration we have been thinking about showing programs. We wanted to support our staff to go and work with staff from other universities as they are excellent in conducting research. These staff members have a chance to work with the best personnel from other schools. When these staff members come back, we hope they will be able to work and transfer their knowledge to their colleagues".

The university staff members also agree with their administrators that gaining new knowledge from others who have a high profile with KM will help them fully understand KM and its conditions. This includes the chance to participate directly with those experienced people and the staff can ask any questions they might have. Huber (1991) states that an organization requires knowledge acquisition to become a learning organization. The knowledge acquisition is attained from: 1) knowledge available within the organization; 2) learning from their own experience; 3) learning from other organization's experience, 4) creating new knowledge from the knowledge they possess; 4) taking in new knowledge that it needs but does not yet possess; 5) acquiring and understanding of the organization's performance and environment. DePalma (2005) states that global organizations also learn from the experience of others. It is considered the "success factor".

5.1.8 Volunteers

Another factor that can facilitate KM implementation within the universities is a volunteer staff. It might be difficult to find a volunteer to work on an extra assignment. The university administrators are not able to force the staff to share their information with their colleagues. How can the administrators harness the university staff member's abilities in sharing knowledge? Giving incentives and recognition is a useful factor. Whether university support staff members volunteer to be KM leaders is an important question to ask university administrators. This might be a question that does not need an answer. However, some of the administrators state that:

> "*Nobody puts their hands up and said "… I want to be a KM leader and I will work on this… KM issue…in the meeting rooms, if they are the university support staff members. But we still have people who can be KM leaders because we have established many CoPs. Some of the informal groups that are led by the university support staff members are really great in terms of their performance and leadership responsibilities. As CoP leaders, they have complete autonomy in their work. They are free to learn, think, share, and create based on their interests without being controlled. This enhances their ability while working, it enhances their confidence to lead and it enhances their creativity. Some of the university staff members are blog leaders. It is very surprising to discover that there are many new quality writers. The new writers have written about topics of interest to them. Some pieces are related to work while others are not related. We observe that there are many staff members who join the blogs, as KM is an open window for our staff. In the case of the academic staff, we do have some professors who want to lead KM activities. This is because they are really interested in KM and they think KM is a very useful tool for their job".*

It is a challenge for the university administrators to encourage the university staff members and to help them enhance their performance. In the case of the academic staff, they

have more academic freedom to perform other jobs besides routine instruction. They think that KM will benefit their work and systemically develop their jobs. The university support staff members have usually said that they have not got the time to do voluntary work because they have too much preexisting routine work. They may be able to do extra work if it is requested. Marta and Pozzi (2008) state that a volunteer is motivated and this motivation influences the decisions of individuals. They are concerned that volunteerism will give them an opportunity to get involved with the group and to learn new things to fulfill their competency. MacNeela (2008) also indicates that volunteerism will connect individuals to organizations and they will gain many advantages. Cowan and Jonard (2003) indicate that informal knowledge sharing between knowledge workers varies from voluntary contributions to the mutual exchange or trade of information. The voluntary contributions are seen as individuals sharing their knowledge in an online community. This includes sharing knowledge with open source software. The reciprocal trade of information can be referred to as informal know-how trading.

5.1.9 Storytelling

Another KM application that has been utilized to persuade the university staff members to participate in KM activities is storytelling. Storytelling is a successful KM application. Storytelling helps to deliver information and knowledge sharing effectively. This is because it is difficult to communicate between data and contextual rules and subtle behavior. Storytelling is the “case based method of teaching”. Storytelling is one of the methods that are used to value individual implicit knowledge (Bergeron, 2003). The four universities have utilized this technique with KM implementation. One of the Nursing Schools has fruitfully applied the storytelling method with the teaching of the subject of diabetes. Storytelling allows them to learn valuable information on how to take good care of and how to treat a person with diabetes. Storytelling is used through a nursing network that uses the GotoKnow.org network as the way to interact. Meetings and seminars among the nursing network were arranged in order to facilitate students, professors, doctors, and nurses to share their implicit knowledge. For example, they

organized a seminar on “Sharing knowledge, energizing teams, improving service quality”. The professors are not the only ones to benefit from implementing KM but it also benefits their students. KM Students have a good opportunity to learn knowledge from other medical experts. They also have a chance to share their knowledge as well.

The process of learning and sharing will not happen if the university staff members are not open minded and do not think positively. One academic staff member stated that *“applying storytelling works if one is willing to give and another is willing to receive. We have to have an open mind and positive thinking and then we will be able to accept other people’s knowledge and integrate it with our knowledge, and use it with our jobs*”. By relating the story to nursing professors, students, and the nursing networking, information on health care services is shared. A set of expectations is set and all participants understand the purpose of the meeting, the use of the KM process, and the benefits of implementing KM.

5.2 Factors for Unsuccessful KM

There are many organizations where the process of KM is perfectly applied and embraced by their operations. Other organizations find that it is not easy to implement KM. The implementation of KM is related to various factors: individuals, data, and technology. Missing information always happens when individuals transfer it to other individuals. Data are also lost when individuals transfer it to a computer server or when senior employees transfer it to new comers. Information is also lost when it is installed in an inappropriate server, when it is converted from one form to another form, and when it is migrated between storage locations. This includes when information is interpreted by using computer programs (Bergeron, 2003). It is challenging for organizations to apply KM to enhance organizational performance, including all kinds of knowledge. This will lead to the improvement of knowledge sharing, creation, and organizational performance. Organizational culture is considered to be critical and it may be a key barrier to KM in terms of leveraging intellectual assets. Individual behaviors are influenced by culture when using, sharing, and creating knowledge (Long & Fahey, 2000). The factors that

negatively impact KM utilization are comprised of four barriers. The first resistances are psychological or human factors. Individuals do not want to change and fear new technology. Individuals are not willing to question KM systems. Psychological rewards and motivation are not provided for organizational members in order to encourage them to share their information and knowledge. The second resistances are economic or financial factors. Organizations lack cost effectiveness and they have less experience with alternative modes of obtaining knowledge. The third resistances are organizational factors. Individuals have had a previous negative experience with KM. Organizations have inadequate organizational rewards. Organizations lack alternative means to gain knowledge. Individuals fear losing power. The fourth resistances are technological factors. Individuals are not familiar with technology provided for KM implementation due to the fact that it is new and complex (Geisler & Wickramasinghe, 2009).

The implementation of KM still has barriers and they may delay the merging of KM university operations. An additional barrier of KM embracement within the universities can be the attitude of university staff members towards KM. This includes a learning culture that may present an obstacle to the process of sharing knowledge. The barriers that might exist among the four universities related to KM implementation are the following.

5.2.1 Workload and Time Constraints

Some of the university staff members do not agree with the idea of KM implementation because it takes a long time to process and it costs money to introduce KM to every sector within the organization. Liao, Fei, and Chen (2007) states that investment in information technology is expensive but it is necessary for organizational members to use (2007) when searching for specialized knowledge and to communicate with others (Ghaznavi, Perry, Logan & Toulson, 2011). The result the universities will get is unlimited because it helps to deliver information faster. The university administrators state that "*the investment in Technology is always expensive if we buy something without knowing how to use it to benefit our operations.*

KM is one of the best systems to use to develop an organization. If the universities could analyze their own strategies for introducing KM to their staff, it would help the university build competitive advantages in every situation." When asking the question of the university administrators "Does the university support staff members want to share their knowledge with others?" The university administrators state that "W*e might give the university support staff members a free hand because some of them think that implementing KM is a burden. It increases their workload and they do not want to do KM because of the burden of their regular job. Some of the university support staff members have said that they do not have the time, and they have too much work to do. KM will be utilized within the universities. At times the administration must command the staff to do so"*.

The university administrators should try to remove workload barriers because they prevent the university staff members from implementing KM and at the same time accomplish their regular jobs. Buckley and Giannakopoulos (2011) find that the barriers to knowledge sharing among academic staff members are related to time constraints and the unwillingness to share knowledge. This includes a lack of support from management.

5.2.2 I will Share Knowledge if I have a Problem

The way to gain knowledge to solve problems is to share it with individuals who know the solutions. The CoP provides an opportunity for individuals who have the same interests to participate and share their knowledge with others. The university administrators were asked. How often do they participate in KM activities? Many of the university administrators would attend the KM activities and the KM seminars if they had the time. When this researcher asked the university support staff members the same question, some of them replied that 'they would be able to attend if they were invited and were allowed to be away from their regular work.' Some university support staff members realize that KM implementation is the university's policy and attempt to utilize KM. Some of them do not want to share their information, knowledge, and experience related to work because they do not have a problem with their job. In this case, they

are willing to share their information if they figure that they will benefit from sharing knowledge. Some of them state that they do not know staff in the network that can help them to resolve their problem. Hislop (2009) states that some staff lack motivation to share their knowledge because they do not trust. Lin and Joe (2011) indicate that knowledge sharing is directly related to flow experience, and knowledge sharing indirectly occurs through the intervention of inter-employee helping. The flow experience is impacted by four factors and these factors are comprised of work skills, self-fulfillment in challenges, perceived control, and vividness. Sbarcea (2001) states that knowledge sharing between workers from different departments is based on the assumption that they will share knowledge that can help them to resolve their problems. Cross, Parker, Prusak, & Borgatti. (2001) state that powerful indicators such as cultural norms and organizational design considerations facilitate who is approachable within an organization. Other solutions are thought to help organizational member accessibility, including email, video conference, instant message, and asynchronous and synchronous collaborative environments. The most important indicator is organizational hierarchy and how it spells out who is accessible to whom.

5.2.3 Everything is for Me

The goal of the four universities is to develop into a learning organization. If the university staff members are unwilling to share their knowledge with others, it is difficult to accomplish the goals. Knowledge derived from conducting research, attending seminars and meetings, and developed from day to day operations is not disseminated to other university staff members. Knowledge is mostly evident in people: professors, researchers, and other university staff members. The knowledge they have is installed on a personal computer in their office. Knowledge is also kept in traditional form, such as cabinets and procedure manuals. Knowledge is used and owned by a few people and this makes it difficult for other faculty members and administrative staff to access that information. They do not want to share knowledge with others or they may not have the time to share it. What will happen if these staff

is hired away or if they retire? The universities will lose information and knowledge. Cross at al. (2011) state that if knowledgeable people leave the company, they will take valuable knowledge with them. This includes the relationship they made within their networks (2011). The university administrators have tried to encourage those professional university staff members to share their knowledge with others by inviting them to attend an important seminar and an academic forum. The universities have tried to connect those professional university staff members to build a relationship between them and other university staff members in order to transfer their knowledge to other group members. Cross at al. (2011) also indicate that managers should establish both an informal and formal relationship among workers. Managers should identify and categorize what knowledge is needed for the organization. Knowledge will then be allocated to people who are responsible for this knowledge and who will then share it with other organizational members (2011). Some of the university administrators state that the implementation of KM may be considered to be one of the items listed in the job description for every position. Cross at al. (2011) indicate that some organizations include KM in their mission statement and some go as far as including KM in their Code of Ethics.

5.2.4 There is No Note Taking

Many of the university staff members do not want to take notes when attending a seminar or a meeting. This includes taking notes on an important issue related to their daily life. As a result, it is difficult to share their information and knowledge with others. Piolat, Olive, & Kellogg (2005) state that people take notes on various issues in their everyday life. For example, they take notes when purchasing goods, planning their activities and future events, studying for examinations, preparing a technique for giving a lecture, and recording the report from a meeting. Note taking is involved with information that is recorded and gathered from diverse contexts and sources. Information from note taking can be used to help people to plan, learn, think, and create things in their daily life and future. People take notes when they understand information they have received and then they write it down. The university

administrators state that they have tried to inspire the university staff members to take notes when they attend a seminar and a meeting both inside and outside the universities. They have to write a report (short report) or a memo and circulate it to their colleagues, including uploading the report onto a server. The university administrators have also suggested that if it is difficult to take notes, the university staff members should write something down on a piece of paper or a Post-it to remind them. They are able to use information from the Post-it to make a short note later. Piolat at al. (2005) indicate that cognitive psychology believes that note taking is involved in a range of human activities that involve organizing data in conjunction with mental and cognitive processes. Makany, Kemp, and Dror (2009) state that before taking notes, individuals will filter the sources of information, organize them, as well as restructure existing knowledge. Individuals also need to understand information and write it down. The most important step is individuals have to store and integrate the processed material.

5.2.5 Close Relationship

Some of the university staff members are willing to share their information with their close friends and colleagues. The universities have tried to encourage them to join the KM network within their university. Accessibility to university staff members sometimes is not easy due to their jobs and the relationships within their groups. Information will flow and will be shared within the groups. Stevenson and Gilly (1993) state that a group of workers who have previously performed projects together will have a close relationship within their network. They are likely to support and help each other and this will make them closer. Jiangdian and Tien (2004) indicate that trust has been built among workers in the networks and trust also makes them willingly share knowledge within their group. This includes trust that allows the group members to seek psychological support as well as emotional engagement. This close relationship has an effect on the networks in terms of knowledge sharing. This means that a close relationship has a positive impact on group membership but plays a negative role with the overall organizational members. Ghaznavi at al. (2011) state that close connections provide a

special accessibility to specialized knowledge. Knowledge sharing among knowledge workers happens without boundary constraint and formal structures.

5.3 The Experience of the Four Universities with KM

Higher education institutions are expected to produce new knowledge, provide education for everybody, and enhance opportunities for students to achieve a high quality education. Higher education institutions are also required to provide a training program beyond high school. The four universities were founded as research universities, providing excellent academic programs and training courses, emphasizing social science, science, technology, and engineering. The universities are actively trying to be outstanding universities, involved in research and development as well as providing quality academic services contributing to the enhancement of the economy and the overall quality of life. It is expected that KM will be a key factor that will help push the universities to be in the forefront of education in South East Asia. These universities employed KM long before the term “knowledge management” was introduced. Each university has been implementing KM as a gauge of university performance.

5.3.1 KMUTT KM

KMUTT has implemented KM since 2009 with the purpose of improving university performance. The KMUTT Roadmap 2020 indicates that KMUTT will establish a KM system in order to increase the value of social capital. KMUTT will promote an exchange and distribution of knowledge among university staff members. KMUTT knowledge committees were formed in 2009 and the committees are chaired by the Chief Knowledge Officer. The Human Resources Development Division helps to operate the university KM. The Knowledge committees are charged with supervising all of the university KM issues. The Knowledge committee members have a critical function in formulating the university KM policy and its direction. Their responsibilities also include the process of KM policy making, in terms of implementation, adoption, and evaluation. One of the most important functions of the Knowledge Committee Members is to support KM activities created by the university staff members. The Knowledge

Committees also encourage KMUTT staff to realize how KM is crucial to the university and how to utilize it. The Knowledge Committees deployed and launched the KM plan while try to bring out implicit knowledge that was embedded in the KM staff. Implicit knowledge will be converted into information and knowledge and will be installed in the university management information system (MIS). Departments and schools have been persuaded to work together and they will be able to utilize and adapt information which can be accessed from MIS to their work. KMUTT has provided tools – technology, the KM website, and KM training programs, to facilitate KM activities. KM forums – the Research and Development Forum, the Strategy Forum, and the Management Forum- were established in order to be another channel for university staff members who are interested in sharing their knowledge within those listed categories. These activities will help to increase university productivity. This will improve and develop the university's ability in teaching, research, and administration. Finally the university will further develop as a learning organization (KMUTT, 2009)

5.3.2 SUT KM

SUT has also implemented KM since 2006 as KM is used as an indicator of performance. SUT is one of the universities in Thailand that announced the intention to become a learning organization with the goal of creating knowledge in science and technology. A 5 year KM plan (2012-2016) was created and KM committees were formed. The KM committees are led by the Vice President for Planning and the Planning Division helps to operate the university KM. Every sector is also required to formulate a KM action plan and to form its committees. The university KM committees are responsible for each of the following; the formulation of the KM strategic plan, the KM action plan within the university, disseminating KM information within the university, KM deployment and monitoring, and KM assessment. The functions of KM committees also include furthering the development of KM through the process of improvement and implementation. The university KM committees will analyze the action plan of each sector based on KM focus areas. They are comprised of four areas; instruction, research, academic

services, and management. As a result, SUT produces various handbooks such as The W*riting Techniques Handbook, The SAM BRODCASTER Program for Users, and The KM Evaluation Handbook*. KM knowledge issues can be found on SUT Knowledge Management website. The website also displays A SUT-AGENDA and other basic information of the university. Furthermore, Community of Practice (CoP) was established in order to be a place for university staff members to come and share similar knowledge, interests and experience. The best practice of KM is The Division of Correspondence, Document and Legal Affairs (SUT, 2012).

5.3.3 WU KM

WU has used KM since 2006. WU prepares its staff to employ KM in three phases. First, WU provides a KM training program in order to prepare its staff to understand the meaning of KM and how to apply tools to KM implementation. Each training program takes four days and this training program has been organized eight times with 40-50 staff members attending. The second activity of the training program is a Walk Rally that helps to build team learning after the trainees have learned KM. A final activity is the After Action Review (AAR) where the trainees are able to appraise what they have learned and shared. This includes how to find a practical solution to the problems found. The university supporting staff will be selected and will be trained prior to the academic staff. Second, the university staff members who have achieved a high rating will be trained to be KM leaders. KM leaders are called facilitators and they are obligated to establish direction in KM and to encourage the university staff members to utilize KM. Their roles also include supporting KM activities as well as introducing significant KM tools. Third, CoP was created and then the CoP members voluntarily attended activities depending on their interests. CoP members are able to share and learn knowledge that is related to their job. A shared topic usually illustrates the best practices of the CoP members. The Cop does not only help to educate its members to learn and share knowledge but it also assists them to be acquainted with each other. There are many CoPs within WU, and these include the Healthy Workplace Community, the e-Office Community, the Book Lover

Community, the IT community, and the Service Community. WU KM is operated by the Operational Development section and KM activities will be reported to the Assistant to the President for Organizational Development and the Communication Office of the President. The School of Nursing KM is successfully applied KM to its missions, including the Division of Property and Supplies. Both organizations are the best practices of the university (WU, 2012).

5.3.4 MFU KM

MFU has also implemented KM since 2005 and MFU is one of six universities that has started exchanging and implementing knowledge, information, and experience through networking. This network is called the Mini University Knowledge Management (Mini UKM). The Mini UKM has held a seminar every year that covers the ongoing issues associated with how to improve a quality of the higher education. The Mini UKM staff will invite a scholar to speak in a seminar and the topics will include teaching techniques, research methods, academic services, risk management, strategic plans, budgeting, and technical curricula. This topics presented will also include the issues of KM. Besides the six university members, other universities in Thailand are also invited to attend the seminar. The attendees are able to exchange their experiences and learn new knowledge. They are expected to adapt knowledge that is derived from the seminar, plus their own knowledge to improve their abilities while working. MFU has utilized KM with its educational quality assurance program in the same way as the other universities. KM strategic plans were formulated at the university and department level. The university staff members along with the academic staff and the university support staff members are trained in KM. The approach used for KM training is learning from a lesson learned. The academic staff will be introduced to apply KM to their work; teaching, research, and academic services while the supporting staff will suggest how to utilize KM with their services and administration. KM has been implemented successfully at the Center for Information Technology Service. KM will be used to help KM workers to focus on their job. An important issue is that KM users are required to continuously produce a report on what they have learned

and shared. KM at MFU is driven by the Division of Quality Assurance and Curricular Development to operate KM and to report to the Vice President for Quality Development (MFU, 2012).

KM has seemingly been employed within the universities for a long time prior to the introduction of the concept of KM. The university strategic plans and their missions state that these schools will be developed into learning organizations. Universities in Thailand are required to be learning organizations because organizations today are impacted by surrounding environmental pressures such as economics, politics, and technology. In order to deal with the various pressures, organizations have to adapt themselves to be learning organizations (Patriotta, 2003). Additionally, organizational performance cannot be improved by the utilization of resources and organizational activity. Due to the need for efficiency and flexibility organizations make use of exploitation knowledge and exploration knowledge. Exploitation is the use of preexisting knowledge used in a more efficient manner in order to enhance an already established set of procedures. Exploration involves using knowledge and expending resources in novel ways in order to find new avenues while conducting research and experimentation. These activities are indicative of organizational flexibility in response to change. As a result, organizational productivity is improved and organizational flexibility and organizational change are created (March, 1991). The most significant factors for developing learning organizations consist of; “systems thinking, achieving personal mastery, shifting mental models, building a shared vision, and team learning” (Senge 1994, p. 1). System thinking means that an individual understands changes and knows how to manage them by using a body of knowledge that has been developed in the past. Personal mastery means that an individual has developed their own vision in order to understand reality clearly and deeply. Mental models are assumptions, pictures, and generalizations that are embedded in an individual. Mental models help an individual clearly understand the world and how he or she can manage it. Shared vision means an individual is ready to shares pictures of the future with

other individuals. Team learning is when an individual is involved with the practice of dialogue and discussion, including learning how to interact with other individuals in a team. Team learning can accelerate learning. These five disciplines drive organizational change and individuals are able to learn to manage environmental transformations (Senge, 1994). KM helps organizations to be stable and to continuously learn new things as well as to adjust themselves. This means that organizations begin to become learning organizations and can adapt themselves to every situation.

The universities have strived to become learning organizations. KM will be one of the methods that will drive the universities to achieve their goal. The four universities have persuaded their staff to collaborate among each other. Many distinguishing features of KM activities within the four universities were established to be a gateway of learning and sharing as well as to illustrate forms of the social network that occurs inside and outside the universities. The establishment of groups within each university demonstrates how a social network can form when a knowledge and information sharing system exists. KM processes then occur and these will affect organizational learning. This means that individual knowledge will be distributed across group and network levels and will also be transferred to the organizational level. Finally knowledge will be installed at the organizational level where organizational members will be allowed to access and use information related to their responsibilities. New knowledge will be valuable, especially knowledge derived from outside organizations. This knowledge can be adapted, modified, and used to improve organizational operation systems and procedures. Learning at an organizational level happens only as the learning of knowledge at the individual and group level has been recognized, admitted, and utilized at an organizational level (Baloh, Desouza & Paquette, 2011). All organizational members are required to share their expertise, knowledge, and experience with others. As a result, a network is a crucial resource for an organization for successful learning and problem solving (Cross et al., 2001).

5.4 How to apply KM

The four universities have tried to create new knowledge in both tacit knowledge and explicit knowledge. The university staff members are able to convert their implicit knowledge to explicit knowledge. For example, KMUTT supporting staff and SUT supporting staff have attempted to transfer their internal knowledge to external knowledge by writing a work flow description of their job, installing it into a server, and then publishing it as a work flow manual. The four universities seemingly manage explicit knowledge more than implicit knowledge. Explicit knowledge is more easily transferred throughout the universities, and this can be seen from the university websites. Documents - the university strategic plans, annual reports, and meeting reports - that are produced within the universities can be found in the form of electronic files and hard copies. How do the university staff members apply KM to their mission? Paquette and Desouza (2011) state that knowledge is created through the process of social interactions. Individuals can also generate new knowledge through their own activities. Knowledge creation happens throughout our daily life, in every activity, and every social setting. Organizations try to increase the abilities of members by supporting them to learn through new experiences and to produce new knowledge and innovation. Organizations and customers will have advantages over new and innovative knowledge. Employees are considered the most important factor in the process of building new knowledge. Techniques – KM systems and technologies- should be applied to assist the process of knowledge creation (Desouza & Paquette, 2011). Over the decades, the Thai government has focused on university competency and has designed a policy that will help to improve university performance. As a result, KM has been used as a tool to improve the abilities of Thai universities. This section will discuss how the four universities apply KM to their missions; teaching, research, administration, and academic services

5.4.1 Teaching

The mission of the universities is to produce knowledgeable people in order to help drive the national economy as well as to develop society in a changing environment.

Universities are expected to contribute to business and innovation through knowledge transfer, including research-based business and training program (Tjedvoll & Blazenaite, 2007). The universities in Thailand are also expected to create new knowledge for the development of the country, especially in the changing political, economic, and societal worlds. One of the important major tasks of higher education institutions is teaching. The four universities have been committed to creating knowledge. They realize that human resources are the most valuable resource. They have applied the KM process in order to improve their teaching methods. Professors have learned and shared their information, knowledge, and experiences with other professors inside and outside the universities.

The four universities utilize sharing and learning activities to find new criteria for teaching. The best teaching practices are used as case studies for professors to discuss and to help them learn to teach more effectively. This includes learning from other instructors' teaching styles and then figuring out the best teaching methods. Also included are problems related to teaching and learning and how to find a solution to these problems. For example, professors are required to create a new "technique of teaching by focusing on Student Centered Learning". Collins and O'Brien (2003) explain that "Student-centered learning is an instructional approach in which students influence the content, activities, materials, and pace of learning. This learning model places the student (learner) in the center of the learning process. The instructor provides students with opportunities to learn independently and from one another and coaches them in the skills they need to do so effectively" (p. 339, 2003).

The university invites professors to a brainstorm meeting. The professors teach dissimilar subjects and are from different schools. After the meeting they decided to use the best practices of student centered learning as a topic for discussion. In addition having a dialogue with other lecturers helped to root out problems and to eventually fix them. One of the problems found is that students pay less attention to the studies and are less patient. Students are trying to negotiate to work less on their assignments due to their homework workload. Some

students do not want to attend classes due to boring presentations. Some of them are not able to access the proper technology to help them increase their learning abilities. As a result, a new criterion of teaching was found. It should help facilitate students to be active and responsible with their own studies. Solutions to the problems of Student Centered Learning are; 1) the university should have distinguished professors who are able to encourage students to participate in classrooms; 2) the university should provide the technology that is necessary for study and make it accessible to students; 3) the university should help students with study problems by offering consultation; 4) professors should pay more attention to enhancing student motivation in learning activities; 5) student-teacher relationships between professors and students should be enhanced; 6) professors need to give students advice when they have difficulty with their learning and also offer positive encouragement; 7) the subject content should be kept up-to-date. This should encourage students to actively contribute to their own learning. Learning then becomes more interesting to students and they should be capable of achieving high levels of proficiency.

5.4.1.1 Applying Knowledge Creation and Social Networking in Teaching

The knowledge creation process can be used to explain the development of the new technique of teaching called Student Centered Learning. Professors have their own style of teaching depending on the classroom environment, subjects, and students. Techniques that instructors use always impact student learning. Professors apply their own knowledge (implicit knowledge) and explicit knowledge to identify problems and solutions. The process of sharing and transferring knowledge (information and experience) occurs while instructors discuss new technique of teaching. Tacit knowledge is converted to explicit knowledge and conversely explicit knowledge is transformed to implicit knowledge. Knowledge resides in various entities across an organization as multiple entities are able to integrate their work and collectively produce knowledge. Knowledge assets are then able to successfully increase (Desouza & Awazu, 2005). The university knowledge assets increase since there is a synergy among the

university academic staff. The four universities decided that human resources are the most important assets along with the knowledge gained from research and teaching. The technical method of teaching Student Centered Learning has improved every year and the number of professors learning this method has increased. The CoP teaching method or the academic community was then established. This means that in the process of knowledge creation a network of knowledge workers is needed. The knowledge creation requires knowledge workers to actively involve with their mind. The university today is the place for scholar to search and create new knowledge (Altbach & Salmi, 2011).

5.4.1.2 The Benefits of KM to Teaching

There are many projects that have utilized the KM method to improve teaching competency. They can also use the creation of knowledge to explain how new knowledge is generated within the four universities. Knowledge will be shared, created, and supported by a group of people or a network that have the same interests. KM has been the key to success in business and it can be applied to improve higher education competency. Professors from different schools and departments have increasingly discussed how to improve teaching methods and update curricula. They become part of a network by working together. Teaching materials and resources were collectively produced, uploaded, and disseminated to other universities. Kidwell at al. (2000) the benefits of KM to teaching are; 1) the quality of the program and the curriculum will be increased by using KM to identify and leverage best practices and to monitor outcomes; 2) the university is able to improve, update, and revise curriculum quickly based on using the KM process; 3) KM can be used to develop faculty abilities in teaching, especially new faculty; 4) teaching will be improved by incorporating lessons learned from experience; 5) KM will lead to the development and design of many interdisciplinary curriculums.

5.4.2 Research

The universities are committed to conducting research in an effort to search for new knowledge and innovation. The universities have conducted numerous research projects and produce both basic and applied research. Professors are required to be involved with research projects along with students. The universities also encourage the university support staff members to develop research projects with the purpose of improving their jobs. It is the intention of the universities to play a leading role in research and development, especially in science and technology with benefits to both private and public sectors. The universities also have research centers where research equipment is installed. Professors and researchers are able to access the equipment. The universities also provide online data bases and technological tools for conducting research. The mission statements of the four universities declare that the universities strive to be research universities (KMUTT, 2012; SUT, 2012; WU, 2012; MFU, 2012). Two of them – KMUTT and SUT- were selected as research universities in 2009 by the National Institutes for Research (Sombatsompop, Markpin, Ratchatahirun, Yochai, Wongkaewand, & Premkamolnetr, 2010). The Education Minister gave a special lecture on "Higher Education Research Vision and Strategy to Develop Thailand towards the ASEAN Community" at the 1st Thailand National Research Universities Summit in April 2012. He stated that the government and the Education Ministry will provide, promote and support higher education institutions to develop professional students. Higher education institutes are required to incorporate research projects with economic issues. Innovation created by the universities cannot be used to serve business needs. The universities should pay attention to knowledge relevant to business in order to help to accelerate economic growth and receive funding (Yamwagee, 2012). The economy is successfully grown through the development of scientific and technological innovations. Most innovations are developed through basic and applied research conducted within the universities (World Bank, 2002).

5.4.2.1 Applying Knowledge Creation and Social Networking in Research

The universities apply KM to research, especially in the area of research projects that will eventually apply for funding both inside and outside the universities. Researchers within each university have tried to create new criteria to improve the abilities of new researchers by using a research mentor system. This includes giving new researchers advice on how to develop research topics that can be integrated with business enterprise. Research groups or research clusters are essential for conducting research. Research clusters will routinely arrange both formal and informal meetings to discuss and develop proposals, solve research problems, and share their information and experience. The shared knowledge will also include how to apply for a research grant as well as how to publish a research paper. A group meeting report will be kept in the form of hard copies and electronic files. The research management office will collect reports, documents, and other essential publications for research and development (R&D). Some documents will be uploaded in the data base and confidentially accessed by researchers. An important characteristic of KM is that it can be utilized by both routine activities and potentially contestable activities depending on the knowledge needs at any specific time (Hall, 2000). The universities try to connect R&D people with the R&D departments. Researchers are expected to assist, communicate, and transfer experiences to each other within and between their R&D groups. The connections occur not only within the R&D units but also with other units within the universities. A meeting of a particular group may lead to an establishment of new technology as well as to new links and new experts who may want to share the same interests.

5.4.2.2 The Benefits of KM to Research

Applying KM to research will benefit the universities. Collaborative research across disciplines has increased. Research funding allocated from the private sector has gradually increased. The numbers of publications have also increased. New knowledge and innovations are produced and proliferate. Kidwell at al. (2000) has stated that researchers will be able to

access the data base easily. As a result, data bases will be shared successfully among researchers. Research projects will receive more grants. The workload of administrative tasks will decrease in terms of providing and preparing data necessary for researchers. The amount of interdisciplinary research will increase. The universities will be able to leverage knowledge from previous research and proposals. Administrative time and costs will be reduced.

5.4.3 Administration

Networking among the university members occurs within and across departments at functional, physical, and hierarchical levels. Networking becomes a significant resource that facilitates KM utilization within the universities. The networks were established through the process of informal and formal relationships. The informal network has successfully integrated its members together, especially among the university support staff members. The universities have encouraged the university staff members to build a relationship with each other before implementing KM. The administrators of the universities believe that if the university staff members have an engaged mind, then the body will become engaged. The university staff members are willing to participate, learn, accept, perform, and pay more attention to work. The organizations will then continue to teach KM to staff until they fully understand the knowledge they have been taught. In addition, the employees will help to improve the process of knowledge sharing (Gary, 2004). “Open minded” is a state of mind that represents the readiness to accept other people’s experiences and knowledge. The university staff members then get involved with groups and are ready to share and receive information. All steps require a leader who can lead, listen, and encourage the university staff while teaching KM.

The KM application is suitable when applied to administrative services within the universities. The universities have applied KM to improve their financial services (accounting, budgeting, and procurement) and human resource management (numbers of staff, salary, workflows, recruitment, health care services, and incentive systems). Other service systems utilize KM with their functions, including the Admissions system. The universities have

supported resources for implementing KM with budget allowances for KM seminars, KM equipment, KM spaces, and information technology. Technology will be used as a tool to help communication among university staff members. Besides face to face and telephone communications, the university staff members are able to connect to others through email, blog, and the KM webpage. They are also allowed to interconnect through social network programs such as Facebook, Google, and other chatting programs while working. Technology is also advancing KM with its ability to install a vast amount of data (Sbarcea, 2001).

5.4.3.1 Applying Knowledge Creation and Social Networking in Administration

Many successful projects have been completed due to the engagement of the university support staff members. Their works have enabled academic staff to do their job without being overly distracted by their routine job. Relationships among the university support staff members were informally built. Knowledge is deeply embedded within an individual who is an expert in a specific context, profession, particular technology, or network activities (Nanoka, 2000). To gain greater performance, the universities are required to be learning organizations. They are eager to coordinate their work to support business sectors. The universities should actively learn and manage their own knowledge. Gupta and Michailova (2004) state that to gain a long term competitive advantage, it is important for organizations to development themselves to be knowledge intensive. They are able to apply, reprocess, and generate knowledge and innovations, including delivering quality products in order to respond to economic change. Organizations need to find a way to cope with and organize the process of knowledge sharing within an organization. In the case of the universities, network groups were informally and formally established in order to help to improve the university staff member's skills in knowledge sharing. The university members are required to be trained in KM and other skills to fulfill their work potential. Some universities have efficaciously improved practical workflow descriptions, work manuals and work procedures. This reduces time and the cost of services. KM helps to improve staff competency and the process of exchanging knowledge and also helps to develop

the workplace environment. Some activities such as the CoP of the Healthy Workplace community at WU continually received a reward from the Department of Health, The Ministry of Public Health of Thailand. While implementing KM, some university support staff members have assimilated KM to the point of becoming experts themselves. These KM experts have a chance to give KM lectures to other universities in Thailand.

5.4.3.2 The Benefits of KM to Administration

The universities have started gaining advantages from KM utilization as the administrative service systems have improved. Online services are offered and provided as an alternative choice to the university staff members and students. The workflow descriptions have improved and they have helped the university support staff members to work faster. Kidwell at al. (2000) indicates that the university support staff member capabilities have increased and they have been able to pinpoint problems and solutions to their jobs. The university support staff members are able to pay more attention to their job, and understand and rely on administrative policies. This will help the universities develop and accomplish their goals within a short period.

5.4.4 Strategic Plan

The universities have also applied KM to their strategic plans since the strategic plans focus on what the universities want to be in the future. The strategic plans indicate the future challenges as well as the actions that the universities intend to take to accomplish their goals. The strategic plan conducted by the university administrators will not be effective in organizational situations that tend to change every day. The strategic plans also cannot be formulated by a small group of people through a meeting within the university. The university strategic plan needs to be accomplished by the full participation of the university members. They are eligible to contribute to the planning process. One of the university administrators demonstrated the criteria used in developing the idea of “sense of belonging” to the university staff members, in the following statement:

"How can the university develop and strengthened its capabilities if their members do not realize and understand the directions of the university? We have encouraged the university staff members to attend strategic planning seminars. We have arranged this seminar every six months for at least 6 years and we invited both academic staff and university support staff members to attend it. The seminar is always managed outside the university in order to keep all of the attendees in the meeting room. If the meeting was held within the university, some of the staff would ask to go back to their office for urgent work. This action can effectively discontinue the process of learning the strategic plan. At the seminar, the university staff members are classified into groups and each group contains both the academic and the university support staff members. Each group will be assigned to discuss, design, and revise the university strategic plan as it relates to their responsibilities and expertise. The seminar reports will be presented to the attendees and the university administrators. We have a special office that helps to organize the seminars and this office will coordinate with the planning office. This includes the administrators who are responsible for the university strategic plan. The administrators will select and suggest the topics for the seminar and give advice about who should be invited to the meeting. The seminar is always held outside the university and in other provinces. The attendees can also bring their families to the seminar because we usually conduct them on weekends. Transportation will be provided for those that need it. We expect that the staff will be willing to join and participate in strategic planning. We always inform the staff each time that the university appreciates everyone who comes and helps the university with the strategic plan. It is a community plan with energy devoted to develop it. Everything, including the reports, the attendees, and the discussed issues is put in the server and the reports are then published and circulated within the university. The university strategic plan will be translated into English due to the fact that we have many foreign professors and they are required to

know the direction of the university. We also give the university staff members a strategic plan and a university vision pamphlet that are written in both Thai and English".

The university has tried to build a sense of belonging with all of the university staff members who get involved in the planning process and then make them realize that they own the plan. Besides the administrative staff members, the university staff members have also showed a sense of ownership, as can be seen as following statement.

"I was invited by the university on three occasions to attend a seminar on strategic planning. I was assigned to join a group of…and we were assigned to think about and design activities in response to one of the strategic statements. We spent a lot of time working on it and finally we devised many practical activities. It is good to know what the university is going to do and I can work to serve the university goals. What I can say is - It is your plan. You have planned it and you need to accomplish it – I will attend the seminar if I am offered and my director allows me to attend. Additionally, I got to know many academic staff members and support staff members from other departments. I have heard their voices for months and some of them for years. Knowing them personally makes my work easier than before".

This promising statement belongs to one of the participants from one university. It shows their responsiveness and their sense of ownership of the strategic plan. This means that the university administrators have tried to utilize KM to help to pull out entrenched knowledge within staff members and have tried to encourage them to share and transfer knowledge. Davenport and Prusak (1998) indicate that knowledge is usually unevenly disseminated within organizations. The process of sharing knowledge is difficult in any organization but knowledge can be shared depending on the context. Knowledge is developed from an individual and is entrenched within a certain cognitive context. This means that if one needs the knowledge to be

shared; one needs to understand the context and then he or she can instigate others to share their knowledge.

5.4.4.1 Applying Knowledge Creation and Social Networking in Strategic Plan

The university staff members participate in strategic planning and their assignment is to develop action plans and goals to add to the university strategic statements. The seminars facilitate network building and communication among the university staff members. Knowledge creation is involved with socialization, externalization, combination, and internalization. Knowledge is generated by individuals and is embedded in them. Knowledge is deeply rooted in action and in an individual commitment to a specific context (Nonaka, 2000). The university staff members take part in groups and networks. They are involved in a cycle of knowledge creation. They are socialized by learning the university strategic plan. They will scrutinize the knowledge that they already have and the new knowledge that they have learned through the seminars: listening to speakers, reading seminar documents, and working on the assignment issues. As a result, they will personally obtain new sets of tacit knowledge. Externalization occurs when staff takes their tacit knowledge and use it through discussion (communication). Tacit knowledge will be understood by the members of a group and it will then become the collective network knowledge or explicit knowledge. This means that the university staff members use their leaning and experience to identify and improve issues related to the strategic plan. Combination occurs when explicit knowledge is converted to explicit knowledge. The university collects information and knowledge derived from seminars. That knowledge must be in the form of reports or documents. The university also has other documents related to their strategic planning derived from outside organizations, for instance; documents from the OHEC and the Budget Office. The university will systematically combine all documents together and use them for formulating the strategic plan. Internalization happens when explicit knowledge is converted to tacit knowledge. The university arraigned the seminar in order to set the *Ba* (place and time for sharing knowledge). The documents and slide presentations (explicit knowledge)

are prepared to ensure that the attendees will understand and learn how to use the knowledge that they have learned. The university staff members are now knowledgeable and they can apply their knowledge to their operations. This means that the university knowledge assets are increasing through time. The model created by Nonaka (2000) is applicable to the communication process among networks. Knowledge will be successfully shared if each person or group has strong ties.

5.4.4.2 The Benefits of KM to Strategic Plan

The universities will gain various advantages when implementing KM to the strategic plan process. The universities are able to identify the challenges and barriers to the strategic plan in order to more fully implement the plan. The universities will gain a lot of information that can be used for making decisions. Kidwell at al. (2000) indicates that the universities are able to improve their capacity to support decentralized strategic planning and decision making. The information and knowledge sharing process will be improved across the universities. The universities will become increasingly paperless since KM will help to reduce the reporting burden. The universities are able to adjust their strategic plan anytime depending on the surrounding situation. The universities will become leaning organizations because there is a variety of knowledge that is relevant to market trends.

The advantage of implementing KM is evident in how it brings about organizational learning, organizational effectiveness, and new explicit and implicit knowledge (Yang, 2007). The knowledge creation theory and the social network theory can explicitly explain how KM is applied to the university functions: teaching, research, administration, and strategic plan. The strategy of networking is used to implement KM within the four autonomous universities. Social networking shows a set of roles that are related and interdependent within an organization. Social networking can be seen as a source of information transmission, inspiration, and effect (Hutt, Reingen, & Ronchetto, 1988). Relationships among the university staff members will lead to the creation of new knowledge and innovations. It is difficult to identify new knowledge and

innovations that are developed from the context of a body of knowledge. A large amount of the new knowledge and information that is created consists of new working methods that can be used to develop university performance. The flow of information exchanged among social networks across the universities is based on technology. Geisler and Wickramasinghe (2009) state that information and communication technology have played a greater role in helping to reduce the cost of knowledge codification and have increased the ability to communicate information. Organizations have a greater opportunity to create and install knowledge required for improving capacity because of the abilities of technology. However, Nonaka (2000) indicates that the major drivers in the knowledge creating process are individuals within an organization. Knowledge will be continually created and recreated based on the perspectives of organizational members.

5.5 Are the Four Universities Ready to Combine KM with Their Missions?

Are the four universities ready to embrace knowledge management? The university administrators state that it is difficult to answer the question of whether the four universities are ready to utilize KM. It takes time to assess readiness. It may take years. KM has been successfully applied in a few departments. This includes the School of Nursing and the Center for Information Technology Service. The universities may have a culture problem related to a value of sharing knowledge. The problems have slowly resolved and some university staff members have agreed on sharing information and knowledge. The universities have developed KM strategic plans and action plans, allocated money to implement these plans, and supported building networks among the university staff members. The universities also have Chief Knowledge officers to help and supervise KM implementation, and KM teams to assist departments to develop KM plans, action plans, and KM projects and activities. The universities also provide spaces for encouraging KM utilization and learning for the university staff members, including providing technology that can facilitate the process of knowledge sharing. The universities have trained their staff to learn and work on KM and have encouraged them to

apply it to their jobs. The universities have applied KM, but it is a work in progress and sometimes they need to solve problems as they occur. The universities have tried to do everything to espouse knowledge sharing. Kidwell at al. (2000) state that culture is the most important barrier when applying KM. Culture impacts how KM merges with the day to day operation of the university. The culture that shapes the uniqueness of an organization is expressed by “beliefs, values, norms, and behaviors”. Ahmadi, Rajabbaigy, and Moghaddar (2012) indicate that managers should establish an appropriate culture for sharing knowledge. The managers should prepare an environment that inspires organizational members to transfer, share, and exchange their information and knowledge. This will benefit the organization when its members are able to access knowledge that can be used with their jobs.

CHAPTER 6

CONCLUSIONS AND FUTURE RESEARCH

6.1 Conclusions

This study aims to understand how higher education institutions in Thailand apply KM to their missions and whether they are ready to combine KM with their day to day operations: teaching, research, administration, and strategic plan. It is understandable that applying KM within higher education institutions requires collaboration from the university staff members to perform the KM process. Higher education institutions are determined to develop into learning organizations and they have tried to develop their performance as well as improved their knowledge based systems. There are many methods, both formal and informal, that are related to information and knowledge sharing. These methods have been developed through time. These methods support the process of knowledge exchange and the systematic flow of information within organizations. Some methods are also a barrier to knowledge sharing. KM strategies and practices can be used to help higher education institutions address their information deficiencies and can assist them to identify opportunities to improve their competency. KM strategies and practices also help higher education institutions to coordinate and share information within their organizations. They keep continually improving methods of information and data transferring and this helps to promote the development of KM implementation. All of this will help to foster the foundation of a knowledge sharing culture and establish the long term mechanisms of a learning organization.

The method used to explain how the universities manage their information and knowledge is the SECI model and social network. The SECI model explains how knowledge transforms into four types; socialization, externalization, internalization, and combination (Nonaka & Takeuchi, 1995). The SECI model, based in system thinking, seems to confirm that

knowledge both tacit and explicit are separated from each other and can be moved interchangeably (Schütt, 2003). Nonaka claims that both types of knowledge are inseparable but they are parts of all knowledge. Nonaka then introduces another important concepts necessary for knowledge creation; *ba*. *Ba* is the place that facilitates knowledge exploitation and creation. Knowledge leadership is also required. Leaders help to identify the critical knowledge that is needed by an organization (Nonaka & Takeuchi, 1998). Organizational knowledge is the sum of overall individual knowledge. Organizations have tried to manage knowledge as well as develop new knowledge and innovations. Information and knowledge within organizations mostly resides in individuals. Knowledge creation helps organizations identify an opportunity to create new knowledge. Different knowledge from various departments will be synthesized to generate new knowledge. New knowledge will be managed and installed in databases and organizational members can access and use it for making decisions. Schütt (2003) indicates that sometimes databases are mediators in helping individuals to share their knowledge. Relationships among the university staff members were established based on their connection in social networks or the CoPs. The CoP objectives are to facilitate knowledge development as well as to be a mechanism for knowledge application. For example, facilitating knowledge development means to identify, create, harvest, and organize knowledge. Another objective of the CoP is to be a mechanism for sharing, adapting, and executing knowledge. The CoP is considered to be a major benefit that helps to shorten an organization's "time to intelligence" (Smith & McKeen, 2003).

Higher education institutions have produced and accumulated information and knowledge. The amount of the accumulated information and knowledge increases through time. Higher education institutions need to organize their information and knowledge by using KM. Using the knowledge creation theory will help to explain how knowledge is generated within higher education institutions. At the same time social network theory will be used to explain how knowledge is shared among the university staff members. The results found that information

and knowledge is mostly entrenched in individuals. This means the universities have tacit knowledge more than explicit knowledge. The universities have tried to convert tacit knowledge to explicit knowledge through the relationships among the university staff members within the CoP groups.

The results from this studies found that the universities obtain new methods for teaching which will encourage students to pay more attention to their studies. New methods for research are created that will facilitate researchers to develop research proposals that are matched with private sector needs, including receiving extra funding from the private sector as well. New criteria for administrative work has been established to help reduce the time and cost of services for the university staff members and students. In addition, KM is utilized to help the universities formulate their strategic plans as well as KM plans. The universities are able to identify their core competencies and improve their abilities in teaching, research, and administrative systems.

Based on the SECI model, KM implementation within the four universities is found mostly in the process of sharing between tacit knowledge and explicit knowledge. The role of the university staff members have not changed since the universities have applied KM to their day to say operations. KM has made the university staff members realize and understand the benefits of KM as well as encouraging them to use KM with their jobs. Characteristics that bring about the merging of KM implementation with the university's day to day operations are: 1) departments where the leaders understand what KM is and what advantages they will gain from KM; 2) small sized offices have successfully integrated KM with their jobs. These offices have created many KM activities as well as using the KM process to improve their work procedures; 3) Offices or centers that work with IT and information in their operations will easily adopt and utilize KM with their functions. Perides & Nguyen (2006) state that if KM is adopted as a university theme, it will be a continuous process dependent on many variables. One variable may accelerate the merging of KM and another may be an impediment to KM implementation.

6.2 KM Challenges for Higher Education Institutions in Thailand

KM implementation is related to the role of individuals and their relationships with others, and this will facilitate the creation of knowledge. It is sometimes difficult to understand the process of KM implementation but it is still important to highlight organizational success and failure. Davenport and Prusak (2005) state that there are three things that affect organizational success and failure in working with KM. Organizations should know what they need, what they have, and what they can and cannot do. Knowing and understanding of these three elements and knowing where organizations can receive data, information, and knowledge will bring about successful knowledge work. The implementation of KM with higher education institutions has focused on several issues. The results found have forced researchers to consider applying aspects of KM to higher education institutions.

KM has been implemented with public organizations in Thailand in order to improve organizational knowledge and the ability of government officers to respond to the surrounding changes. The objective also includes the goal of becoming leaning organizations (The OPDC & Thailand Productivity Institute, 2005). Implementing KM with higher education institutions is a new experience for these schools. KM is a young and popular field (Schütt, 2003; Santos 2006). Some universities have successfully adopted KM principles to their activities but others will not be able to apply all parts of the KM framework. For instance, some universities are concerned with only developing their capacity in information systems but are not also paying attention to improving the ability of their staff to interpret this information. This means that the universities invest a large amount of money in developing systems and infrastructures which will be used to generate information. The universities have failed to invest in human capital that is able to interpret information produced by the system (Santos, 2006). KM processes are difficult to apply to day to day university operations. The first reason is that there is a large amount of information and knowledge produced daily within the universities, including knowledge that was previously created and still needs to be managed. Another reason is all university activities

operate under complex rules, laws, and authorities, although the university administrations have their own autonomy. These reasons can delay the process of KM implementation, which may lead the university staff members to not want to share their information, experience, and knowledge. These reasons represent the various ingredients of unsuccessful KM implementation. The university staff members state that they deal with too much regular or routine work and they have little time to do KM, resulting in a negative impact on KM utilization. Problems with work operations do not occur while the university staff members are working, and as a consequence knowledge sharing does not matter. Knowledge belongs to individuals more than the universities. If knowledge is shared it will be shared among close friends and colleagues. Sometimes the universities lose their knowledge because some of the university staff members do not want to take notes while learning new information.

The university staff members may not want to create new knowledge due to the issues related to unsuccessful KM implementation. How can managers foster workers to share their knowledge? Human resources are the most important knowledge assets that have driven the process of knowledge creation within the four universities. The universities have provided the *ba* both physical and virtual for the university staff members to share their knowledge, including supporting the CoP activities. Desouza and Awazu (2005) state that self-governance is a crucial strategy to arouse workers to share their knowledge. Management should not get directly involved in the creative process. Management should let knowledge workers work to solve and resolve problems within their groups without interrupting. Management should provide the tools, infrastructure, and funding needed for knowledge sharing projects (2005). Knowledge sharing works in an informal social network and this leads to a successful creation, distribution, and utilization of knowledge. One of the informal groups is the CoP which is a place for knowledge practitioners to share and create knowledge and innovation. The CoP is self-governed and self-managed (Pavlin, 2004). Companies have been using CoP to help increase the creation of knowledge. CoP was established in order to respond to organizational needs. Individuals

participate with CoP based on their interests, and the relationship among individuals is established based on knowledge and those who need it.

Organizational culture is a major factor that resists KM implementation within the four universities. KM will be successfully implemented within an organization based on its culture (Smith & McKeen, 2003). Organizations should be built as knowledge sharing cultures. Knowledge sharing would (could) occur within a social atmosphere. It is an ongoing environment and it is called a knowledge sharing culture. An organization's culture should be built based on its values, mission, goals, and strategies (Smith & Mckeen, 2003; Figallo & Rhine, 2001). Different subcultures can exist within one organization. There are three essentials that are related to a sharing culture: trust, tolerance, and reward. Trust is an important factor in sharing knowledge. Individuals will not participate in knowledge sharing if they tell others what they know and then others take credit for that knowledge. Individuals will not share their information if it will be used against them and then cause them trouble. Trust is established when organization's rules and policy are felt to be reliable (Figallo & Rhine, 2001). Individuals share and transfer knowledge depending on trust. Trust also promotes collaboration among individuals as well as facilitates the use of human and social capital (Beerli, 2003). A trustful environment is one of the important factors for maintaining social collaboration (Evan & Roth, 2004). Tolerance is also an important issue that impacts individuals when sharing knowledge since they have to use new systems for interaction. "What I contribute will not be criticized unfairly or bring personal attack." Given rewards are needed fundamentally based on "What is in it for me?" Individuals expect a reward when they exchange knowledge with others. Rewards can be both material or can involve recognition from group members (Figallo & Rhine, 2001).

Workers show less interest in using information and knowledge from these databases. Once knowledge is shared and installed in databases, Databases are used less and information is not attractive to users. This means that the shared information and knowledge may be unqualified and cannot be used for making decisions. How can managers arouse organizational

members to share knowledge that is needed by an organization? Schütt (2003) indicates that managers do not use motivation to encourage organizational members to use and reuse information. The university staff members from the four universities have confirmed that rewards are necessary in order to encourage KM initiatives. Rewards can be both financial and nonfinancial (such as recognition of expertise). Giving incentives can be powerful drivers to worker attitudes and knowledge sharing. Lizboswitz and Chen (2003) state that some organizations such as Johnson & Johnson and the World Bank have promoted KM by having knowledge fairs. These will motivate workers to share more knowledge and to increase new relationships among colleagues. By doing this, tacit knowledge will be increasingly transferred. Some organizations have created a guiding principle for knowledge sharing. For instance, "Knowledge, Information, and Data Should Be Shared." This statement belongs to the Public Service Commission in Canada. This organization also states that if their members share knowledge with others, they will be rewarded. The worker's contribution to knowledge creation, assessment, and transfer will also be evaluated.

The four universities emphasize that KM implementation is well represented by a CoP. This means that social networking, especially informal social networks, play an important role in KM implementation. Information networks have facilitated the process of KM implementation. Sutherland (2011) explains that social knowledge theory concerns the relationships among actors in groups or organizations. Actors who have a strong relationship with their connection will be willing to share their opinion, information, ideas, and knowledge. In contrast, when there is a weak tie actors will not want to share information and knowledge with anybody. Higher education institutions may take time to establish relationships among the university staff members as well as to apply KM to day to day university operations. As a result, relationships will be built by using the CoP as a channel to facilitate the university staff members to work and share information and knowledge. The university staff members will participate with the CoP depending on their interests. Knowledge sharing increasingly occurs across the universities.

The university staff members share and transfer their knowledge based on their connection with others without knowing how strong or weak their tie is to each other. The shared knowledge occurs among the university staff members, from the university staff members to university, and from university to the university staff members. A culture of using technology is not a barrier for sharing knowledge within the universities. Bergeron (2003) states that information always flows from the knowledge worker to the organization and conversely it also flows from the organization to the knowledge worker. The flow of information happens through informal and formal interaction. An example of informal transfer can be seen from an interaction in a meeting room while working on the same projects. Formal transfer can be defined in terms of worker knowledge education. Management invests in workers with an expectation that there will be a return on the investment.

The four universities have the intention to develop to become learning organizations. The university is a higher education institution where specific academic degrees are offered. The activity that happens within the university can also be measured. Therefore, the university can be identified as a learning organization if the individuals within the university have the same characteristics as those individuals within organizations that are lifelong learning people, who create new knowledge or criteria for jobs and share knowledge, including understanding organizational goals.

6.3 Dissertation Contributions

This research studies the criteria that higher education institutions in Thailand use to implement KM with their functions as well as studies the readiness to merge KM with day to day university operations. The major findings of this dissertation have presented relevant issues to higher education institutions and other organizations that are involved with higher education in Thailand when implementing KM:

First, the results can be used as basic information for higher education institutions and related organizations to help to rethink and redesign KM policy when KM is successfully applied in Thai universities.

Second, the findings can be used to help to develop and apply the process of KM implementation to higher education institutions, including other public organizations in Thailand. Other universities and public organizations may be able to implement KM more easily than the four universities. The four universities are autonomous universities but they have established their own rules and laws to be a guideline in conducting their missions.

Third, the findings can be used to monitor how KM has been utilized in order to develop university tasks, in terms of teaching, research, administration, and strategic planning.

Fourth, the factors that lead to successful and unsuccessful KM implementation may be useful to the universities in Thailand. They are able to realize which factors will help to facilitate KM implementation and as some of these factors can delay KM implementation. Other public organizations in Thailand can also learn from the experiences of these four universities.

Fifth, the results show that KM implementation is a friendly user and receiver information resource by using a mechanism of the CoPs.

Sixth, embracing KM and implementing KM activities is very challenging to public organization administrators who need to know how to establish a relationship among the university staff members as well as how to lead KM efforts.

Seventh, the results show where KM is successfully applied within higher education institutions such as administrative and service offices and in the School of Nursing. These office experiences can be used as a lesson for other organizations.

6.4 Limitations of the Study

There are several limitations to this study. There may be some flaws related to the following issues. The first limitation is that this research study covered many functions of the university: teaching, research, administration, and strategic planning. The results received may

lack an important detail that is necessary for applying KM for higher education institutions in Thailand.

The second limitation is related to the characteristics of the sample. This dissertation studies only four autonomous universities out of 15 autonomous universities. The number of participants in this research totals 40 (10 from each university). Sample selection was based on the suggestions of the university staff members and administrators. Participants may be the university staff members who know KM very well. Therefore data gained from interviewing may not discover the important aspects of KM implementation. The data may have steered the results in one direction.

The third limitation is related to social networking and the lack of a measure of the degree of strong and weak ties. This research cannot explain the strength of the relationships that influence an individuals' decision to share their knowledge and participate in knowledge creation.

The fourth limitation is related to time of this study and this makes the difficulty to study how organizational culture influences KM implementation within higher education institutions.

6.5 Possible Future Research

Higher education institutions are required to improve their competencies and abilities to produce knowledge and innovations that can be used to support the private sector. Recently it has become much more difficult to address systematic KM implementation. The desire to discern how to utilize KM is related to various factors coming from inside and outside the university. Some of them bring about change and some of them are obstacles to KM implantation. This research found that there are many issues that need further study. The results can be applied and used to improve and develop both the KM process and higher education institutions.

This research studies how KM is applied within four major areas: teaching, research, administration, and strategic planning. Each topic requires more information and detail in order

to help the development of higher education institutions. They are able to classify and realize elements that impact their operations. It will be more useful if future research uses various methods for data collection and data analysis or may focus on only one issue at time.

This study does not delve into the issue of organizational culture, as it is a main issue related to the delay of KM processes and activities. An organization is comprised of various specific subcultures and they are related to beliefs, norms, ideas, and the behavior of organizational members. Some organizations fail to apply KM because they do not understand staff background. It is also challenging for management to identify subcultures and try to merge them with the dominant organizational culture.

Further study is needed on information and technology that fits with KM implementation as well as worker skills in using this technology. Furthermore, there are cases such as public universities and colleges that have applied KM successfully. These cases can be used as case studies. Other organizations can learn from these case experiences.

APPENDIX A

QUESTIONS FOR THE UNIVERSITY ADMINISTRATORS AND THE UNIVERSITY SUPPORT STAFF MEMBERS

Questions for the University Administrators

1. What does your university know about KM?

- When did your university start to apply KM?
- Why was the KM started?

2. What do you understand about KM?

- Where is this knowledge located?
- In what form is this knowledge stored?

3. What do you do to methodically assess the university's actual know-how vs the university's needs to act accordingly?
4. How can the university better achieve the objectives with knowledge management?

- How can the university enhance its knowledge creation?
- How can the university preserve its existing knowledge?
- How can the university encourage its knowledge sharing?
- What are the most efficient methods of knowledge dissemination?

5. What are the knowledge assets of the university?

- How can the university leverage its knowledge assets for better results?
- How can KM increase its assets in the long run?

6. Does the university promote KM?

- What does the university do to promote KM?
- Have the university provide KM projects or KM forums?
- Do you participate in the KM projects?
- How often do you attend KM projects or forums?

7. Why do you think the university staff members will join and participate in KM sharing?
8. Why do you think the university staff member will volunteer to work in the KM executive committees?

9. Should the university consider KM as a basic obligation of an employee that additional incentive is not required?
10. How do you transfer your knowledge to others to be able to take advantage of it or to ensure that it is not lost?
11. What tools do you use to facilitate the KM?

Questions for the University Staff Members

1. What does your university know about KM?

- Why was this KM started?
- What do you understand KM to be?

2. What do you do to methodically assess the university's actual know-how vs the university's needs to act accordingly?
3. How can the university better achieve objectives with knowledge management?

- How can the university enhance its knowledge creation?
- How can the university preserve its existing knowledge?
- How can the university encourage its knowledge sharing?
- What are the most efficient methods of knowledge dissemination?

4. Does the university promote KM?

- What does the university do to promote KM?
- Have the university provide KM projects or KM forums?
- Do you attend the KM projects?
- How offend do you attend KM projects or forums?

5. Why do you join and participate in KM sharing?
6. Why do you think someone volunteers to work on the KM?
7. How do you transfer your knowledge to relevant people so as to be able to take advantage of it or to ensure that it is not lost?
8. Is it easy to share knowledge with other members of the university?
9. What tools do you use to create and share your knowledge?

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