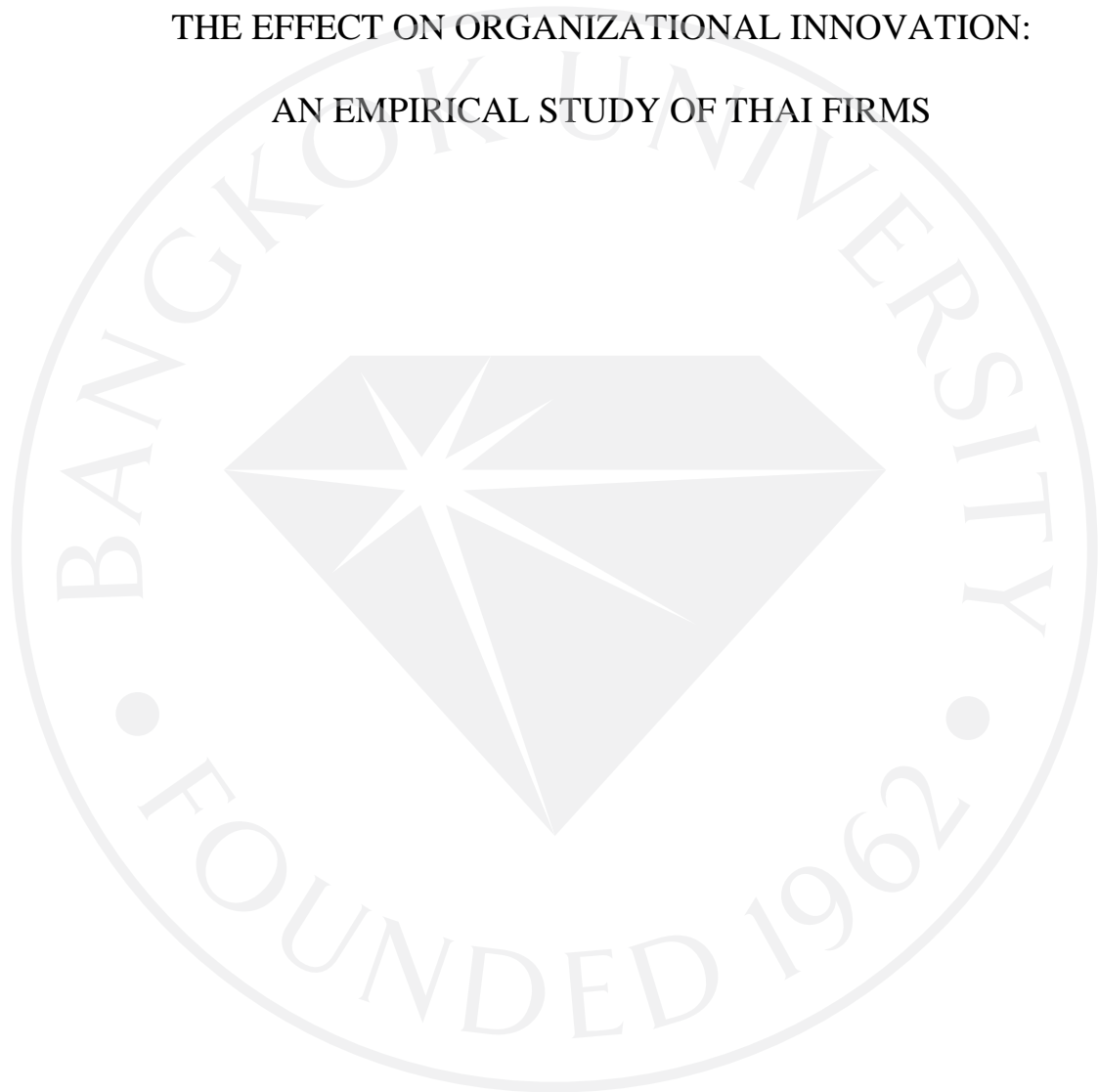KNOWLEDGE MANAGEMENT STRATEGY AND

THE EFFECT ON ORGANIZATIONAL INNOVATION:

AN EMPIRICAL STUDY OF THAI FIRMS

KNOWLEDGE MANAGEMENT STRATEGY AND

THE EFFECT ON ORGANIZATIONAL INNOVATION:

AN EMPIRICAL STUDY OF THAI FIRMS

A Dissertation Presented to

The Graduate School of Bangkok University

In partial Fulfillment

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Doctor of Philosophy in Business Administration
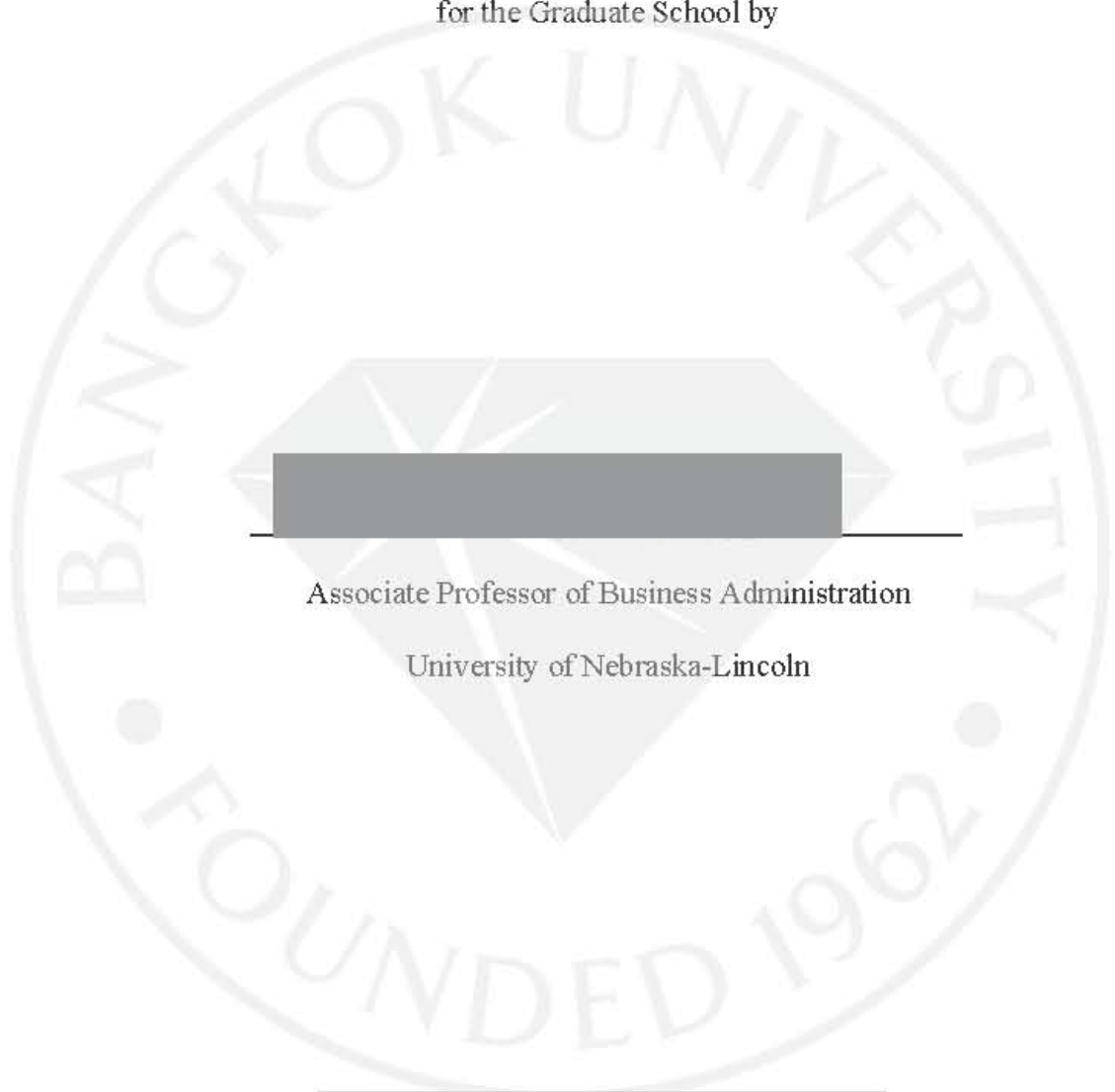
by

Saweeya Prathanadi

2011

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Knowledge Management Strategy and the Effect on Organizational Innovation:

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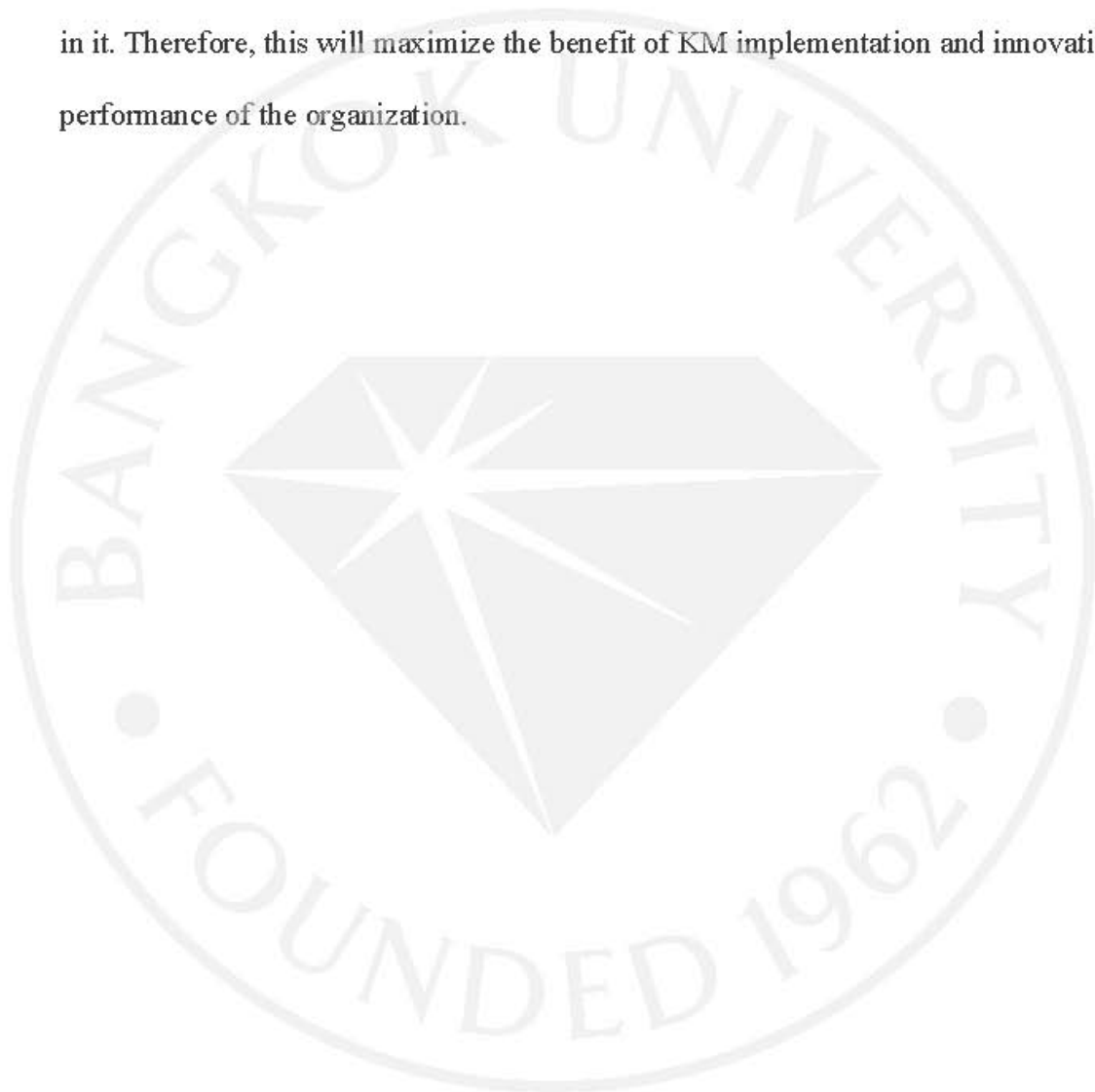Advisor of dissertation: Associate Professor Silvana Trimi, Ph.D.

ABSTRACT

Today, it is the world of knowledge-based economy. Knowledge management
(KM) and innovation have become the vital ingredients for enhancing competitive
advantage in a fast-changing environment. In Thailand, KM started almost ten years
but most executives still lack successful models that could be used as guides. It is
important for them to make the explicit connection between their organizational
innovation and how they use the KM strategy to support it. The purpose of this
dissertation is to explore the effect of KM strategy on organizational innovation. This
study also explores whether industry type and organizational size are intermediary
factors in the relationship of KM strategy and organizational innovation.

A quantitative research design was employed by collecting data from firms in
the knowledge-intensive and non-knowledge-intensive industries. The research results
indicate that both codification and personalization KM strategies can positively and
significantly affect organizational innovation. The results confirm the beliefs of many,
and scattered partial support in the literature, and shed a new light on the relationships
between KM strategy and organizational innovation. The results also indicate that

industry type and organizational size are intermediary factors that influence on the relationship.

This research provides business executives new insights about making surefooted decisions as to which dominant KM strategy to focus and their investments in it. Therefore, this will maximize the benefit of KM implementation and innovation performance of the organization.

Approved:

Signature of Advisor

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Finally, I would like to thank you my family and lovely friends who have always supported me with their concern and love.

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CHAPTER 1

INTRODUCTION TO THE STUDY

Statement of Problem

Today, organizations have to deal with dynamic, complex, and rapidly changing business environments in order to survive in the increasingly competitive global economy. The firm's competitive advantage comes from core competencies which are based on the distinctive knowledge created over time (Prahalad & Hamel, 1990). Grant (1996) also stated that the sources of competitive advantage are not all the firm's internal resources, but just the knowledge-related assets of the organization and its competence to integrate knowledge. Therefore, organizations recognize knowledge as the only meaningful resource (Drucker, 1996), fundamental basis of competition (Zack, 1999), and a key to business success.

Unsurprisingly, the strategic value of knowledge has been recognized by world-class organizations (Nonaka, 1991). Knowledge that can be a source of competitive advantage is particularly tacit knowledge. Ambrosini and Bowman (2001) discuss the reason that tacit knowledge is unique, imperfectly mobile, imperfectly imitable and non-substitutable. Also, argue that managing knowledge actively and seeking for tools to leverage knowledge that can identify, share, process, capture and use it more effectively are important.

Over the past ten years, knowledge management (KM) concept has become an integral part of work processes in organizations of all types, including business, education, health care providers, management consulting firms, and government. Technology has changed to create an explosive interest in knowledge, specially, KM.

Additionally, the recognition that organizations need a leading edge approach to providing product and service differentiation to customers, combined with technological advances, has aggressively driven organizations to further pursue a better understanding of KM.

KM is expected to improve and create organizational innovation and competitive advantage for business enterprises. In addition, KM as a long term attempt is well recognized in business excellence models around the world. The models directly or indirectly include KM as a key success factor. International role models of organizational excellence usually demonstrate superiority in the application of KM in their day-to-day operations. Dykeman (Lee & Hong, 2002), from the research reported in Fortune, found that 63 percent of 200 firms by CAP ventures in 1997 had employed a KM strategy. Superiority in KM is no longer an option, it is now a requirement in achieving world class performance. Importantly, if properly implemented, KM can help organizations become more flexible as well as become better learning places (Yahya & Goh, 2002).

KM has exploded in the popular management literature. In an important study, Hansen, Nohria, and Tierney (1999) have developed two major strategies of managing organizational knowledge assets: *codification* and *personalization*. The codification strategy views knowledge as an external object that can exist independent of the human experts. The fundamental of the codification strategy to KM is to provide a high quality and reliable knowledge library for reuse. Whereas the personalization strategy, it derived from another fundamentally different aspect of knowledge, views knowledge as a quality not detachable from human experts. Additionally, this strategy also has a different implication on the various aspects of

the KM process by facilitating human experts to better communicate in order to create and exchange (or exchange and then created) more of their luminous ideas for solving problems or finding solutions (Wong & Tiainen, 2004).

Hansen, Nohria and Tierney (1999) propose that organizations focus in varying degrees on the *codification* and *personalization* of knowledge. These are not mutually exclusive categories but managers had pointed out that emphasizing a wrong approach or trying to pursue the two approaches at the same time does not usually generate good result although a hybrid approach with one of the approaches being dominant may work (Wong & Tiainen, 2004). Kim and Trimi (2007) also support that effective firms need to focus on one of the strategies and use another one as a supporting role. They tend to favor one over the other (perhaps as much as an '80-20 split') (Hansen et al., 1999, p. 112).

Today, knowledge management (KM) and organizational innovation have become the vital ingredients for enhancing the competitive advantage in the fast-changing environment. While, in Thailand, Vicheanpanya, Natakuatoong, and Panich (2006) concluded for KM that "a majority of Thai organizations are in the initiative stage that has various models." Hence, KM as a conscious practice is still immature and executives have lacked successful models that they could use as guides. Many managers still do not know what to do to manage an organization's knowledge. It is important for them to have enough guidance to develop KM and make the explicit connection between their organizational innovation and how they use knowledge management strategy to support it.

In recent years, much research has been conducted to learn about the existence, diffusion and effectiveness of organizational innovation and knowledge

management (Schienstock, Rantanen, & Tyni, 2009). But current research in this field is that organizational innovation and KM are dealt separately. They have not been researched together as parts of KM strategy in Thailand. The purpose of this study is to explore the effect of KM strategy on organizational innovation and also attempts to find if industry type and organizational size are intermediary factors in the relationship of KM strategy and organizational innovation.

Purpose of Study

This study addresses the following questions: 1) What is the relationship between KM strategy and organizational innovation among Thai firms in several industries? 2) Does industry type moderate the relationship between KM strategy and innovation performance of these Thai firms? And 3) Does organization size moderate the relationship between KM strategy and innovation performance of these Thai firms? The research model is shown in Figure1.1. The findings of this study will be important since they can help executives and middle-managers can use them as a guide to make more effective decisions about which KM strategy to focus on and their investments in it. Therefore, this study attempts to maximize the benefit of KM implementation and innovation performance of the organization.
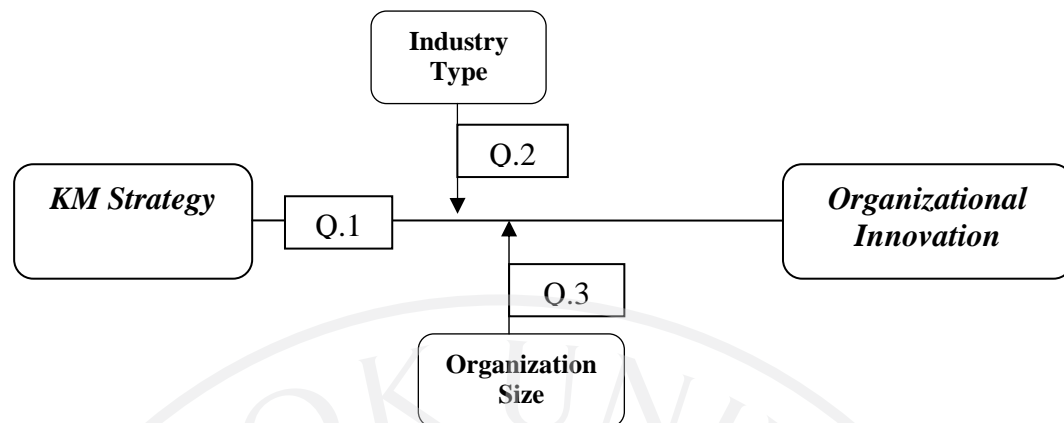
Figure 1.1: Research Model

Research Methodology

The research was conducted by sending questionnaires to target populations who are chief knowledge officers (CKOs), managers and employees involved in KM implementation at any level in an organization. The population of this study was selected from the list of Department of Business Development, Ministry of Commerce. Main statistical analysis tools for producing analysis were SPSS (Statistical Package for Social Science) and Microsoft Excel software.

Organization of the Dissertation

For attaining the objective, this study is organized into five main chapters. The first chapter has introduced and investigated the general problem and research questions.

Next, Chapter 2 draws on relevant literatures in the field of KM and the main KM strategy typologies, heavily drawn from the work of Hansen et al. (1999), are reviewed. Additionally, this chapter describes and conceptually evaluates the area of

effectiveness of organizational innovation. In this chapter, the research model and testable hypotheses are proposed.

Chapter 3 examines the theoretical construction of this study and addresses the methodology for testing the proposed hypotheses. This chapter reviews the literature for each of the main constructs and proposes the measurement model and also shows the study plan, research design, methodology, target population, instruments, and data gathering method and analysis.

Chapter 4 presents the result of the study, discussion, and the in-depth statistical analysis interpretations.

Chapter 5 provides the discussion. Finally, the expected outcome and their implications for KM implementation are presented. Also, the strengths, limitations of the study, future directions for KM research, and conclusion are included.

CHAPTER 2

LITERATURE REVIEW

This section provides an overview of the resource-based view and knowledge-based view of the firm. Next, we review the relevant literature in the field of knowledge management and KM strategies. Finally, we review the relevant literature about organizational innovation.

Resource-based View and Knowledge-based View of the Firm

Among many contributions from research in the field of strategic management, the resource-based view (RBV) of the firm notes that the firm performance is fundamentally due to the firm's heterogeneous internal resources. Barney (1991) and Wernerfelt (1984) described about the firm's resources that consist of all tangible and intangible assets, human and non-human, which are possessed or controlled by the firm and that allow the firm to formulate and implement strategies that enhance its efficiency and effectiveness.

An extension of the resource-based theory is the knowledge-based view (KBV). In this KBV, Grant (1996) stated that the sources of competitive advantage are not all the firm's internal resources, but just the knowledge-related assets of the organization and its competence to integrate knowledge. According to Prahalad and Hamel (1990), the firm's competitive advantage comes from core competencies which are based on the distinctive knowledge created within them over time. Knowledge that can be a source of competitive advantage is usually tacit knowledge. Ambrosini and Bowman (2001) showed the reason that tacit knowledge is unique, imperfectly mobile, imperfectly imitable and non-substitutable. Knowledge is a core

competence that does not weaken nor is it consumed with use (Halawi, McCarthy, &

Aronson, 2006) and it is the resource that the firm can build up and have a main

influence on its strategies (Barney, 1996) since it support decision making of the firm

(Grant, 1991). Therefore, Zack (1999) stated that the fundamental basis of

competition is knowledge.

Knowledge Management (KM)

Over the past ten years, the KM concept has become an integral part of work

processes in organizations of all types, including business, education, health care

providers, management consulting firms, and governments. KM is a branch of

management for achieving breakthrough business performance through the synergy of

people, processes, and technology (Brint Institute, n.d.; Chaka, 2008).

Davenport and Prusak (1998) defined knowledge as 'a fluid mix of framed

experience, values, contextual information and expert insight that offer a framework

for evaluating and integrating new experience and information' (Halawi, McCarthy,

& Aronson, 2006). In defining KM, a few definitions are presented here and there are

multiple interpretations (Choi, 2000).

Wiig (1997) defined KM as a systematic and explicit process that helps a firm

to acquire, build, renew, and apply knowledge from both inside and outside of the

company to maximize an organization's knowledge-related effectiveness and returns

from its knowledge assets. KM applies systematic approaches to find, understand, use

(O'Dell, 1996), formulate and access to experience, knowledge, and expertise that

create capabilities, enable superior performance, encourage innovation, and enhance

customer value (Beckman, 1997). The information provided through KM is expected

to help an organization accomplish their missions (Wiig, 1995) and to improve organizational performance (Laurie, 1997).

Malhotra (1998) defines KM that "caters to the critical issues of organizational adaptation, survival, and competence in face of increasingly discontinuous environmental change. Essentially, it embodies organizational processes that seek synergistic combination of data and information processing capacity of information technologies, and the creative and innovative capacity of human beings." In theory, the process is simple, but the implementation can be quite complex.

In order to achieve the desired outcome, organization must openly describe the policies to direct the implementation of the KM infrastructure, must provide top-down support for generous details of the causes behind the addition of the capability, and must create a culture that places value on knowledge (Shepard, 2000). Organizations not only have to build appropriate IT infrastructures but also have to integrate human, computer systems, network technologies, and other corresponding organizational arrangements to effectively obtain, store, and utilize knowledge (Meso & Smith, 2000; Paisittanand, Digman, & Lee, 2007).

However, Halawi et al. (2006) stated that KM solutions are generally only 10 percent to 20 percent of technology effort and the major efforts involved those that are cultural, managerial and behavioral. Also, Davenport (1996) stated that when we think of knowledge in the future, we should think of "human" advancements, not super-futuristic products. Successful managers understand the aspects of KM that go beyond technology. These are people, content and economics. Therefore, KM is "knowing what you know and profit from it" and "making obsolete what you know before others obsolete it." (Malhotra, n.d.)

Murray (1998) viewed KM as a strategy that turns intellectual assets of the organization – both recorded information and the talents of it members into better productivity, new value and enhance competitiveness. Furthermore, KM is also defined as a mindful strategy of getting the right knowledge to the right people at the right time and helping people share and place information into action in methods that attempt to develop the performance of organizations (American Productivity Quality Center, 1999a, 1999b, cited in Halawi, McCarthy, & Aronson, 2006, pp.384-397).

These perspectives provide KM with a strategic attribute. Through many case studies, Drew (1999) found that organizations interviewed combine KM with organizational objectives and form a set of operating arrangements to implement KM activities. Furthermore, Zack (1999) found that when conducting KM, organizations implement different administrative procedures according to their different strategic missions. These findings indicate that it is appropriate to view KM as an organization's strategic tool.

Table 2.1: Comparisons of KM Studies

Criteria	Research							
	Nevis et al. (1995)	Bierly & Chakrabarti (1996)	Jordan & Jones (1997)	Hansen et al. (1999)	Zack (1999)	Swan et al. (2000)	Choi & Lee (2003)	Kim & Trimi (2007)
Acquisition								
• Explicit-oriented	Product	Exploitation	Focused	Reuse	Exploitation	Exploitation (fitting pieces of knowledge together)	Exploitation	Exploitation
• Tacit-oriented	Process	Exploration	Opportunistic	Interaction	Exploration	Exploration (creative interaction)	Exploration	Exploration
• Both Tacit and Explicit	NA	NA	NA	NA	Innovator	NA	Innovator	NA
Sharing								
• Explicit-oriented	Formal	NA	Formal	People-to-document	NA	Text	Documentation	Procedure-oriented
• Tacit-oriented	Informal	NA	Informal	People-to-people	NA	Social network	Social relationships	Expertise-oriented
KM Category	Embrace & Improve; Change	Loner; Exploiter; Explorer; Innovator	Tacit-oriented; Explicit Oriented	Codification; Personalization	Conservative; Aggressive	Cognitive; Community	Passive System-Oriented; Human-Oriented; Dynamic	Reuser; Stabilizer; Explorer; Innovator
Research Method	Case	Empirical	Conceptual	Case	Case	Case	Empirical	Empirical

(Continued)

Table 2.1 (continued): Comparisons of KM Studies

Criteria	Research							
	Nevis et al. (1995)	Bierly & Chakrabarti (1996)	Jordan & Jones (1997)	Hansen et al. (1999)	Zack (1999)	Swan et al. (2000)	Choi & Lee (2003)	Kim & Trimi (2007)
Industry Implications	All	Pharmaceutical	All	Consulting	All	Manufacturing & Financial	All	SME Management Consulting
Corporate Performance	NA	Financial Performance	NA	NA	NA	NA	Self-report Measure (a kind of balanced scored card)	NA
KM Style Suggested	Balanced	Innovator or Explorer	Balanced	80-20 split	Aggressive	Community	Dynamic	Use more IT to their KM Model

Source: Adapted from Choi, B., & Lee, H. (2003). An empirical investigation of KM styles and their effect on corporate performance.

Information and Management, *40*(5), 403-17.

Knowledge Management Strategy

Halawi et al. (2006) defined KM strategy, in simple terms, as the process of generating, codifying, and transferring explicit and tacit knowledge within an organization, getting the right information, to the right people, in the right place and at the right time. Broadbent (1998) identified the key to KM strategies is the transformation of knowledge from tacit to tacit, explicit to explicit, tacit to explicit and explicit to tacit, with the emphasis on the last two processes as the key challenges of KM. She also summarized how to get started in KM in four steps as the following:

1. making knowledge visible;

2. building knowledge intensity;

3. developing a knowledge culture; and

4. building a knowledge infrastructure

Since KM as a conscious practice is so young, executives have lacked successful models that they could use as guides. Many researchers and practitioners have worked on coming up with a framework that specifies the different aspects of the KM process and have worked on providing typologies for KM strategies. A better understanding of the concept and implications of KM strategies can be achieved through a review of the most important contributions.

March (1991) stated that an essential element in KM is the balance that firms should observe between exploration and exploitation such as between the creation and discovery or acquiring knowledge and its refinement, reuse or generally speaking a focus on efficiency in knowledge resource management. Bierly and Chakrabarti (1996) label firms according to the way they manage knowledge. They conclude that more aggressive knowledge strategies, featured by more innovative firms, cause

higher financial performance. Similarly, Zack (1999) proposed two orientations: conservative and aggressive. The latter is frequently more concerned about exploration.

In Table 2.1, adapted from Choi and Lee (2003) and cited by Meroño, López, and Sabater (2007), broader perspectives of main KM strategies are presented. This table highlights a distinction between a system-oriented and a human-oriented approach. System orientation highlights codified knowledge, focuses on codifying and storing knowledge via information technology and attempts to share knowledge formally. In contrast, human-orientation highlights person-to-person contacts and dialogue through social networks, focuses on acquiring knowledge via experienced and skilled people and attempts to share knowledge informally.

Table 2.2: Knowledge Management Strategies

Author	System-oriented	Human-oriented
March (1991)	Exploitation	Exploration
Bohn (1994)	Pure procedure	Pure expertise
Bierly and Chakrabarti (1996)	Exploiters	Innovators, Explorers
Jordan and Jones (1997)	Explicit-oriented	Tacit-oriented
Hansen et al. (1999)	Codification	Personalization
Zack (1999)	Conservative	Aggressive
Swan et al. (2000)	Cognitive model	Community model
Earl (2001)	Technocratic	Organizational, Spatial
Schutz and Jobe (2001)	Codification	Tacitness
Choi and Lee (2003)	Systems-oriented	Dynamic, Human-oriented

Hansen et al.'s (1999) typology of knowledge strategies has become the most referenced and supported (Meroño, López, & Sabater, 2007). They have studied KM practices of companies in several industries. They decided to start by looking at major professional and management consulting firms. Because knowledge is the core asset of consultancies, they were among the first businesses to pay attention to the management of knowledge. However, consultants do not take a uniform approach to managing knowledge. Hansen et al. (1999) have identified two very different KM strategies employed in those consulting business firms: The codification and personalization approaches to KM. In some companies, the strategy centers on the computer. Knowledge is carefully codified and stored in databases, where it can be accessed and used easily by anyone in the company. They call this the *codification strategy.* In other companies, knowledge is closely tied to the person who developed it and is shared mainly through direct person-to-person contacts. The chief purpose of computers at such companies is to help people communicate knowledge, not to store it. They call this the *personalization strategy.*

A company's choice of strategy is far from arbitrary - it depends on the way the company serves its clients, the economics of its business, and the people it hires. Emphasizing the wrong strategy or trying to pursue both at the same time can, as some consulting firms have found, quickly undermine a business.

The two KM strategies are not unique to consulting, a single profession or industry. When they looked beyond that business and analyzed computer industries, and the health care providers, they found the same two strategies at work. They also believe that the choice between codification and personalization is the central one facing virtually all companies in the area of knowledge management.

The following details about two KM strategies are described by Wong and Tiainen (2004).

a.   The Codification Approach

The core of the codification approach to KM is to develop an electronic document system that codifies, stores in databases, disseminates, and allows reuse of knowledge. The competitive strategy for companies that favor the codification approach can be characterized as a 'commodity' strategy. A commodity strategy emphasizes reuse economies: Investing once in eliciting, codifying, and storing the knowledge for a process of importance, and applying such knowledge to solve many other similar instances. The recurrent practice with similar problems eventually leads to a large scale of knowledge being articulated and reused by more knowledge users without having to contact the original source of knowledge or experts (Wong & Tiainen, 2004). The value-adding philosophy of companies adopting a codification approach of KM is to offer their clients with a relatively low-cost, high quality functional solution to a special class of problems. Growth is resulted from such an economy of scale.

For the codification strategy to be successful, the processes, which knowledge the company seeks to manage, that are critical to the business are identified with all the internal knowledge tasks identified and articulated. The various tasks related to the identification, elicitation, validation, representation, and verification are formalized, with all the roles required to take up all these tasks created. Technical details such as what knowledge acquisition methods are to be used should also be identified for extracting the knowledge for further codification and storage. Such codified knowledge is then stored in a database or knowledge base for later retrieval

by either other persons or an automatic system for its operations. The KM focus is on constructing a model that is a good representative of the knowledge intensive process with all the components formalized to a computational form. Hansen et al. (1999) summarized that knowledge is codified using a people-to-document approach. The strategic focus is to invest heavily on information technology to connect people with reusable codified knowledge (Lee & Hong, 2002).

In terms of the human resources strategies, the codification KM approach calls for the hire of new college graduates that are well appropriated to the reuse of knowledge and the implementation of solutions, rather than to be the new solutions inventors. Another advantage for hiring more newly graduates is their relatively higher readiness for the use of automated knowledge retrieval devices and systems using the codified knowledge as input (Wong & Tiainen, 2004). Because of the availability of codified knowledge, training can be done in larger groups using the stored codified knowledge and computer-based distant learning. Also, rewarding system should reflect the high value the company has put on one's contribution to the addition to the knowledge base.

The codification strategy to KM has found many adopters across industries. For examples, Ernst & Young (Lee & Hong, 2002) and KPMG Peat Marwick in the consulting industry, Dell in the computer industry, and Access Health in the health care industry (Wong & Tiainen, 2004).

b. The Personalization Approach

The core of the personalization approach to KM is to develop an information systems infrastructure or networks of people that facilitates the communication of individuals in a company, so that they can easily exchange ideas and share their

knowledge such as tacit knowledge (Lee & Hong, 2002) through socialization and communication. Thus, this approach focuses on dialogue between individuals, not knowledge in a database (Hansen et al., 1999). However, Lee and Hong (2002) proposed that the strategic focus of the information technology is to invest moderately to connect people and their ideas.

The competitive strategy for companies that favor the personalization approach can be characterized as an 'innovative' strategy. An innovative strategy emphasizes, instead of reuse economies, an expert economic. An expert economic model typically features a high fee being charged to the clients for a highly customized solution (Hansen et al., 1999; Lee & Hong, 2002). The client's problem will not be framed with a generic problem template for arriving at a quick generic solution. As such the strategy of investing once and reuse many times is not the target of the innovative strategy. Instead, the company typically uses small teams of human experts with a low ratio of associates to experts (Wong & Tiainen, 2004). The value-adding philosophy of companies adopting an innovative approach of KM is to offer their clients with a high-cost, one-of-a-kind innovative solution to a unique problem (Lee & Hong, 2002). Sufficient return is guaranteed from the premium embedded in the high fees (Wong & Tiainen, 2004).

Since the focus of the personalization strategy is on the expertise and innovative thinking of the human experts, the business processes may not be formulated as prescriptively as in companies which favor a codification KM strategy. The formation of such processes is likely to be in an organic manner emphasizing the expert quality of the participating members and the ideas they may contribute toward the resolution of a given problem. As such emphases will not be put on a set of pre-

identified internal knowledge tasks for the definition of the business processes.

Hence, there will not be a set of predetermined and formalized procedures for taking

on the various tasks for identifying, eliciting, validating, representing, and verifying

the knowledge objects in the business processes (Wong & Tiainen, 2004). One would

also rarely see formal KM roles required to take up all these tasks created as

knowledge is inseparatable from the human experts.

The personalization approach to KM has found many adopters across

industries. For examples, Boston Consulting Group, Bain, and McKinsey in the

consulting industry (Lee & Hong, 2002), Memorial Sloan-Kettering Cancer Centre in

New York in the health care industry and Hewlett-Packard in the computer industry

(Wong & Tiainen, 2004).

Hansen et al.'s (1999) distinction of codification and personalization strategies

is similar to exploration and exploitation typology proposed by March (1991). Both

classifications are corresponding in that codification is related to exploitation,

whereas personalization refers to exploration of knowledge. Moreover, both

typologies are alike in that firms should not attempt to implement and excel at both

strategies. Rather, companies should use one KM strategy primarily and use the

second to support the first (Smith, 2004; Kim & Trimi, 2007). Specifically, Hansen et

al. (1999) recommend an 80-20 split.

Organizational Innovation

Organizational innovation is considered to be highly important for a firm's

competitiveness. However, the definition of "organizational innovation" is interpreted

differently and lack of widely accepted definition. Armbruster, Bikfalvi, Kinkel, and

Lay (2008) state in their research "…referring to Schumpeter and other innovation

researchers (e.g., Anderson & King, 1993; Damanpour & Evan, 1984; Totterdell, Leach, Birdi, Clegg, & Wall, 2002), innovation can be considered to be a complex phenomenon including technical (e.g., new products, new production methods) and non-technical aspects (e.g., new markets, new forms of organization) as well as product innovations (e.g., new products or services) and process innovations (e.g., new production methods or new forms of organization). Based on these considerations, we distinguish four different types of innovations: 1) technical product innovations, 2) non-technical service innovations, 3) technical process innovations, and 4) non-technical process innovations, understood to be organizational innovations". However, OECD (2005), Damanpour (1987), Damanpour and Evan (1984) mentioned about organizational innovation that comprise changes in the structure and processes of an organization due to implementing new managerial and working concepts and practices, such as the implementation of teamwork in production, supply chain management or quality-management systems.

Govindarajan and Trimble (2007) said that innovation can be viewed in the number of forms. Armbruster et al. (2008) show a vast variety of organizational innovation which differs in terms of their type and focus, as shown in Figure 2.1.

Focus of Organizational Innovation

	Intra-Organizational	Inter-Organizational
Structural Innovation	• Cross-functional teams • Decentralization of planning, operating and controlling functions • Manufacturing cells or segments • Reduction of hierarchical levels • ...	• Cooperation/Networks/ Alliances (R&D, production, service, sales, etc.) • Make or buy/Outsourcing • Offshoring/Relocation • …
Procedural Innovation	• Team work in production • Job enrichment/Job enlargement • Simultaneous engineering/Concurrent engineering • Continuous improvement process/Kaizen • Quality circles • Quality audits/Certification (ISO) • Environmental audits (ISO) • Zero-buffer-principles (KANBAN) • Preventive maintenance • …	• Just-in-time (to customers, with suppliers) • Single/Dual sourcing • Supply chain management • Customer quality audits • …

Type of Organizational Innovation

Figure 2.1: An Item-oriented Categorization of Organizational Innovation

Additionally, Lee and Olson (2010) propose types of innovation on Table 2.3. First level is reinventing customer value which focuses on creative ideas to improve products/services for customers; Second level is process innovation which focuses to improve processes of the value chain such as lower price and better quality; Third level is continuous improvement which is incremental process improvement typical of programs which can be of value to business in existing markets and also creating new

markets; Forth level is strategic innovation which is leading to dramatically different

ways to conduct business or do old tasks.

Table 2.3: Innovation Types

Level	Type	Impact
1	Reinventing Customer Value	Better products and services, speed, customization, emotional gratification (aesthetics, memory, inner satisfaction)
2	Process Innovation	Reduced value chain cost and improve quality simultaneously
3	Continuous Improvement	E-customers, global customers, customer communities, non-customers
4	Strategic Innovation	New ways of doing old tasks, in a much improved manner

Lee and Olson (2010, p.45) also said that "the success of any organization is

largely based on its ability to predict the future direction of convergence that can

enrich the entire value chain-operational innovation, new products/services, new

customer value, and new customer base". Evolution of convergence can be examined

in six broad levels (shown in Table 2.4) which are relevant to organizational

innovation. Therefore, we try to cover all area of organizational innovation in this

study.

Table 2.4: Evolution of Convergence and Organization Innovation

	Convergence Level	Purpose
Level 1	Component/Product Convergence	Product Innovation
Level 2	Functional Convergence	Process Innovation
Level 3	Organizational Innovation	Value Chain Innovation
Level 4	Technology Convergence	Technology, Product Innovation
Level 5	Industry Convergence	New Industries, Customer Value Innovation
Level 6	Bio-artificial Systems	Ubiquitous Innovation

Source: Lee, S.M., & Olson, D. L. (2010). *Convergenomics: Strategic innovation in the convergence era.* Farnham, UK: Gower.

Summary

According to the literature reviews, this study brings three important questions: 1) Is there a positive relationship between KM strategy and organizational innovation among Thai firms?; 2) Does industry type (knowledge-intensive industry and non knowledge-intensive industry) moderate the relationship between KM strategy and innovation performance of these Thai firms?; and 3) Does organization size moderate the relationship between KM strategy and innovation performance of these Thai firms? This study investigates the relationships between KM strategy and organizational innovation among Thai firms and intermediary effect of industry type and organizational sizes, as shown in Figure 2.2.

```
                    ┌──────────┐
                    │ Industry │
                    │   Type   │
                    └────┬─────┘
                         │
                      ┌──┴──┐
                      │ Q.2 │
                      └──┬──┘
                         ▼
┌─────────────┐  ┌───┐           ┌──────────────┐
│ KM Strategy │──│Q.1│──────────▶│Organizational│
│             │  └───┘    ▲       │  Innovation  │
└─────────────┘        ┌──┴──┐    └──────────────┘
                       │ Q.3 │
                       └──┬──┘
                    ┌─────┴──────┐
                    │Organization│
                    │    Size    │
                    └────────────┘
```
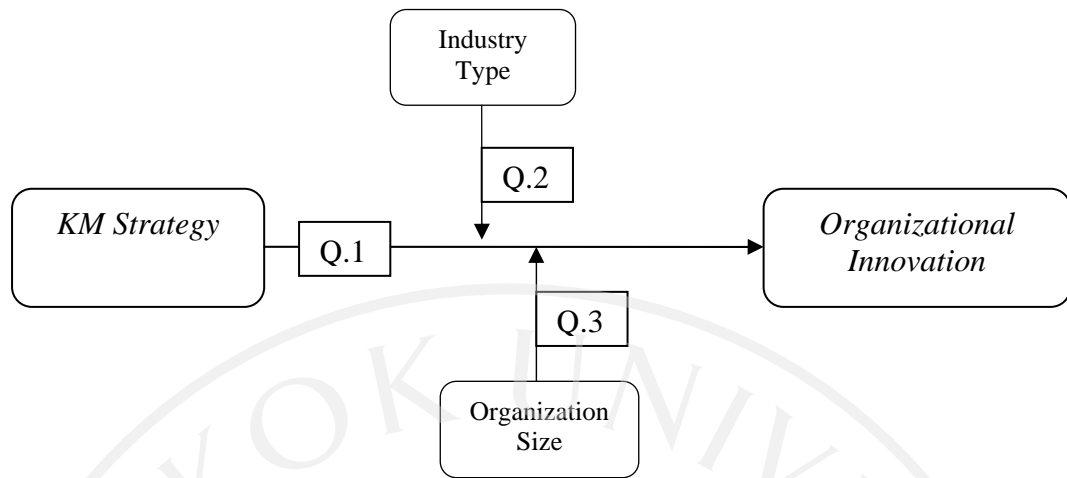
Figure 2.2: Conceptual Model and Research Question

CHAPTER 3

HYPOTHESES DEVELOPMENT AND

RESEARCH METHODOLOGY

Hypotheses Development

Lorlowhakarn and Ellis (2005, p.34) noted that in Thailand "the significance of innovation in creating and enhancing national competitiveness is widely recognized. National innovation systems provide a sustainable development strategy for promoting innovation in R&D institutions and enterprises. Academic and financial support mechanisms along with knowledge management are considered to be crucial driving factors for innovation management".

It is interesting that previous statement mentioned about KM and innovation. KM strategy is the part of KM that deals with the way to manage knowledge to gain higher performance and enhancing competitiveness. The importance of organizational innovation for competitiveness has been proven (Mogollon, Carrión, Navarro, & Millán, 2010). This brings to the first question of this research. "What is the relationship between KM strategy and organizational innovation among Thai firms?" The result of KM strategy is believed to enhance organizational innovation. This study hypothesized that there is a positive relationship between KM strategy and organizational innovation

Hypothesis 1: There is a positive relationship between KM strategy and

organizational innovation

According to the literature reviews in Chapter 2, Hansen et al. (1999) identified two very different KM strategies: codification and personalization strategy.

Thus, it is interesting to study each of KM strategy and its relationship to organizational innovation separately. The result of each KM strategy is believed to enhance organizational innovation. However, organizational innovation described by Table 2.3 of Lee and Olsen (2010) shown the impact of innovation type of all level that lead us to believed that organizational innovation is comprised of the following constructs. First, efficiency of the value chain – this leads to better efficiency through higher productivity, employee skills, cost reduction, profitability figures, decision-making, problem solving, and so on; Second, new products/services and quality - focused on creative ideas to improve products or services or quality; Third, speed – focused on faster response of business issues; Forth, customization; Last, new customer base - focused on the new customer base, e-customers, global customers, customer communities. The sub-hypotheses involve each KM strategy that increases each of organizational innovation as followings:

Hypothesis 1a: A codification strategy of KM increases efficiency of the value chain

Hypothesis 1b: A codification strategy of KM increases new products/services and quality

Hypothesis 1c: A codification strategy of KM increases speed

Hypothesis 1d: A codification strategy of KM increases customization

Hypothesis 1e: A codification strategy of KM increases new customer base

Hypothesis 2a: A personalization strategy of KM increases efficiency of the value chain

Hypothesis 2b: A personalization strategy of KM increases new products/services and quality

Hypothesis 2c: A personalization strategy of KM increases speed

Hypothesis 2d: A personalization strategy of KM increases customization

Hypothesis 2e: A personalization strategy of KM increases new customer base

Many researchers have argued that organizational size facilitates innovation (Damanpour, 1992). Large organizations have more complex and diverse facilities (financial slack, marketing skills, research capabilities, product development experience (Nord & Tucker, 1987), and more professional and skilled workers (Damanpour, 1992) that help the adoption of a large number of innovations. Thus, large company have many chances to manage knowledge from their professional and skilled workers which most likely to adopt personalization of KM. However, in some large organizations also have potential to invest in the strategy centers on the computer. Knowledge is carefully codified and stored in databases, where it can be accessed and used easily by anyone in the company. Consequently, it is expected that a large organization is more likely to adopt both personalization and codification strategy of KM and gain better performance of organizational innovation in terms of *efficiency of value chain, new products/services, and customization.* This study hypothesized as the followings;

Hypothesis 3a: The effect of balance strategy in the efficiency of value chain is greater in large organizations than it is in small-medium organizations.

Hypothesis 3b: The effect of balance strategy in new products/services is greater in large organizations than it is in small-medium organizations.

Hypothesis 3c: The effect of balance strategy in customization is greater in large organizations than it is in small-medium organizations.

On the other hand, some organizational scholars argue that large size does not necessarily result in greater innovativeness (Hage, 1980; Utterback, 1974 cited in Damanpour, 1992, pp.375-402). Smaller organizations can be more innovative because of their flexibility and having more ability to adapt. In order to achieve a new customer base, we believe that codification strategy of KM can enhance this innovation performance. This study hypothesized as follows.

Hypothesis 3d: The effect of codification strategy in new customer base is greater in small-medium organizations than it is in large organizations.

Large organizations have more expertise and experienced skill workers. Therefore, personalization strategy of KM is believed to help the large organizations faster response for any business issues. This study hypothesized as follows.

Hypothesis 3e: The effect of personalization strategy in speed is greater in large organizations than it is in small-medium organizations.

The trend in the 21st century promises to emphasize knowledge-intensive industries. Value and wealth are being created in such knowledge-intensive industries such as biotechnology, ICT, pharmaceuticals, financial service and so on (Lee & Olsen, 2010). In this study, based on literature reviews, we expect these organizations, especially in knowledge-intensive service industries, need more tacit knowledge that lie in knowledge workers. Thus, personalization strategy is believed to make a greater impact in all constructs of organizational innovation in knowledge-intensive service organizations. This study hypothesized as follows.

Hypothesis 4a: The effect of personalization strategy in organizational

innovation is greater in knowledge-intensive service

organizations than non knowledge-intensive service

organizations.

The process of KM in knowledge-intensive manufacturing organizations is more codification of knowledge than in knowledge-intensive service organizations and still need experiences from knowledge workers. Hence, a balance strategy is believed to be better in all constructs of organizational innovation in knowledge-intensive manufacturing organizations. This study proposes the following hypothesis.

Hypothesis 4b: The effect of balanced strategy in organizational innovation is

greater in knowledge-intensive manufacturing organizations

than non knowledge-intensive manufacturing organizations.

In non knowledge–intensive firms in both manufacturing and service industries, codification strategy is expect to be an appropriate approach to achieve better organizational innovation. This study suggests as the following hypothesis.

Hypothesis 4c: The effect of codification strategy in organizational innovation

is greater in non knowledge-intensive service organizations

than knowledge-intensive service organizations.

Table 3.1: Summary Table of Hypotheses

Hypothesis 1	There is a positive relationship between KM strategy and organizational innovation
Hypothesis 1a:	A codification strategy of KM increases efficiency of the value chain
Hypothesis 1b:	A codification strategy of KM increases new products/ services and quality
Hypothesis 1c:	A codification strategy of KM increases speed
Hypothesis 1d:	A codification strategy of KM increases customization
Hypothesis 1e:	A codification strategy of KM increases new customer base
Hypothesis 2a:	A personalization strategy of KM increases efficiency of the value chain
Hypothesis 2b:	A personalization strategy of KM increases new products/ services and quality
Hypothesis 2c:	A personalization strategy of KM increases speed
Hypothesis 2d:	A personalization strategy of KM increases customization
Hypothesis 2e:	A personalization strategy of KM increases new customer base
Hypothesis 3a:	The effect of balance strategy in the efficiency of value chain is greater in large organizations than it is in small-medium organizations
Hypothesis 3b:	The effect of balance strategy in new products/services is greater in large organizations than it is in small-medium organizations.
Hypothesis 3c	The effect of balance strategy in customization is greater in large organizations than it is in small-medium organizations.
Hypothesis 3d:.	The effect of codification strategy in new customer base is greater in small-medium organizations than it is in large organizations.
Hypothesis 3e:	The effect of personalization strategy in speed is greater in large organizations than it is in small-medium organizations.

(Continued)

Table 3.1(continued): Summary Table of Hypotheses

Hypothesis 4a:	The effect of personalization strategy in organizational innovation is greater in knowledge-intensive service organizations than non knowledge-intensive service organizations.
Hypothesis 4b:	The effect of balanced strategy in organizational innovation is greater in knowledge-intensive manufacturing organizations than non knowledge-intensive manufacturing organizations.
Hypothesis 4c:	The effect of codification strategy in organizational innovation is greater in non knowledge-intensive service organizations than knowledge-intensive service organizations.

Figure 3.1 shows the research model
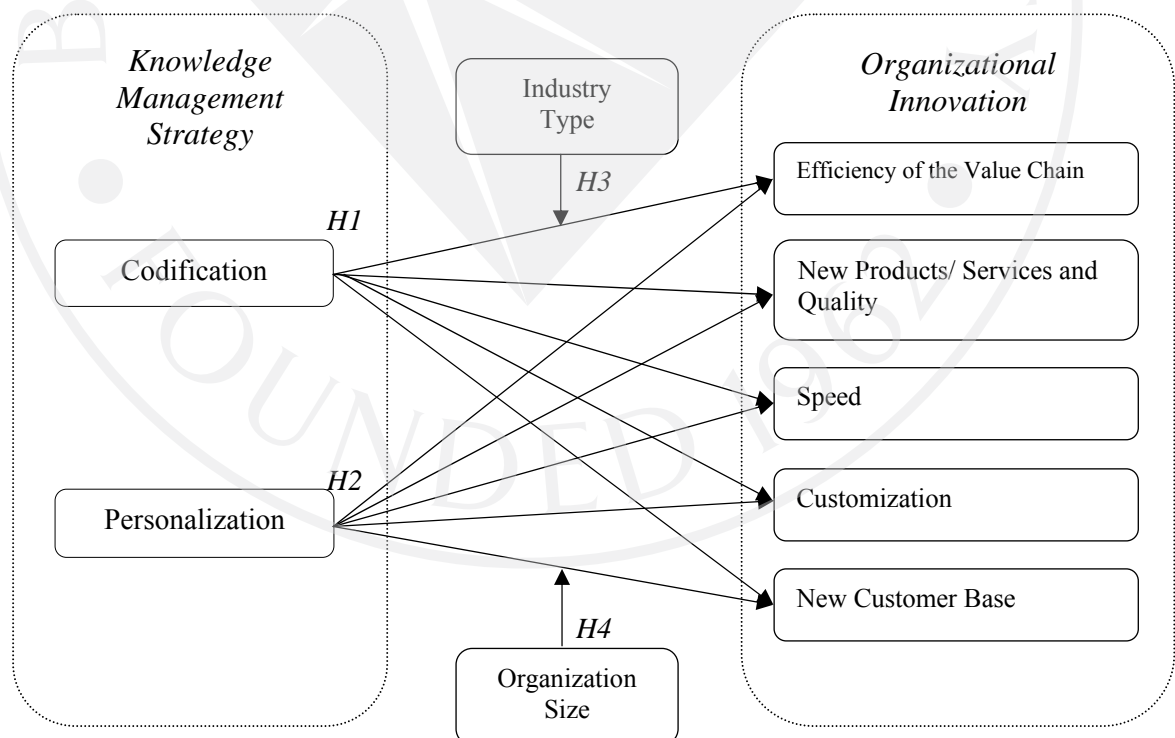
Figure 3.1: Research Model

<u>Research Methodology</u>

    1.   <u>Data Collection</u>

The target populations of this study are chief knowledge officers (CKO), managers and employees involved in KM implementation at any level in an organization. If CKO or the members of KM team are not available in some organizations, chief information officers (CIO) and employees in IT department or involved in human resource development at any level in an organization should be the appropriate persons to be responsible for the task. Thus, a majority of respondents in this study are CKO, CIO, employees in any level of KM team or IT department or department of human resource development while, at the same time, being able to avoid response bias by using a single informer.

The questionnaires were developed in English and were translated into Thai and back-translated into English for several times until the double translation protocol produced satisfactory match between the versions.

A mailing set to each company comprises of the cover letter, 3 prepaid return envelopes, outgoing envelope, and 3 questionnaires. Each mailing set asking for participation was mailed to the targeted people involved with KM (members of KM groups and associations) to 1,200 companies. Moreover, the online version was available as an internet survey at https://www.surveymonkey.com/s/JL53CDC which we informed this web browser in the mailed questionnaires to make more convenient access for respondents. The targeted companies were all located in Thailand. A total of 560 responses (from 408 mailed questionnaires and 152 internet surveys) were received, a response rate of 15.6 percent. The responses became modest due to the fact that the questionnaire took a long time to fill-out (20 minutes - 4 pages - 92

items). Main statistical analysis tools used were SPSS (Statistical Package for Social Science) and Microsoft Excel software.

2. Instrument

The study used a survey-questionnaire as the measurement instrument. The questionnaire items concerning KM strategy were modified from Ribière (2005) and a comprehensive review of previous research. A panel of experts, including senior scholars and professional managers in the respective fields help ascertain the adequacy and appropriateness of wordings in the questionnaire. While, questionnaire items concerning organizational innovation were developed from literature reviews.

The questionnaire items are shown in Appendix B. It contains three sections as follows; First, organizational profile and respondent profile; Second, KM strategy assessment tool; Last, organizational innovation assessment tool.

2.1 Organizational Profile and Respondent Profile

The first part captures the organizational profile as well as the respondent profile. It is dedicated to obtain demographic data about respondents and about their firms. The name of the respondent was optional but most of the respondents filled it in and even provided their email addresses in order to receive results of this research. Questions about the respondent's job title & position level were asked. Industry types, business orientation (service/product), annual revenue, asset value, as well as the total fulltime work force were requested in order to profile the size of the organization. Additional questions were asked including (Tiwana, 2002); does the company offer a standardized and/or a customized products/service?, does the company have an innovative and/or a mature product/service?, and do people rely on explicit or tacit knowledge to solve problems?

Organizational sizes in this study were categorized by number of employees (Damanpour, 1992). According to terminology of SMEs by the Office of Small and Medium Enterprises Promotion in Thailand, it is classified by number of employees shown in Table 3.2. First, they classified the small enterprises having the number of employees not over 50 employees. Second, medium enterprises were classified by number of employees in the 51-200 range. Lastly, the large organizations mean the size of having more than 200 employees. Thus, organizational sizes were categorized in three types.

Table 3.2: Classification Organization Size by Number of Employees

	Small Size	Medium Size	Large Size
Manufacturing	Not over 50 employees	51-200 employees	over 200 employees
Service	Not over 50 employees	51-200 employees	over 200 employees

According to industry type which mentioned earlier, the trend in the 21st century promises to emphasize knowledge-intensive industries (Lee & Olson, 2010). Wu and Lin (2009, p.794) stated that "OECD defines knowledge intensive industries to include both manufacturing and service industries. Manufacturing industries comprised the industries of aerospace, computer and office automation equipments, pharmaceutics, communication, semi-conduct, scientific instrument, automobile, electrical machinery, chemical engineering, transport equipment, and so on. Service industries comprised the industries of software service, banking and insurance,

transportation and warehouse, consultant service, healthcare service, legal service, and so on". Moreover, as shown in Table 3.3, the classification of knowledge-intensive service sector was adapted from Kemppilä and Mettänen (2003).

Table 3.3: Classification of Knowledge-intensive Service Sector

	Knowledge-intensive Services			Knowledge-intensive Business Services						
	Kasanko and Tiilikka (1999)	Eurostat (2003)	Wu (2009)	Miles et al. (1995)	Hermelin (1997)	Kautonen et al.(1998)	Tomlimson (2000)	Toivonen (2001)	Penttilä (2003)	Employment and Economy Development Centre of Pirkanmaa (2003)
Technical Services	X			X	X	X		X	X	X
Computer and IT Services	X	X	X	X	X	X	X	X	X	
Research and Development Services	X	X		X		X		X	X	X
Patent Offices										X
Legal and Economic Consulting	X		X	X	X	X	X	X		X
Training (including private)	X	X		X		X		X	X	X
Education and Recruiting Services					X					
Financial and Insurance Services	X	X	X	X			X			X
Post and Telecommunication Services		X		X						

(Continued)

Table 3.3 (continued): Classification of Knowledge-Intensive Service Sector

	Knowledge-intensive Services			Knowledge-intensive Business Services						
	Kasanko and Tiilikka (1999)	Eurostat (2003)	Wu (2009)	Miles et al. (1995)	Hermelin (1997)	Kautonen et al.(1998)	Tomlimson (2000)	Toivonen (2001)	Penttilä (2003)	Employment and Economy Development Centre of Pirkanmaa (2003)
Marketing and Advertising Services				X	X		X	X	X	X
Management Consulting			X	X	X			X	X	X
Healthcare Service			X							
Personnel Services								X		X
Real Estate Services							X			
Knowledge-intensive Transportation	X	X	X							
Water and Air Transportation		X								
Machinery Rental without an Operator		X								
Knowledge-intensive IT Services	X								X	
Knowledge-intensive Basic Services	X	X								
Creative,Cultural ,Athletic Activities		X								

(Continued)

Table 3.3 (continued): Classification of Knowledge-Intensive Service Sector

	Knowledge-intensive Services			Knowledge-intensive Business Services						
	Kasanko and Tiilikka (1999)	Eurostat (2003)	Wu (2009)	Miles et al. (1995)	Hermelin (1997)	Kautonen et al.(1998)	Tomlinson (2000)	Toivonen (2001)	Penttilä (2003)	Employment and Economy Development Centre of Pirkanmaa (2003)
Knowledge-intensive Associations	X									
Design Firms										X
Other Business Services		X					X			
Other Professional Services							X			
Office Services				X						
Architecture Services										X
Community Planning Firms										X
HPAC and Electric Planning										X
Technical Earth and Water Services										X
Engineering Offices										X
Technical Testing and Analyzing										X
Environmental Services				X						

Source: Adapted from Kemppila, S., & Mettanen, P. (2003). *Innovations in knowledge-intensive services*. Paper presented in 5th International CINet Conference 2004, Sydney 22-25 September 2004.

In this study, we categorized industries based on OECD to four types and industry type matrixes are shown in Figure 3.2.

1. Knowledge intensive industry - service sector: KIS (included telecommunications, software service, banking/ insurance, healthcare service, consultant service, legal, and transportation & Logistic)

2. Knowledge intensive industry - manufacturing sector: KIM (included computer & office automation, pharmaceutics, semi-conduct, automobile, electrical machinery, chemical engineering)

3. Non knowledge intensive industry - service sector: NKIS (included trading)

4. Non knowledge intensive industry - manufacturing sector: NKIM (included resources/energy, real estate /construction)

Sector		
Service	Non Knowledge Intensive Service Type (NKIS)	Knowledge Intensive Service Type (KIS)
Manufacturing	Non Knowledge Intensive Manufacturing Type (NKIM)	Knowledge Intensive Manufacturing Type (KIM)
	Non Knowledge-Intensive	Knowledge-Intensive

Industry Type

Figure 3.2: Industry Type Matrixes

2.2 KM Strategy Assessment Tool

The second part of the questionnaire assessed the technology and practices the organization uses and what KM strategies (codification vs. personalization) they

emphasize. A five-point Likert scale is used for respondents to indicate their response and endorsement of the questionnaire items. An assessment tool was developed into two sub-parts;

Sub-part one is based on Shih and Chiang (2005), this study used their 12 questions of five point scale to measure the firm's nature of business knowledge and strategic intention in managing its business knowledge. Principal components factor analysis with varimax rotation was used to detect the nature of these variables. All 12 items related to one factor with Cronbach's alpha of 0.90. The respondents were asked to rate the level of importance as follows:

Not Important	Less Important	Average	Important	Most Important
1	2	3	4	5

Sub-part two is about KM strategy (IV) assessment tool. The questions were asked about to what extent the respondents use the thirty-six-items listed technologies, practices processes and support tools to help generate, organize, share and leverage knowledge in their organization. The assessment listed the most common technologies and practices used for knowledge management strategy adapted from Ribière (2005) and others from the literature review. A sense of use/utilization ranging from "never" to "regularly" was also enrich this information;

Never	Rarely	Sometimes	Often	Regularly
1	2	3	4	5

Table 3.4 lists the type of technologies and practices likely to be used in each of the different KM strategy type. The level of usage of each KM strategy (Codification vs. Personalization) was calculated to determine the KM strategy that the firm primarily focuses on. However, the one that had about equal usage score for both KM strategies will be considered as having a balanced strategy.

Table 3.4: Technologies and Practices Used in Each of the Different KM Strategy

Type.

Codification	Personalization
1. Email - listserv	1. Expertise locators-Corporate yellow pages -Who's who– Directory of expertise
2. Corporate Intranet – Extranet - Internet	
3. Database management system (Oracle, Informix, etc)	2. Communities of practice : CoP's - Communities of interest : CoI's
4. Search engines – Web portals – Intelligent agents – Information retrieval systems	3. Brainstorming – peer interaction/conversation
	4. Groupware (as a collaborative tool not as an Email tool, e.g, Lotus Notes)
5. Data warehouses - Data marts	5. Teleconferencing (shared applications, whiteboards)
6. Web-based training – E-learning-Online training	
7. Help-desk applications	6. Lessons learned / Best practices repository
8. Multimedia repositories	
9. Document Management Systems (EDMS)	7. Videoconferencing (using audio and/or video)
10. Content Management Systems (CMS)	8. Mentoring / Tutoring
	9. Story telling/ Success story sharing (SSS)
11. Data mining tools - Knowledge discovery tools	
	10. Dialogue
12. Decision Support Systems (Executive Information; Expert Systems)	11. After action review (AAR)
	12. Online chat & Instant Messaging
	13. Weblogs (Blogs)
13. Knowledge mapping tools	14. Wikis
14. Web forum – Discussion groups - News group	15. RSS (Rich site summary)
	16. SNA (Social network analysis)
15. Index system - Category	17. Social bookmarking

(Continued)

Table 3.4 (continued): Technologies and Practices Used in Each of the Different KM

Strategy

Codification	Personalization
16. Navigation – Metadata 17. Business Intelligence (BI) 18. Taxonomies	18. Folksonomies-Tagging

Source: Ribiere, V., Arntzen, A. A. B., & Worasinchai L. (2007). The Influence of

Trust on the Success of Codification and Personalization KM Approaches.

from http://phd-it.siam.edu/Conference2007/documents/The%20Influence

%20of%20Trust%20on%20the%20Success%20of%20Codification%20and.

pdf

2.3 Organizational Innovation (DV) Assessment Tool

The third part assessed the performance level of organizational innovation

which is dependent variable. According to the literature reviews, Lee and Olsen

(2010) said that success of any organization is largely based on its ability to predict

the future direction of convergence that can enrich the entire value chain-operational

innovation, new products/services, new customer value, and new customer base

which are relevant to organizational innovation. Table 2.3, which is based on Lee and

Olson (2010), showed the impact of innovation type of all levels such as better

products and services, speed, customization, emotional gratification (aesthetics,

memory, inner satisfaction), reduced value chain cost and improve quality,

simultaneously also for e-customers, global customers, customer communities, non-customers, and new ways of doing old tasks in a much improved manner. Therefore, this study tries to cover all areas of organizational innovation. In this study, the measurements of organizational innovation were mostly brought from those in Table 2.3 summarized as follows;

1. Efficiency of the value chain – this leads to better efficiency through productivity, employee skills, cost reduction, profitability figures ,decision-making, – problem solving, distribution, and so on (KPMG, 2000; Ribière, Arntzen, & Worasinchai, 2007; Lee & Olson, 2010)

2. New products/ services and quality - focuses on creative ideas to improve product or services or quality. (KPMG, 2000; Ribière, Arntzen, & Worasinchai, 2007; Lee & Olson, 2010)

3. Speed (Lee & Olson, 2010)

4. Customization (Lee & Olson, 2010)

5. New customer base - focuses on new customer base, e-customers, global customers, customer communities (Lee & Olson, 2010)

An assessment tool was developed to ask about the results of KM implementation of the respondent's organization. The respondents were asked to rate the level of achievement as follows;

1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
1	2	3	4	5

We conducted a factor analysis with the Principal Components Method with Varimax Rotation Technique to test the validity of each construct. Overall, as shown

in Table 3.5, the levels of validity and reliability of the assessment tool were

acceptable (please see more detail in part 4 of Chapter 4).

Table 3.5: Research Instrument

Factors	Eigen Values	Variance	Cronbach's alpha
Codification strategy	9.360	51.998	.944
Personalization strategy	8.752	48.623	.935
Efficiency of the value chain	11.071	69.191	.964
Speed			.978
New products/services and quality	3.230	80.739	.894
Customization	3.955	79.108	.933
New customer base	3.526	70.513	.894

3. Pilot Study

A pilot study was conducted to determine the clarity and readability of the

questionnaire, and the test of internal validity of the measures. The pilot survey

questionnaire, developed through a review of the literature as well as through

interviews, was mailed via electronic mail linked to the questionnaire web-site to 100

target respondents. The response rate in this pilot project was 50 percent, large

enough to have a statistical test. The result showed that questions in each construct

had high reliability. My advisor and co-advisor reviewed the scale items in the

questionnaire to confirm the validity and readability.

Summary

This chapter presented development of hypotheses and research model. Research methodology for testing the proposed hypotheses were addressed in this chapter. The survey-questionnaire, used as the measurement instrument, was provided as mail and online version. The questionnaire items are shown in Appendix B. It contains three sections as follows; First, organizational profile and respondent profile; Second, KM strategy assessment tool; Last, organizational innovation assessment tool. A majority of respondents are people involved with KM who work in firms located in Thailand.   Main statistical analysis tools used were SPSS and Microsoft Excel software.

CHAPTER 4

RESEARCH FINDING AND DATA ANALYSIS

This chapter presents the result of statistical analysis. The data was collected from 560 respondents through the questionnaires. The analysis result is presented in five parts as follows;

Part 1   Sample characteristics

Part 2   Independent variable: knowledge management strategy

Part 3   Dependent variables: organizational innovation

Part 4   Reliability and validity of constructs

Part 5   Test of hypotheses

Part 1: Sample Characteristics

As detailed in Table 4.1, the largest number of the respondent's position was manager/director, accounting for 47.1 percent. Followed by those whose work positions were support staff, up to 31.8 percent. Another group of the respondents were executives, as contributes to 11.8 percents. Some of them, up to 5 percent were technical staff. Moreover, the smallest group was in other positions, accounting for 4.3 percent, respectively

.

Table 4.1: Positions in the Organization

Position Level	Number of the Respondents	Percentage
Executive	66	11.8
Manager/Director	264	47.1
Technical staff	28	5.0
Support staff	178	31.8
Other	24	4.3
Total	560	100.0

As observed in Table 4.2, about 19.3 percent of the respondents worked in other industries. Followed by the respondents who worked in real estate/construction industry, up to 10.7 percent, and those who worked in consultant service industry, 10.4 percents, respectively.

Table 4.2: Industry Type

Industry type	Number of the Respondents	Percentage
Computer & office automation equipments	20	3.6
Pharmaceuticals	54	9.6
Semi-conduct	12	2.1
Automobile	40	7.1
Electrical machinery	10	1.8
Chemical engineering	34	6.1
Resources/Energy	24	4.3
Real estate/Construction	60	10.7
Telecommunications	32	5.7
Software service	8	1.4
Banking/Insurance	48	8.6
Healthcare service	22	3.9
Consultant service	58	10.4
Legal service	8	1.4
Transportation and logistic	22	3.9
Other	108	19.3
Total	560	100.0

Figure 4.1 and Figure 4.2 showed that most of the organizations that

responded to the survey were 198 respondents or 35% involved in knowledge-

intensive service industry (KIS). KIS industry comprised of telecommunications,

software service, banking/insurance, healthcare service, consultant service, legal

service, and transportation and logistic. 170 respondents or 31% were knowledge –

intensive manufacturing industry (KIM) which were computer & office automation

equipments, pharmaceuticals, semi-conduct, automobile, electrical machinery, and

chemical engineering. 108 respondents or 19% were non knowledge-intensive service industry (NKIS) which were other industries. 84 respondents or 15% were non knowledge-intensive manufacturing industry (NKIM) which were resources/energy and real estate/construction.
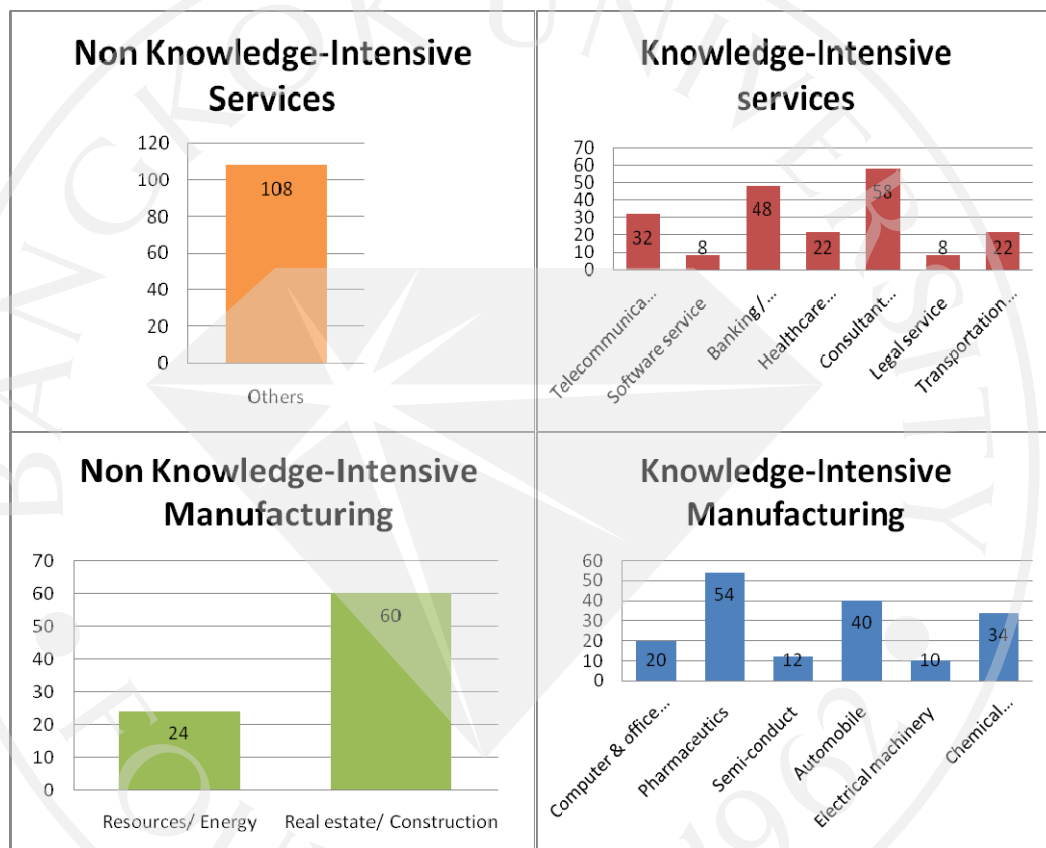
Figure 4.1: Industry Type Matrixes with Number of Respondents
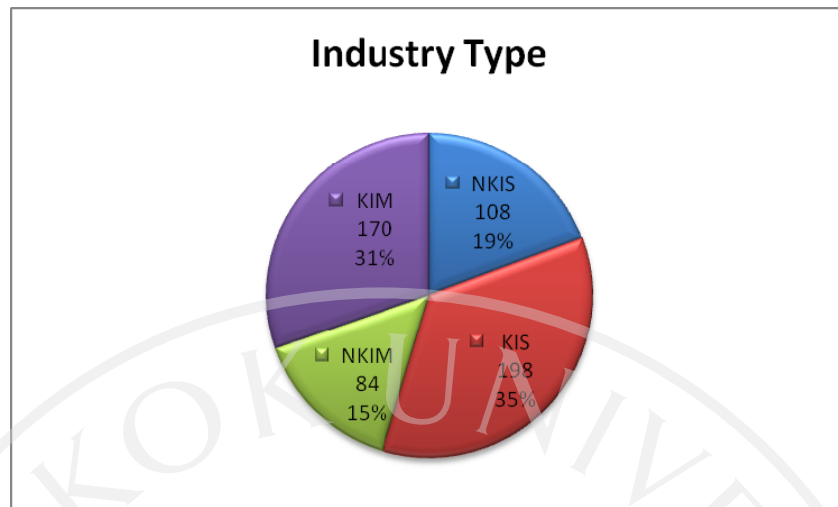
Figure 4.2: Industry Type with Total Number of Respondents and Their Percentages

The result in Table 4.3 indicates that, majority of the respondents' main business orientation were products, accounting for 52.1 percent and service orientation accounted 47.9 percent.

Table 4.3: Main Business Orientation

Main Business Orientation	Number of the Respondents	Percentage
Products	292	52.1
Services	268	47.9
Total	560	100.0

As shown in Table 4.4, the largest number of the respondent's companies offer standardized products, accounting for 51.8 percent, and the rest 48.2 percent offer customized products.

Table 4.4: Products Offer by the Sample Firms

Products Offer	Number of the Respondents	Percentage
Standardized	290	51.8
Customized	270	48.2
Total	560	100.0

Table 4.5 indicates that, a majority of the respondent firms offer mature product/service, (71.8 percent), and 28.2 percent offer new/innovative products.

Table 4.5: Life Cycle of Products Offered by the Firms

Mature/New	Number of the Respondents	Percentage
Mature product/Service	402	71.8
New/Innovative	158	28.2
Total	560	100.0

Table 4.6 presents the size of sample firms in terms of the number of employees.

Table 4.6: Size of the Sample Firms

Total Full-time Workforce	Number of the Respondents	Percentage
Less than 25	42	7.5
26-50	84	15.0
51-200	154	27.5
201-1000	168	30.0
More than 1,000	112	20.0
Total	560	100.0

As shown in Table 4.7, a majority of the respondent companies have KM in place, accounting for 47.5 percent. Followed by the companies which have no program/not considering, (19.6 percent), and in the process of examining need, (17.1 percent), respectively.

Table 4.7: Status of KM in the Company

Status of KM	Number of the Respondents	Percentage
KM in place	266	47.5
Currently setting up	88	15.7
Examining need	96	17.1
No program/Not considering	110	19.6
Total	56	100.0

As shown in Table 4.8, a majority of the respondent companies have no chief knowledge officer, (59.2 percent), while 25.0 percent have CKO, 12.0 percent already having CKO but call it in other names.

Table 4.8: Chief Knowledge Officer

Chief Knowledge Officer	Number of the Respondents	Percentage
Yes	140	25.0
No	332	59.2
Don't know	22	3.8
Yes, but call others	66	12.0
Total	560	100.0

As detailed in Table 4.9, a majority of the respondents (18.6%) use 80% of tacit knowledge and 20% of explicit knowledge when solving problems. Followed by those who use 60% of tacit knowledge and 40% of explicit knowledge, (16.1%), 50% of tacit knowledge and 50% of explicit knowledge (14.3%), 70% of tacit knowledge and 30% of explicit knowledge, (13.9%), 40% of tacit knowledge and 60% of explicit knowledge, (11.1%), 20% of tacit knowledge and 80% of explicit knowledge, (9.6%), 30% of tacit knowledge and 70% of explicit knowledge, (8.2%), 90% of tacit knowledge and 10% of explicit knowledge, (2.1%). The respondent firms that use 45% of tacit knowledge and 55% of explicit knowledge equaled those using 55% of tacit knowledge and 45% of explicit knowledge (1.6%). The rest distributions all had less than 1 percent of the sample.

Table 4.9: KM Focus: Tacit Knowledge and Explicit Knowledge

Tacit Knowledge	Explicit Knowledge	Number of the Respondents	Percentage
10	90	4	0.7
20	80	54	9.6
25	75	2	0.4
30	70	46	8.2
35	65	2	0.4
40	60	62	11.1
45	55	9	1.6
48	52	2	0.4
50	50	80	14.3
55	45	9	1.6
60	40	90	16.1
65	35	2	0.4
70	30	78	13.9
75	25	2	0.4
80	20	104	18.6
90	10	12	2.1
95	5	2	0.4
Total		560	100.0

Part 2: Independent Variable: Knowledge Management Strategy

Table 4.10 shows the respondent firms' KM strategic intention in managing its business knowledge. The detailed report can be made as follows: important knowledge strategies are: Operating knowledge is highly linked with person ($\overline{X} = 3.79$); Culture of encouraging interactions among employees ($\overline{X} = 3.78$); Many occasions for reusing the

operating information ($\overline{X}$ = 3.60); Knowledge transferred by focusing on IT system

($\overline{X}$ = 3.54); and Considerable portions of training programs involving interactions

among employees ($\overline{X}$ = 3.47).

The respondent's firms considered the following strategies as average

importance: Storing operating knowledge that can be codified in the database ($\overline{X}$ =

3.35); Knowledge resources are used to solve problems in daily operations ($\overline{X}$ =

3.16); Reward system for knowledge transferring and idea sharing among employees

($\overline{X}$ = 3.06); Directory of experts for accessing needed information ($\overline{X}$ = 3.03); Heavy

investment for reusable codified knowledge on IT infrastructure ($\overline{X}$ = 3.01); and

Frequent transferring of employees among departments ($\overline{X}$ = 2.78).

Table 4.10: Strategic Intention in Managing Business Knowledge

Description	$\overline{X}$	S.D.	Level of Importance
Knowledge transfer by focusing on IT system	3.54	1.023	Important
Many occasions for reusing the operating information	3.60	1.043	Important
Operating knowledge is highly linked with person	3.79	0.865	Important
Culture of encouraging interactions among employees	3.78	0.922	Important
Considerable portions of training programs involving interactions among employees	3.47	0.981	Important
Storing operating knowledge that can be codified in the database	3.35	1.016	Average

(Continued)

Table 4.10 (continue): Strategic Intention in Managing Business Knowledge

Description	$\overline{X}$	S.D.	Level of Importance
Knowledge resources are used to solve problems in daily operations	3.16	1.000	Average
Heavy investment for reusable codified knowledge on IT infrastructure	3.01	1.072	Average
Reward system for addition to the knowledge base	2.90	1.195	Average
Directory of experts for accessing needed information	3.03	1.049	Average
Frequent transferring of employees among departments	2.89	1.059	Average
Reward system for knowledge transferring and idea sharing among employees	3.06	1.108	Average
Total	3.30	0.729	Average

As shown in Table 4.11, overall, the respondent companies use KM technologies sometimes ($\overline{X} = 2.90$). When considering in detail, the firms often use the following technologies: Email – listserv ($\overline{X} = 3.99$); Corporate intranet – extranet -Internet ($\overline{X} = 3.83$); Search engines – web portals – intelligent agents – information retrieval systems ($\overline{X} = 3.68$); and Database management systems ($\overline{X} = 3.60$). They sometimes use with the following items: Data warehouses – data marts ($\overline{X} = 3.32$); Document management system (EDMS) ($\overline{X} = 3.28$); Help-desk applications ($\overline{X} = 2.93$); Multimedia repositories ($\overline{X} = 2.92$); and Content management system (CMS) ($\overline{X} = 2.85$).

They rarely use the following technologies: Index system – category as equal Web-based training – e-learning – online training ($\overline{X}$ = 2.58); Data mining and knowledge discovery tools ($\overline{X}$ = 2.54); Knowledge mapping ($\overline{X}$ = 2.48); Decision support systems (DSS) ($\overline{X}$ = 2.38); Web forum – discussion groups - news group ($\overline{X}$ = 2.37); Business intelligence (BI) ($\overline{X}$ = 2.36); Navigation –metadata ($\overline{X}$ = 2.30); and Taxonomies ($\overline{X}$ = 2.22).

Table 4.11: Codification Tools of KM Strategy

Description	$\overline{X}$	S.D.	Level of Usage
Email – listserv	3.99	1.136	Often
Corporate Intranet – Extranet -Internet	3.83	1.196	Often
Database management systems	3.60	1.242	Often
Search engines – Web portals – Intelligent agents – Information retrieval systems	3.68	1.159	Often
Data warehouses – Data marts	3.32	1.214	Sometimes
Help-desk applications	2.93	1.286	Sometimes
Multimedia repositories	2.92	1.208	Sometimes
Document Management System (EDMS)	3.28	1.257	Sometimes
Content Management System (CMS)	2.85	1.168	Sometimes
Web-based training – E-learning – Online training	2.58	1.258	Rarely
Data mining and knowledge discovery tools	2.54	1.254	Rarely
Decision Support Systems (DSS)	2.38	1.228	Rarely
Knowledge Mapping	2.48	1.260	Rarely

Table 4.11 (continued): Codification Tools of KM Strategy

Description	$\overline{X}$	S.D.	Level of Usage
Web forum – Discussion groups - News group	2.37	1.203	Rarely
Index system – Category	2.58	1.185	Rarely
Business Intelligence (BI)	2.36	1.185	Rarely
Taxonomies	2.22	1.189	Rarely
Navigation –Metadata	2.30	1.189	Rarely
Total	2.90	0.873	Sometimes

Table 4.12 presents the respondent companies' use of the overall technologies ($\overline{X}$ = 2.45). When considering in details, the respondent firms sometimes use the following items: Brainstorming – peer interaction/conversation ($\overline{X}$ = 3.24); After action review (AAR) ($\overline{X}$ = 2.95); Mentoring – tutoring ($\overline{X}$ = 2.91); Online chat & instant messaging (IM) ($\overline{X}$ = 2.88); Lessons learned & best practices repository ($\overline{X}$ = 2.78); Document management system (EDMS) ($\overline{X}$ = 3.28); Help-desk applications ($\overline{X}$ = 2.93); Multimedia repositories ($\overline{X}$ = 2.92); Content management system (CMS) ($\overline{X}$ = 2.85); Groupware ($\overline{X}$ = 2.65); and Storytelling – success story sharing (SSS) ($\overline{X}$ = 2.61). While they rarely use the rest of technologies:

Table 4.12: Personalization Tools of KM Strategy

Description	$\overline{X}$	S.D.	Level of Usage
Brainstorming – Peer interaction/Conversation	3.24	1.150	Sometimes
Groupware	2.65	1.359	Sometimes
Lessons learned & Best Practices repository	2.78	1.217	Sometimes
Mentoring – Tutoring	2.91	1.283	Sometimes
Story telling – Success Story Sharing (SSS)	2.61	1.204	Sometimes
After Action Review (AAR)	2.95	1.171	Sometimes
Online chat & Instant Messaging (IM)	2.88	1.377	Sometimes
Expertise locators	2.08	1.129	Rarely
Communities of Practice (CoP's), CoI's	2.27	1.211	Rarely
Teleconferencing (shared applications, whiteboards)	2.48	1.345	Rarely
Videoconferencing (using audio and/or video)	2.42	1.380	Rarely
Dialogue	2.60	1.179	Rarely
Weblogs (Blogs)	2.19	1.173	Rarely
Wikis	1.88	1.033	Rarely
Rich Site Summary (RSS)	2.04	1.105	Rarely
Social Network Analysis (SNA)	2.03	1.092	Rarely
Social bookmarking	2.20	1.185	Rarely
Folksonomies - Tagging	1.97	1.094	Rarely
Total	2.45	0.834	Rarely

Part 3: Independent Variables: Organizational Innovation

Table 4.13 indicate the achievement level of overall efficiency of the value chain, as perceived by the respondents, at 41-60% ($\overline{X}$ = 3.15). When we examine the details, the achievement of each organizational innovation as perceived by the respondents, was also at 41-60% as follows; Better decision making ($\overline{X}$ = 3.40);

Better customer handling ($\overline{X}$ = 3.38); Reduction of problem solving time ($\overline{X}$ = 3.37);

Improving product/ service quality ($\overline{X}$ = 3.35); Faster response to key business issues as

equal Improving employee skills and competency ($\overline{X}$ = 3.28); Productivity enhancement

($\overline{X}$ = 3.27); Better selection, coordination, communication with suppliers ($\overline{X}$ = 3.19);

Lower cost incurred as equal Increase of sales/ profit growth rate/ return on

investment ($\overline{X}$ = 3.08); New enterprise system as equal Inventory reduction by

produce only what is required, in the correct quantity and at the correct time ($\overline{X}$ =

2.97); Transformation by eliminating waste ($\overline{X}$ = 2.91); E-purchasing. ($\overline{X}$ = 2.85);

and Streamlining the distribution channel ($\overline{X}$ = 2.79).

Table 4.13: Efficiency of Value Chain

Description	$\overline{X}$	S.D.	Level of Achievement
Productivity enhancement	3.27	1.132	41-60%
Improving employee skills and competency	3.28	1.024	41-60%
Lower cost incurred	3.08	1.101	41-60%
Increase of sales/Profit growth rate/Return on investment	3.08	1.113	41-60%
Better decision making	3.40	1.017	41-60%
Faster response to key business issues	3.28	1.078	41-60%
Reduction of problem solving time	3.37	1.010	41-60%
Better customer handling	3.38	1.065	41-60%
Improving product/Service quality	3.35	1.012	41-60%
New enterprise system	2.97	1.093	41-60%

(Continued)

Table 4.13 (continued): Efficiency of Value Chain

Description	$\overline{X}$	S.D.	Level of Achievement
Better selection, coordination, communication with suppliers	3.19	1.118	41-60%
E-purchasing	2.85	1.247	41-60%
Inventory reduction by produce only what is required, in the correct quantity and at the correct time	2.97	1.220	41-60%
Transformation by eliminating waste	2.91	1.141	41-60%
Streamlining the distribution channel	2.79	1.179	41-60%
Total	3.15	0.902	41-60%

Table 4.14 shows the level of achievement of speed as perceived by the respondents at 41-60% ($\overline{X}$ = 3.27). More specifically, the achievement of providing speed/responding almost instantaneously to customer needs, as perceived by the respondents, was at 41-60% ($\overline{X}$ = 3.27).

Table 4.14: Speed

Description	$\overline{X}$	S.D.	Level of Achievement
Providing speed/Responding almost instantaneously to customer needs	3.27	1.134	41-60%
Total	3.27	1.134	41-60%

We present the respondents' opinions in Table 4.15. It was toward their companies' overall achievement of new products/ services and quality at 41-60% ($\overline{X}$ = 2.97). More specifically, the respondents' opinion toward achievement of new products/services and quality were at 41-60% with the following items: New ways of doing old tasks in a much improved manner ($\overline{X}$ = 3.22); Providing superior customer value ($\overline{X}$ = 3.00); Innovative product or service launched ($\overline{X}$ = 2.93); and New business model ($\overline{X}$ = 2.72).

Table 4.15: New Products/Services and Quality

Description	$\overline{X}$	S.D.	Level of Achievement
Innovative product or service launched	2.93	1.196	41-60%
New ways of doing old tasks in a much improved manner	3.22	1.072	41-60%
New business model	2.72	1.187	41-60%
Providing superior customer value	3.00	1.132	41-60%
Total	2.97	1.031	41-60%

Table 4.16 presents the respondents' opinions which was toward their companies' achievement in regard to overall customization, at 41-60% ($\overline{X}$ = 3.15). The respondents' opinion toward their companies' achievement in regard to customization was at 41-60% with the following items: Better customer handling ($\overline{X}$ = 3.38); Ability to satisfy customers' needs ($\overline{X}$ = 3.32); Customer designed products ($\overline{X}$ = 3.06); Customer relationship management (CRM) ($\overline{X}$ = 3.00); and Providing exactly or beyond customers' expectations ($\overline{X}$ = 2.97).

Table 4.16: Customization

Description	$\overline{X}$	S.D.	Level of Achievement
Providing Exactly or Beyond Customers' Expectations	2.97	1.201	41-60%
Ability to Satisfy Customers' Needs	3.32	1.131	41-60%
Retaining and Better Satisfying Existing Customers	3.38	1.163	41-60%
Customer Relationship Management : CRM	3.00	1.197	41-60%
Customer Designed Products	3.06	1.218	41-60%
Total	3.15	1.051	41-60%

Table 4.17 summarizes the companies' achievement in respect to the new customer base, as perceived by the respondents, which was at 41-60% ($\overline{X} = 2.71$). More specifically, the companies' achievement in respect to the new customer base, as perceived by the respondents, was at 41-60% with the following items: New customer base ($\overline{X} = 3.02$); Global e-business ($\overline{X} = 2.78$); Customer communities ($\overline{X} = 2.74$); and Ability to service customer online (e-customers) ($\overline{X} = 2.66$). The companies' perceived achievement in respect to the new customer base was at 21-40% with the following items: Ability to support global customer ($\overline{X} = 2.37$).

Table 4.17: New Customer Base

Description	$\overline{X}$	S.D.	Level of Achievement
New customer base	3.02	1.133	41-60%
Customer communities	2.74	1.233	41-60%
Ability to service customer online (e-customers)	2.66	1.281	41-60%
Ability to support global customer	2.37	1.261	21-40%
Global e-business	2.78	1.315	41-60%
Total	2.71	1.044	41-60%

Table 4.18 presents the industry type and the respondent firms' codification strategy of KM for efficiency of the value chain. Codification at a regular basis was at 4.25 for the knowledge-intensive firms. In knowledge-intensive manufacturing type, a majority of the respondent firms' codification was at 3.79. In non knowledge-intensive service type, a majority of the respondent firms' codification was at 4.13. In non knowledge-intensive manufacturing type, a majority of the respondent firms' codification was at 4.33.

Table 4.18: Industry Type and Knowledge Management Codification Strategy for the

Efficiency of the Value Chain

Industry Type	Codification	$\overline{X}$	S.D.
Knowledge Intensive Service Type (KIS)	Never	2.24	.927
	Rarely	2.71	.954
	Sometimes	3.37	.688
	Often	3.73	.575
	Regularly	4.25	.875
Knowledge Intensive Manufacturing Type (KIM)	Never	2.20	.732
	Rarely	2.76	.811
	Sometimes	3.11	.700
	Often	3.77	.456
	Regularly	3.79	.496
Non Knowledge Intensive Service Type (NKIS)	Never	1.81	.899
	Rarely	2.86	.898
	Sometimes	3.38	.464
	Often	3.79	.493
	Regularly	4.13	.000
Non Knowledge Intensive Manufacturing Type (NKIM)	Never	2.00	.154
	Rarely	2.62	.960
	Sometimes	3.4	.414
	Often	4.33	.231
	Regularly	4.27	.000

Table 4.19 presents the industry type, codification strategy of KM for speed, a majority of the respondent firms' codification for speed was at 4.25 (highest) for knowledge-intensive firms. In knowledge-intensive manufacturing type, a majority of the respondent firms' codification for speed was at 4.07 (highest). In non knowledge-

intensive service type, a majority of the respondent firms' codification regularly for speed was at 5.00 (highest). In non knowledge-intensive manufacturing type, a majority of the respondent firms' codification for speed was at 4.33 (highest).

Table 4.19: Industry Type and Knowledge Management Codification Strategy for Speed

Industry Type	Codification	$\overline{X}$	S.D.
Knowledge Intensive Service Type	Never	2.71	1.488
	Rarely	2.94	1.279
	Sometimes	3.48	.911
	Often	3.85	.777
	Regularly	**4.25**	.886
Knowledge Intensive Manufacturing Type	Never	2.00	.961
	Rarely	2.84	.965
	Sometimes	3.14	1.030
	Often	**4.07**	.697
	Regularly	3.86	.655
Non Knowledge Intensive Service Type	Never	2.00	1.026
	Rarely	2.83	1.227
	Sometimes	3.52	1.030
	Often	4.00	.943
	Regularly	**5.00**	.000
Non Knowledge Intensive Manufacturing Type	Never	2.50	.578
	Rarely	2.67	1.225
	Sometimes	3.44	.527
	Often	**4.33**	.577
	Regularly	4.00	.000

Table 4.20 presents the industry type and the sample firms' codification for new products/services and quality. For knowledge-intensive service firms it was at 4.00 (highest). In knowledge-intensive manufacturing type, a majority of the respondent firms' codification for new products/services and quality, was at 3.74 (highest). In non knowledge-intensive service type, a majority of the respondent firms' codification for new products/services and quality was at 3.70 (highest). In non knowledge-intensive manufacturing type, a majority of the respondent firms' codification for new products/services and quality was at 5.00 (highest).
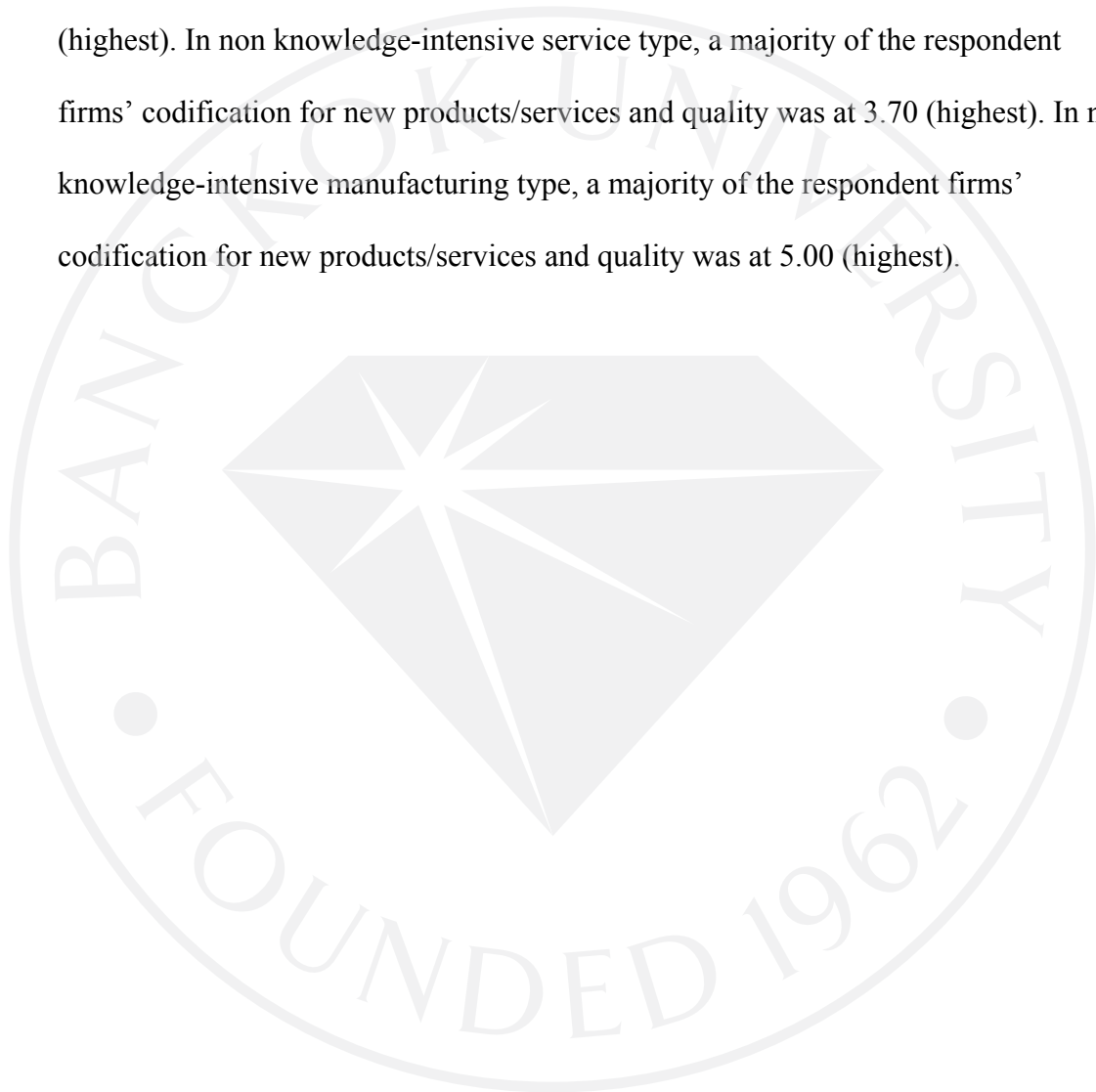
Table 4.20: Industry Type and Knowledge Management Codification Strategy for

New Products/Services and Quality

Industry Type	Codification	$\overline{X}$	S.D.
Knowledge Intensive Service Type	Never	1.78	1.039
	Rarely	2.46	.970
	Sometimes	3.22	.804
	Often	3.57	.775
	Regularly	**4.00**	1.150
Knowledge Intensive Manufacturing Type	Never	2.21	.924
	Rarely	2.53	.910
	Sometimes	2.97	.906
	Often	3.73	.535
	Regularly	**3.74**	.620
Non Knowledge Intensive Service Type	Never	1.63	.793
	Rarely	2.50	1.004
	Sometimes	3.10	.584
	Often	**3.70**	.771
	Regularly	2.75	.000
Non Knowledge Intensive Manufacturing Type	Never	1.75	.000
	Rarely	2.67	1.409
	Sometimes	3.11	.547
	Often	4.00	.433
	Regularly	**5.00**	.000

Table 4.21 shows that the respondent firms in knowledge-intensive service

industry type practice codification for customization, was at 4.20 (highest). In

knowledge-intensive manufacturing type, it was 3.86(highest); in non knowledge-

intensive service type, it was 4.40 (highest); and in non knowledge-intensive

manufacturing type, it was 5.00 (highest).

Table 4.21: Industry Type and Knowledge Management Codification Strategy for

Customization

Industry Type	Codification	$\overline{X}$	S.D.
Knowledge Intensive Service Type	Never	1.87	1.107
	Rarely	2.62	1.042
	Sometimes	3.46	.877
	Often	3.78	.583
	Regularly	**4.20**	.907
Knowledge Intensive Manufacturing Type	Never	2.14	1.199
	Rarely	2.85	.960
	Sometimes	3.21	.925
	Often	3.76	.568
	Regularly	**3.86**	.727
Non Knowledge Intensive Service Type	Never	1.72	.647
	Rarely	2.88	.892
	Sometimes	3.09	.962
	Often	3.94	.640
	Regularly	**4.40**	.000

(Continued)

Table 4.21 (continued): Industry Type and Knowledge Management Codification

Strategy for Customization

Industry Type	Codification	$\overline{X}$	S.D.
Non Knowledge Intensive Manufacturing Type	Never	2.00	.000
	Rarely	2.53	1.204
	Sometimes	3.29	.501
	Often	4.27	.231
	Regularly	**5.00**	.000

Table 4.22, the respondent firms in knowledge-intensive service industry type practice codification for the new customer base was at 4.15 (highest). In knowledge-intensive manufacturing type, the average was 3.61 (highest); in non knowledge-intensive service type, the number was at 3.44 (highest); and non knowledge-intensive manufacturing type, it was 5.00 (highest).

Table 4.22: Industry Type and Knowledge Management Codification Strategy for

New Customer Base

Industry Type	Codification	$\overline{X}$	S.D.
Knowledge Intensive Service Type	Never	1.88	1.232
	Rarely	2.05	.813
	Sometimes	2.91	.891
	Often	3.40	.808
	Regularly	**4.15**	.873
Knowledge Intensive Manufacturing Type	Never	2.37	1.049
	Rarely	2.37	.840
	Sometimes	2.67	.839
	Often	3.36	.707
	Regularly	**3.61**	.768
Non Knowledge Intensive Service Type	Never	1.22	.233
	Rarely	2.37	1.183
	Sometimes	2.79	.904
	Often	**3.44**	.324
	Regularly	3.20	.000
Non Knowledge Intensive Manufacturing Type	Never	1.00	.000
	Rarely	2.38	1.440
	Sometimes	2.96	.691
	Often	3.33	.231
	Regularly	**5.00**	.000

Table 4.23 shows the respondent firms in knowledge-intensive service

industry type, the average personalization for the efficiency of the value chain was

4.51 (highest), in knowledge-intensive manufacturing type, it was 4.15 (highest), in

non knowledge-intensive service type, the figure was 4.13 (highest), and in non

knowledge-intensive manufacturing type, it was 4.33 (highest).

Table 4.23: Industry Type and Knowledge Management Personalization Strategy for

Efficiency of the Value Chain

Industry Type	Personalization	$\overline{X}$	S.D.
Knowledge Intensive Service Type	Never	2.92	1.034
	Rarely	2.83	.931
	Sometimes	3.57	.644
	Often	3.71	.563
	Regularly	**4.51**	.686
Knowledge Intensive Manufacturing Type	Never	2.57	.856
	Rarely	3.01	.809
	Sometimes	3.50	.482
	Often	3.71	.470
	Regularly	**4.15**	.320
Non Knowledge Intensive Service Type	Never	2.18	1.150
	Rarely	2.98	.7822
	Sometimes	3.66	.532
	Often	**4.13**	.000
	Regularly	2.18	1.150
Non Knowledge Intensive Manufacturing Type	Never	2.57	.808
	Rarely	2.25	.608
	Sometimes	3.70	.195
	Often	**4.33**	.231
	Regularly	4.27	.000

Table 4.24 indicates that, in the knowledge-intensive service industry type, a majority of the respondent firms' personalization strategy for speed, was 4.60 (highest), in knowledge-intensive manufacturing type, it was 4.38 (highest), in non knowledge-intensive service type, the figure was 5.00 (highest), and in non knowledge-intensive manufacturing type, it was 4.33 (highest).

Table 4.24: Industry Type and Personalization Strategy KM for Speed

Industry Type	Personalization	$\overline{X}$	S.D.
Knowledge Intensive Service Type	Never	3.11	1.272
	Rarely	3.21	1.262
	Sometimes	3.48	.922
	Often	3.86	.560
	Regularly	**4.60**	.894
Knowledge Intensive Manufacturing Type	Never	2.41	1.024
	Rarely	3.07	1.015
	Sometimes	3.67	.834
	Often	4.06	.649
	Regularly	**4.38**	.518
Non Knowledge Intensive Service Type	Never	2.44	1.357
	Rarely	2.90	1.136
	Sometimes	4.00	.877
	Often	**5.00**	.000
Non Knowledge Intensive Manufacturing Type	Never	3.00	.000
	Rarely	2.40	1.075
	Sometimes	3.63	.518
	Often	**4.33**	.577
	Regularly	4.00	.000

Table 4.25 shows that, in the knowledge-intensive service industry type, a majority of the respondent firms' personalization strategy for new products/services and quality was 4.25 (highest), in knowledge-intensive manufacturing type, it was 3.81 (highest), in non knowledge-intensive service type, it was 3.39 (highest), and in non knowledge-intensive manufacturing type, it was 5.00 (highest).

Table 4.25: Industry Type and Personalization KM Strategy for New Products/Services and Quality

Industry Type	Personalization	$\overline{X}$	S.D.
Knowledge Intensive Service Type	Never	2.56	1.153
	Rarely	2.59	.946
	Sometimes	3.41	.850
	Often	3.76	.746
	Regularly	**4.25**	.750
Knowledge Intensive Manufacturing Type	Never	2.42	.979
	Rarely	2.85	.966
	Sometimes	3.48	.655
	Often	3.62	.675
	Regularly	**3.81**	.347
Non Knowledge Intensive Service Type	Never	1.96	.989
	Rarely	2.70	.951
	Sometimes	**3.39**	.870
	Often	2.75	.000
Non Knowledge Intensive Manufacturing Type	Never	2.38	.722
	Rarely	1.90	.428
	Sometimes	3.81	.704
	Often	4.00	.433
	Regularly	**5.00**	.000

Table 4.26 shows similar results for respondent firms' personalization strategy for customization by industry type.

Table 4.26: Industry Type and Personalization KM Strategy for Customization

Industry Type	Personalization	$\overline{X}$	S.D.
Knowledge Intensive Service Type	Never	2.70	1.233
	Rarely	2.81	1.043
	Sometimes	3.67	.818
	Often	3.83	.637
	Regularly	**4.12**	.867
Knowledge Intensive Manufacturing Type	Never	2.63	1.062
	Rarely	3.00	.987
	Sometimes	3.64	.598
	Often	3.71	.590
	Regularly	**4.55**	.487
Non Knowledge Intensive Service Type	Never	2.25	1.136
	Rarely	2.74	.885
	Sometimes	3.81	.690
	Often	**4.40**	.000
Non Knowledge Intensive Manufacturing Type	Never	2.70	.808
	Rarely	2.00	.566
	Sometimes	3.70	.414
	Often	4.27	.231
	Regularly	**5.00**	.000

Table 4.27 presents similar results for respondent firms' personalization strategy for new customer base by industry type.

Table 4.27: Industry Type and Personalization KM Strategy for New Customer Base

Industry Type	Personalization	$\overline{X}$	S.D.
Knowledge Intensive Service Type	Never	2.09	1.001
	Rarely	2.35	.965
	Sometimes	3.18	.760
	Often	3.81	.767
	Regularly	**4.36**	.817
Knowledge Intensive Manufacturing Type	Never	2.20	.835
	Rarely	2.48	.820
	Sometimes	3.23	.661
	Often	3.49	.705
	Regularly	**4.10**	.490
Non Knowledge Intensive Service Type	Never	1.72	1.066
	Rarely	2.30	1.025
	Sometimes	**3.47**	.405
	Often	3.20	.000
Non Knowledge Intensive Manufacturing Type	Never	2.10	1.270
	Rarely	1.52	.590
	Sometimes	3.55	.791
	Often	3.33	.231
	Regularly	**5.00**	.000

Table 4.28 shows the respondent firms' codification strategy for efficiency of the value chain based on organization Size.

Table 4.28: Organization Size and Codification KM Strategy for Efficiency of the

Value Chain

Organization Size	Codification	$\overline{X}$	S.D.
Small Size	Never	2.32	.824
	Rarely	2.80	.825
	Sometimes	3.34	.615
	Often	**3.72**	.497
	Regularly	3.17	.039
Medium Size	Never	2.01	.924
	Rarely	2.41	.760
	Sometimes	3.28	.745
	Often	3.95	.390
	Regularly	**4.36**	.249
Large Size	Never	1.70	.612
	Rarely	2.96	.933
	Sometimes	3.18	.665
	Often	3.72	.552
	Regularly	**3.99**	.603

Table 4.29 indicates similar results as Table 4.28 for speed

Table 4.29: Organization Size and Codification KM Strategy for Speed

Organization Size	Codification	$\overline{X}$	S.D.
Small Size	Never	2.74	1.054
	Rarely	3.42	.974
	Sometimes	3.40	.876
	Often	**3.96**	.793
	Regularly	3.00	.000
Medium Size	Never	2.17	1.373
	Rarely	2.45	.959
	Sometimes	3.47	1.018
	Often	3.82	.819
	Regularly	**4.17**	.408
Large Size	Never	1.67	.779
	Rarely	2.96	1.248
	Sometimes	3.20	1.005
	Often	4.05	.706
	Regularly	**4.17**	.717

Table 4.30 shows a similar summary of firms' codification strategy for new products/services and quality based on organization size.

Table 4.30: Organization Size and Codification KM Strategy for New Products/

Services and Quality

Organization Size	Codification	$\overline{X}$	S.D.
Small Size	Never	1.90	.845
	Rarely	2.57	.739
	Sometimes	3.08	.963
	Often	**3.45**	.695
	Regularly	3.13	.144
Medium Size	Never	2.02	1.063
	Rarely	2.02	.704
	Sometimes	3.25	.737
	Often	3.70	.618
	Regularly	**4.58**	.466
Large Size	Never	1.33	.417
	Rarely	2.80	1.076
	Sometimes	3.00	.804
	Often	**3.74**	.659
	Regularly	**3.74**	.844

Table 4.31 summarizes the respondent firms' codification strategy for

customization based on organization size.

Table 4.31: Organization Size and Codification KM Strategy for Customization

Organization Size	Codification	$\overline{X}$	S.D.
Small Size	Never	1.93	.896
	Rarely	2.88	.610
	Sometimes	3.32	.956
	Often	**3.76**	.663
	Regularly	3.50	.116
Medium Size	Never	2.00	1.092
	Rarely	2.24	.848
	Sometimes	3.52	.773
	Often	3.87	.450
	Regularly	**4.67**	.516
Large Size	Never	1.60	.753
	Rarely	3.02	1.064
	Sometimes	3.16	.918
	Often	3.77	.590
	Regularly	**3.97**	.808

Table 4.32 shows the respondent firms' codification strategy for new customer base according to organization size.

Table 4.32: Comparative between Organization Size, Knowledge Management

Strategy: Codification and Organizational Innovation: New Customer

Base

Organization Size	Codification	$\overline{X}$	S.D.
Small Size	Never	1.59	1.017
	Rarely	1.68	.524
	Sometimes	2.82	.936
	Often	**3.21**	.856
	Regularly	2.70	.116
Medium Size	Never	1.967	1.173
	Rarely	2.03	.688
	Sometimes	2.93	.737
	Often	3.35	.668
	Regularly	**4.53**	.450
Large Size	Never	1.43	.425
	Rarely	2.54	1.084
	Sometimes	2.69	.872
	Often	3.47	.671
	Regularly	**3.80**	.779

Table 4.33 summarizes the respondent firms' personalization strategy for
efficiency of the value chain based on organization size.

Table 4.33: Organization Size and Personalization KM Strategy for Efficiency of the

Value Chain

Organization Size	Personalization	$\overline{X}$	S.D.
Small Size	Never	2.74	.892
	Rarely	2.98	.833
	Sometimes	3.59	.469
	Often	**3.64**	.423
Medium Size	Never	2.41	.995
	Rarely	2.90	.904
	Sometimes	3.64	.681
	Often	3.87	.363
	Regularly	**4.31**	.300
Large Size	Never	2.79	1.109
	Rarely	2.87	.839
	Sometimes	3.51	.521
	Often	3.79	.557
	Regularly	**4.27**	.563

Table 4.34 indicates the respondent firms' personalization strategy for speed
based on organization size.

Table 4.34: Organization Size and Personalization KM Strategy for Speed

Organization Size	Personalization	$\overline{X}$	S.D.
Small Size	Never	3.09	.928
	Rarely	3.29	1.073
	Sometimes	3.69	.838
	Often	**3.88**	.619
Medium Size	Never	2.48	1.249
	Rarely	2.89	1.071
	Sometimes	3.86	.891
	Often	**4.17**	.408
	Regularly	**4.17**	.408
Large Size	Never	2.68	1.328
	Rarely	3.04	1.216
	Sometimes	3.54	.861
	Often	4.08	.664
	Regularly	**4.56**	.727

Tables 4.35 to 4.37 summarize the results of the correspondent firms'

personalization KM strategy for value creation options based on organization size.

Table 4.35: Organization Size and Personalization KM Strategy for New Products/

Services and Quality

Organization Size	Personalization	$\overline{X}$	S.D.
Small Size	Never	2.36	.875
	Rarely	2.61	1.005
	Sometimes	3.46	.483
	Often	**3.63**	.725
Medium Size	Never	2.20	.980
	Rarely	2.72	.952
	Sometimes	3.54	.927
	Often	3.92	.258
	Regularly	**4.08**	.785
Large Size	Never	2.62	1.246
	Rarely	2.69	.936
	Sometimes	3.44	.769
	Often	3.65	.739
	Regularly	**4.14**	.547

Table 4.36: Organization Size and Personalization KM Strategy for Customization

Organization Size	Personalization	$\overline{X}$	S.D.
Small Size	Never	2.56	1.016
	Rarely	2.82	.941
	Sometimes	**3.85**	.544
	Often	3.74	.7473
Medium Size	Never	2.43	1.069
	Rarely	2.84	1.045
	Sometimes	3.66	.802
	Often	4.13	.393
	Regularly	**4.73**	.413
Large Size	Never	2.78	1.306
	Rarely	2.83	.992
	Sometimes	3.62	.687
	Often	3.77	.559
	Regularly	**4.29**	.736

Table 4.37: Organization Size and Personalization KM Strategy for New Customer

Base

Organization Size	Personalization	$\overline{X}$	S.D.
Small Size	Never	1.81	1.021
	Rarely	2.20	.903
	Sometimes	3.15	.665
	Often	**3.50**	.864
Medium Size	Never	2.13	.944
	Rarely	2.39	.743
	Sometimes	3.41	.701
	Often	4.10	.701
	Regularly	**4.33**	.745
Large Size	Never	2.16	.945
	Rarely	2.42	1.036
	Sometimes	3.23	.695
	Often	3.55	.635
	Regularly	**4.29**	.601

Part 4: Reliability and Validity of Constructs

Table 4.38 provide Cronbach's alpha coefficients for   Knowledge

Management Strategy in respect to Codification and Personalization, .944 and .935,

respectively. Both values are quite high since the threshold value suggested for

Cronbach's alpha coefficient is .70. Therefore, we can conclude that the items that

measures Knowledge Management Strategy in respect to Codification and

Personalization are reliable.

Table 4.38: Cronbach's Alpha of Knowledge Management Strategy

Variables	Cronbach's Alpha	Cronbach's Alpha if Item Deleted
A.Codification	.944	
Email – listserv		.945
Corporate intranet – extranet -Internet		.943
Database management systems		.943
Search engines		.943
Data warehouses – data marts		.942
Web-based training – e-learning – online training		.941
Help-desk applications		.941
Multimedia repositories		.941
Document management system (EDMS)		.942
Content management system (CMS)		.939
Data mining and knowledge discovery tools		.941
Decision support systems (DSS)		.940
Knowledge mapping		.940
Web forum – discussion groups - news group		.942
Index system – category		.941
Business intelligence (BI)		.940
Taxonomies		.939
Navigation –metadata		.941
B. Personalization	.935	
Expertise locators		.931
Communities of practice (CoP's)		.929
Brainstorming – peer interaction/conversation		.933
Groupware		.932
Teleconferencing		.933

(Continued)

Table 4.38 (continued): Cronbach's Alpha of Knowledge Management Strategy

Variables	Cronbach's Alpha	Cronbach's Alpha if Item Deleted
Lessons learned & best practices repository		.931
Videoconferencing		.934
Mentoring – tutoring		.933
Story telling – success story sharing (SSS)		.930
After action review (AAR)		.932
Dialogue		.932
Online chat & instant messaging (IM)		.933
Weblogs (Blogs)		.930
Wikis		.931
Rich site summary (RSS)		.930
Social network analysis (SNA)		.931
Social bookmarking		.931
Folksonomies - tagging		.930

Table 4.39 details Cronbach's alpha coefficients for organizational innovation in respect to efficiency of the value chain, speed, new products/services and quality, customization, and new customer base. They were at .964, .978, .894, .933 and .864, respectively. Notice that each value is quite high. We conclude that the items that measured organization innovation regarding, value chain, speed, new products/services and quality, customization, and new customer base are reliable.

Table 4.39: Cronbach Alpha of Organizational Innovation

Variables	Cronbach's Alpha	Cronbach's Alpha if Item Deleted
A. <u>Efficiency of the Value Chain</u>	.964	
Productivity enhancement		.960
Improving employee skills and competency		.961
Lower cost incurred		.962
Increase of sales/ profit growth rate/ return on investment		.962
Better decision making		.961
Faster response to key business issues		.961
Reduction of problem solving time		.962
Better customer handling		.961
Improving product/ service quality		.961
New enterprise system		.962
Better selection, coordination, communication with suppliers		.962
E-purchasing		.964
Inventory reduction by produce only what is required, in the correct quantity and at the correct time		.962
Transformation by eliminating waste		.961
Streamlining the distribution channel		.963
B. <u>Speed</u>	.978	
Providing speed/ responding almost instantaneously to customer needs		.978
C. <u>New Products/ Services and Quality</u>	.894	
Innovative product or service launched		.895
New ways of doing old tasks in a much improved manner		.903

(Continued)

Table 4.39 (continued): Cronbach Alpha of Organizational Innovation

Variables	Cronbach's Alpha	Cronbach's Alpha if Item Deleted
New business model		.891
Providing superior customer value		.894
D. Customization	.933	
Providing exactly or beyond customers' expectations		.913
Ability to satisfy customers' needs		.909
Retaining and better satisfying existing customers		.918
Customer relationship management : CRM		.926
Customer designed products		.924
E. New Customer Base	.894	
New customer base		.867
Customer communities		.868
Ability to service customer online (e-customers)		.863
Ability to support global customer		.881
Global e-business		.877

The factor analysis result as presented in Table 4.40 can be interpreted that, knowledge management strategy in respect to "Codification" was comprised of 18 indicators (question items) using the "Varimax Rotation Technique". The eigen values of all 18 indicators were higher than 1.0. Therefore, all indicators were retained. Furthermore, the analysis result revealed that every indicator had the factor loading higher than .05, with the highest factor loading of .839. Thus, we can concluded that all indicators were subjected to the same factor, (Codification).

Table 4.40: Factor Analysis of Knowledge Management Strategy: Codification

Variables	Factor Loading	Eigen Values	Variance Explain
Email – listserv	.505	9.360	51.998
Corporate Intranet – Extranet -Internet	.585		
Database management systems	.632		
Search engines – Web portals – Intelligent agents – Information retrieval systems	.591		
Data warehouses – Data marts	.674		
Web-based training – E-learning – Online training	.758		
Help-desk applications	.728		
Multimedia repositories	.719		
Document Management System (EDMS)	.695		
Content Management System (CMS)	.839		
Data mining and knowledge discovery tools	.750		
Decision Support Systems (DSS)	.792		
Knowledge Mapping	.787		
Web forum – Discussion groups - News group	.711		
Index system – Category	.738		
Business Intelligence (BI)	.786		
Taxonomies	.830		
Navigation –Metadata	.763		

The same analysis was performed for knowledge management strategy in respect to "Personalization" comprised of 18 indicators (question items) as shown in table 4.41. 18 indicators had factor loadings higher than .05, with the highest factor loading of .784. Thus we can conclude that all 18 indicators are subjected to the same factor,(Personalization).

Table 4.41: Factor Analysis of Knowledge Management Strategy: Personalization

Variables	Factor Loading	Eigen Values	Variance Explain
Expertise locators	.749	8.752	48.623
Communities of Practice (CoP's)	.784		
Brainstorming – Peer interaction/Conversation	.612		
Groupware	.664		
Teleconferencing	.618		
Lessons learned & Best practices repository	.696		
Videoconferencing	.596		
Mentoring – Tutoring	.599		
Story telling – Success Story Sharing (SSS)	.726		
After Action Review (AAR)	.662		
Dialogue	.665		
Online chat & Instant Messaging (IM)	.622		
Weblogs (Blogs)	.766		
Wikis	.715		
Rich Site Summary (RSS)	.764		
Social Network Analysis (SNA)	.756		
Social Bookmarking	.721		
Folksonomies - Tagging	.781		

Table 4.42 provides the same analysis in respect to "Efficiency of the value

chain" comprised of 15 indicators (question items). 15 indicators had factor loadings

higher than .05, with the highest factor loading of .872. We conclude that all

indicators are subjected to the same factor, (Efficiency of the Value Chain).

Table 4.42: Factor Analysis of Organizational Innovation: Efficiency of the Value Chain

Variables	Factor Loading	Eigen Values	Variance Explain
Productivity enhancement	.872	11.071	69.191
Improving employee skills and competency	.866		
Lower cost incurred	.811		
Increase of sales/ profit growth rate/ return on investment	.806		
Better decision making	.828		
Faster response to key business issues	.857		
Reduction of problem solving time	.823		
Better customer handling	.833		
Improving product/ service quality	.849		
New enterprise system	.791		
Better selection, coordination, communication with suppliers	.817		
E-purchasing	.719		
Inventory reduction by produce only what is required, in the correct quantity and at the correct time	.811		
Transformation by eliminating waste	.828		
Streamlining the distribution channel	.767		

Table 4.43 presents the same analysis results for "New products/services and quality" comprised of 4 indicators (question items). The analysis result revealed that every indicator had a factor loading higher than .05, with the highest factor loading of .907. We accept that all indicators are subjected to the same factor, (New products/services and quality).

Table 4.43: Factor Analysis of Organizational Innovation: New products/Services and

        Quality

Variables	Factor Loading	Eigen Values	Variance Explain
Innovative product or service launched	.900	3.230	80.739
New ways of doing old tasks in a much improved manner	.885		
New business model	.907		
Providing superior customer value	.902		

Table 4.44 presents the same analysis results of the organizational innovation

factor in respect to "Customization" comprised of 5 indicators. The analysis result

revealed that every indicator had the factor loading higher than .05, with the highest

factor loading of .925. Thus, we conclude that all indicators are subjected to the same

factor, (Customization)

Table 4.44: Factor Analysis of Organizational Innovation: Customization

Variables	Factor Loading	Eigen Values	Variance Explain
Providing exactly or beyond customers' expectations	.907	3.955	79.108
Ability to satisfy customers' needs	.925		
Retaining and better satisfying existing customers	.891		
Customer relationship management : CRM	.858		
Customer designed products	.865		

Table 4.45 shows the results of the same analysis for "New customer base" comprised of 5 indicators. The result revealed that every indicator had a factor loading higher than .05, with the highest factor loading of .862. We conclude that all indicators are subjected to the same factor, (New customer base).

Table 4.45: Factor Analysis of Organizational Innovation: New Customer Base

Variables	Factor Loading	Eigen Values	Variance Explain
New customer base	.857	3.526	70.513
Customer communities	.854		
Ability to service customer online (e-customers)	.862		
Ability to support global customer	.804		
Global e-business	.821		

Table 4.46 presents normality test of KM strategy items. Most of the indicators (11) had positive skewness. Except for the indicators, such as, Email – listserv, Corporate intranet – extranet –Internet, Database management systems, Search engines – web portals – intelligent agents – information retrieval systems, Data warehouses – data marts, Document management system (EDMS) and Content management system (CMS) which showed negative skewness. Regarding kurtosis, the analysis result revealed that most indicators had negative kurtosis, except for the indicator: Email – listserv. The indicator "Help-desk applications" had the highest negative kurtosis.

As for "Personalization" most of the indicators had positive skewness. Except for the indicators; Brainstorming – peer interaction/conversation, Mentoring – tutoring and After action review (AAR) which had the left skewness.

Regarding kurtosis, the analysis result revealed that most indicators had negative kurtosis, except wikis, which had positive kurtosis. The indicator "Online chat & instant messaging (IM)" had the highest negative kurtosis.

Table 4.46: Normality of Knowledge Management Strategy

Variables	Skewness	Kurtosis
A.Codification		
Email – listserv	-.999	.160
Corporate Intranet – Extranet -Internet	-.856	-.147
Database management systems	-.472	-.837
Search engines	-.568	-.551
Data warehouses – Data marts	-.423	-.737
Web-based training – E-learning – Online training	.332	-.849
Help-desk applications	.081	-.982
Multimedia repositories	.058	-.792
Document Management System (EDMS)	-.308	-.900
Content Management System (CMS)	-.041	-.850
Data mining and knowledge discovery tools	.356	-.904
Decision Support Systems (DSS)	.442	-.907
Knowledge Mapping	.354	-.980
Web forum – Discussion groups - News group	.506	-.648
Index system – Category	.301	-.916
Business intelligence (BI)	.527	-.587
Taxonomies	.620	-.667
Navigation –Metadata	.541	-.704

(Continued)

Table 4.46 (continue): Normality of Knowledge Management Strategy

Variables	Skewness	Kurtosis
B. Personalization		
Expertise locators	.735	-.442
Communities of practice (CoP's)	.638	-.558
Brainstorming – Peer interaction/Conversation	-.399	-.606
Groupware	.265	-1.095
Teleconferencing	.372	-1.132
Lessons learned & Best practices repository	.058	-.989
Videoconferencing	.508	-1.023
Mentoring – Tutoring	-.038	-1.008
Story telling – Success Story Sharing (SSS)	.177	-.956
After Action Review (AAR)	-.097	-.840
Dialogue	.155	-.877
Online chat & Instant Messaging (IM)	.030	-1.236
Weblogs (Blogs)	.592	-.669
Wikis	.944	.014
Rich Site Summary (RSS)	.720	-.468
Social Network Analysis (SNA)	.741	-.414
Social bookmarking	.691	-.414
Folksonomies - Tagging	.884	-.104

Table 4.47 shows "Efficiency of the value chain" of all 15 indicators had

negative skewness. The indicator "Improving employee skills and competency" had the

highest skewness score. Regarding kurtosis, the analysis result showed that most

indicators had negative kurtosis, except for "Better decision making", which had

positive kurtosis. The indicator "E-purchasing" had the highest negative kurtosis

score.

As for "New products/services and quality" the analysis result revealed that, all four indicators had negative skewness. The indicator **"**New ways of doing old tasks in a much improved manner" had the highest negative score. In respect to kurtosis, the result indicated that every indicator had negative kurtosis, with "New business model" having the highest negative kurtosis score.

In regard to "Customization", all 5 indicators had negative skewness, with "Retaining and better satisfying existing customers" having the highest negative score. Regarding kurtosis, the analysis revealed that most indicators had negative kurtosis, while "Providing exactly or beyond customers" having the highest negative kurtosis score.

As for "New Customer Base" the result indicated that most indicators had positive skewness. The indicator "New customer base" had the highest positive score**.** Regarding kurtosis, the result revealed that most indicators had negative kurtosis, with "Global e-business" having the highest negative score.

Table 4.47: Normality of Organizational Innovation

Variables	Skewness	Kurtosis
A. Efficiency of the Value Chain		
Productivity enhancement	-.481	-.426
Improving employee skills and competency	-.641	-.134
Lower cost incurred	-.443	-.519
Increase of sales/ profit growth rate/ return on investment	-.461	-.489
Better decision making	-.546	.021
Faster response to key business issues	-.494	-.346
Reduction of problem solving time	-.535	-.262
Better customer handling	-.532	-.167
Improving product/ service quality	-.492	-.127
New enterprise system	-.348	-.673
Better selection, coordination, communication with suppliers	-.378	-.535
E-purchasing	-.068	-1.036
Inventory reduction by produce only what is required, in the correct quantity and at the correct time	-.165	-.933
Transformation by eliminating waste .	-.147	-.775
Streamlining the distribution channel	-.065	-.857
B. Speed		
Providing speed/ responding almost instantaneously to customer needs	-.393	-.468
C. New Products/ Services and Quality	.	
Innovative product or service launched	-.164	-.881
New ways of doing old tasks in a much improved manner	-.341	-.560
New business model	-.055	-1.001
Providing superior customer value	-.186	-.706

(Continued)

Table 4.47 (continue): Normality of Organizational Innovation

Variables	Skewness	Kurtosis
D. Customization		
Providing exactly or beyond customers' expectations	-.209	-.899
Ability to satisfy customers' needs	-.577	-.364
Retaining and better satisfying existing customers	-.614	-.421
Customer relationship management : CRM	-.311	-.882
Customer designed products	-.253	-.831
E. New Customer Base		
New customer base	-.265	-.674
Customer communities	.010	-1.061
Ability to service customer online (e-customers)	.148	-1.095
Ability to support global customer	.371	-1.101
Global e-business	.034	-1.212

Part 5: Test of Hypotheses

Hypothesis 1: There is a positive relationship between codification KM strategy and organizational innovation

Hypothesis 1a: A codification strategy of KM increases efficiency of the value chain

The result shown in Table 4.48, there is a positive relationship between codification KM strategy and efficiency of the value chain. Thus, a codification strategy of KM increases efficiency of the value chain.

Table 4.48: Hypothesis 1a

Variables	Efficiency of the value chain		
	Pearson Correlation	p-value	n
codification KM strategy	.620	.000 **	560

**p<.01

Hypothesis 1b: A codification strategy of KM increases new products/services and quality

Table 4.49 shows that there is a positive relationship between codification KM strategy and speed. Thus, a codification strategy of KM increases new products/services and quality.

Table 4.49: Hypothesis 1b

Variables	Speed		
	Pearson Correlation	p-value	n
codification KM strategy	.503	.000 **	560

**p< .01

Hypothesis 1c: A codification strategy of KM increases speed

The result shown in Table 4.50 indicates that, there is a positive relationship between codification KM strategy and new products/services and quality. Thus, a codification strategy of KM increases speed.

Table 4.50: Hypothesis 1c

Variables	New product ,service and quality		
	Pearson Correlation	p-value	n
codification KM strategy	.600	.000 **	560

**p< .01

Hypothesis 1d: A codification strategy of KM increases customization

Table 4.51 indicates that there is a positive relationship between codification KM strategy and customization. Thus, a codification strategy of KM increases customization.

Table 4.51: Hypothesis 1d

Variables	Customization		
	Pearson Correlation	p-value	n
codification KM strategy	.576	.000 **	560

**p< .01

Hypothesis 1e: A codification strategy of KM increases new customer base

Table 4.52 indicates that there is a positive relationship between codification KM strategy and new customer base. Thus, a codification strategy of KM increases new customer base.

Table 4.52: Hypothesis 1e

Variables	New Customer Base		
	Pearson Correlation	p-value	n
codification KM strategy	.589	.000 **	560

**p< .01

Hypothesis 2: There is a positive relationship between personalization KM strategy and organizational innovation

Hypothesis 2a: A personalization strategy of KM increases efficiency of the value chain

Table 4.53 indicates that there is a positive relationship between personalization KM strategy and efficiency of the value chain. Thus, a personalization strategy of KM increases efficiency of the value chain.

Table 4.53: Hypothesis 2a

Variables	Efficiency of the Value Chain		
	Pearson Correlation	p-value	n
personalization KM strategy	.525	.000 **	560

**p<01

Hypothesis 2b: A personalization strategy of KM increases new products/services and quality

Table 4.54 indicates that there is a positive relationship between personalization KM strategy and speed. Thus, a personalization strategy of KM increases new products/services and quality.

Table 4.54: Hypothesis 2b

Variables	Speed		
	Pearson Correlation	p-value	n
personalization KM strategy	.407	.000 **	560

**p< .01

Hypothesis 2c: A personalization strategy of KM increases speed

Table 4.55 indicates that there is a positive relationship between personalization KM strategy and new product, service and quality. Thus, a personalization strategy of KM increases speed

Table 4.55: Hypothesis 2c

Variables	New product ,service and quality		
	Pearson Correlation	p-value	n
personalization KM strategy	.507	.000 **	560

**p< .01

Hypothesis 2d: A personalization strategy of KM increases customization

Table 4.56 indicates that there is a positive relationship between personalization KM strategy and customization. Thus, a personalization strategy of KM increases customization.

Table 4.56: Hypothesis 2d.

Variables	Customization		
	Pearson Correlation	p-value	n
personalization KM strategy	.501	.000 **	560

**p< at .01

Hypothesis 2e: A personalization strategy of KM increases new customer

base

Table 4.57 indicates that there is a positive relationship between personalization

KM strategy and new customer base. Thus, a personalization strategy of KM increases

new customer base.

Table 4.57: Hypothesis 2e

Variables	New Customer Base		
	Pearson Correlation	p-value	n
personalization KM strategy	.603	.000 **	560

**p<.01

Regression Test 1:

A test of the relationship between independent variables and organizational

innovation: efficiency of the value chain.

H_o: $\beta 1 = \beta 2 = \beta i = 0$

H_a: At least one $\beta i \neq 0$

The researcher used ANOVA to test the hypothesis. The result showed that the

p- value obtained from F-test was less than .05. Therefore the null hypothesis (H_o) is

rejected and the alternative hypothesis (H_a) is retained which implies that there is at

least one independent variable which is associated with organizational innovation:

efficiency of the value chain**.**

Table 4.58: Result of Hypothesis Regression Test 1

Model		Sum of Squares	df	Mean Square	F	Sig.(p-value)
1	Regression	167.279	1	167.279	325.029	0.000*
	Residual	287.179	558	0.515		
	Total	454.457	559			

a Predictors: (Constant), Codification.

b Dependent Variable: Efficiency of the value chain

$p < .05$

The adjusted R square value in table 4.59 indicates that codification could explain 36.7% of the variation in the dependent variable: efficiency of the value chain.

Table 4.59: Multiple Coefficient of Determination Test1

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.607	0.368	0.367	0.71740

a Predictors: (Constant), Codification.

b Dependent Variable: Efficiency of the value chain

$p < .05$

Table 4.60 indicates that "tolerance" value (1.000) was greater than 0.10 and the "VIF" value (1.000) was less than 10. Both of them were all acceptable, thus multicolinearity did not seem to be a problem for this case. The result confirmed that codification significantly correlates with organizational innovation: efficiency of the value chain.

Prediction Equation: Y(efficiency of the value chain) = 1.326 + 0.627 Codification.

Table 4.60: Coefficient of Regression and Beta Coefficient Test 1

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.326	0.105		12.593	0.000		
	Codification	0.627	0.035	0.607	18.029	0.000	1.000	1.000

a Predictors: (Constant), Codification.

b Dependent Variable: Efficiency of the value chain

p<.05

Regression Test 2:

The relationship between independent variables and organizational innovation: speed was tested.

H_o: $\beta1= \beta2= \beta i =0$

H_a: At least one $\beta i \neq 0$

ANOVA was used to test the hypothesis. The result showed that the p-value obtained from F-test was significant at the .05 level. Therefore, the null hypothesis (H_o) was rejected and the alternative hypothesis (H_a) was accepted as there was at least one independent variable which associates with organizational innovation: speed**.**

Table 4.61: Result of Regression Hypothesis Test 2

Model		Sum of Squares	df	Mean Square	F	Sig. (p-value)
1	Regression	169.956	1	169.956	172.666	0.000*
	Residual	549.242	558	0.984		
	Total	719.198	559			

a Predictors: (Constant), Codification.

b Dependent Variable: Speed

p<.05

The adjusted R square value in table 4.62 could explain 23.5 % of the variation in the dependent variable, organizational innovation speed**.**

Table 4.62: Multiple Coefficient of Determination Test2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.486	0.236	0.235	0.99212

a Predictors: (Constant), Codification.

b Dependent Variable: Speed

$p < .05$

Table 4.63, indicates that the "tolerance" value (1.000) was greater than 0.10 and the "VIF" value (1.000) less than 10. Thus, multicolinearity was not a problem for this case. The result confirmed that codification significantly correlates with organizational innovation: speed.

Prediction Equation: $Y(speed) = 1.440 + 0.632$ Codification.

Table 4.63: Coefficient of Regression and Beta Coefficient Test 2

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.440	0.146		9.889	0.000		
	Codification	0.632	0.048	0.486	13.140	0.000	1.000	1.000

a Predictors: (Constant), Codification.

b Dependent Variable: Speed

$p < .05$

Regression Test 3:

The relationship between independent variables and organizational innovation: New products/services and quality was also tested.

H_o: $\beta 1$= $\beta 2$= βi =0

H_a: At least one βi $\neq 0$

ANOVA was used to test the hypothesis. The result in Table 4.64 indicated that the p-value obtained from F-test was significant at the .05 level. Therefore the null hypothesis (H_o) was rejected and the alternative hypothesis (H_a) was accepted, which implies that codification is associates with organizational innovation: New products/services and quality.

Table 4.64: Result of Regression Hypothesis Test 3

Model		Sum of Squares	df	Mean Square	F	Sig. (p-value)
1	Regression	204.207	1	204.207	292.530	0.000*
	Residual	389.524	558	0.698		
	Total	593.730	559			

a Predictors: (Constant), Codification.

b Dependent Variable: New products/services and quality

p<.05

The adjusted R square value in table 4.65 shows that codification could explain 34.3% of the variation in the dependent variable which is organizational innovation: New products/services and quality.

Table 4.65: Multiple Coefficient of Determination Test 3

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.586	0.344	0.343	0.83551

a Predictors: (Constant), Codification.

b Dependent Variable: New products/ services and quality

$p<.05$

Table 4.66 indicates that the "tolerance" value (1.000) was greater than 0.10 and the "VIF" value (1.000) was less than 10. Thus, multicolinearity was not a problem for this case. The result confirmed that codification significantly was correlated with organizational innovation: New products/services and quality.

Prediction Equation:

Y(New products/services and quality) = 0.957 + 0.693Codification.

Table 4.66: Coefficient of Regression and Beta Coefficient Test 3

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0.957	0.123		7.802	0.000		
	Codification	0.693	0.040	0.586	17.103	0.000	1.000	1.000

a Predictors: (Constant), Codification.

b Dependent Variable: New products/ services and quality

$p<.05$

Regression Test 4:

The relationship between independent variables and organizational innovation: customization was also tested.

H_o: $\beta1= \beta2= \beta i =0$

H_a: At least one $\beta i \neq 0$

ANOVA was used to test the hypothesis. The result showed F-test was significant at the .05 level. Thus, the null hypothesis (H_o) was rejected and the alternative hypothesis (H_a) was accepted, implying that codification and personalization are associated with organizational innovation: Customization**.**

Table 4.67: Result of Regression Hypothesis Test 4

Model		Sum of Squares	df	Mean Square	F	Sig. (p-value)
1	Regression	200.086	1	200.086	267.849	0.000*
	Residual	416.833	558	0.747		
	Total	616.919	559			
2	Regression	204.046	2	102.023	137.637	0.000*
	Residual	412.873	557	0.741		
	Total	616.919	559			

a Predictors: (Constant), Codification.

b Predictors: (Constant), Codification, Personalization

c Dependent Variable: Customization

$p<.05$

The adjusted R square in table 4.68 showed that codification and personalization can explain 32.8 % of the variation in the dependent variable which is organizational innovation: Customization.

Table 4.68: Multiple Coefficient of Determination Test 4

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.570	0.324	0.323	0.86430
2	0.575	0.331	0.328	0.86096

a Predictors: (Constant), Codification.

b Predictors: (Constant), Codification, Personalization

c Dependent Variable: Customization

p<.05

Again, the "tolerance" value (0.4111) shown in Table 4.69 was greater than 0.10 and the "VIF" value (2.434) was less than 10. Both of them were acceptable, thus multicolinearity was not an issue for this case.   The result confirmed that codification and personalization together correlate with organizational innovation.

Prediction Equation:

Y(New products/services and quality) = 1.109 + 0.570Codification+

0.158Personalization.

Table 4.69: Coefficient of Regression and Beta Coefficient Test 4

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.160	0.127		9.141	0.000		
	Codification	0.686	0.042	0.570	16.366	0.000	1.000	1.000
2	(Constant)	1.109	0.128		8.639	0.000		
	Codification	0.570	0.065	0.474	8.758	0.000	0.411	2.434
	Personalization	0.158	0.068	0.125	2.311	0.021	0.411	2.434

a Predictors: (Constant), Codification.

b Predictors: (Constant), Codification, Personalization

c Dependent Variable: Customization

p<.05

Regression Test 5:

The relationship between independent variables and organizational innovation: Customization was also tested.

Ho: $\beta 1 = \beta 2 = \beta i = 0$

Ha: At least one $\beta i \neq 0$

ANOVA was again used to test the hypothesis. The result indicated that the F-test was significant at the .05 level. The null hypothesis (H_o) was rejected and the alternative hypothesis (H_a) was accepted, implying that codification and personalization are associated with organizational innovation: New customer base.

Table 4.70: Result of Regression Hypothesis Test 5

Model		Sum of Squares	df	Mean Square	F	Sig. (p-value)
1	Regression	212.166	1	212.166	297.660	0.000*
	Residual	397.731	558	0.713		
	Total	609.897	559			
2	Regression	233.646	2	116.823	172.944	0.000*
	Residual	376.251	557	0.675		
	Total	609.897	559			

a Predictors: (Constant), Codification.

b Predictors: (Constant), Codification, Personalization

c Dependent Variable: New customer base

p<.05

The adjusted R square value in Table 4.71 showed codification and personalization could explain 38.3 % of the variation in the dependent variable which is organizational innovation: New customer base.

Table 4.71: Multiple Coefficient of Determination Test 5

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.590	0.348	0.347	0.84426
2	0.619	0.383	0.381	0.82189

a Predictors: (Constant), Codification.

b Predictors: (Constant), Codification, Personalization

c Dependent Variable: New customer base

$p < .05$

The "tolerance" value (0.4111) and the "VIF" value (2.434) were both acceptable, thus multicolinearity did not cause a problem for this case. The result confirmed that codification and personalization of KM significantly correlated with organizational innovation: New customer base.

Prediction Equation:

Y(New customer base) = 0.575 + 0.457Codification + 0.350Personalization.

Table 4.72: Coefficient of Regression and Beta Coefficient Test 5

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0.901	0.111		8.123	0.000		
	Codification	0.739	0.043	0.590	17.253	0.000	1.000	1.000
2	(Constant)	0.575	0.123		4.695	0.000		
	Codification	0.457	0.065	0.365	7.033	0.000	0.411	2.434
	Personalization	0.350	0.062	0.293	5.639	0.000	0.411	2.434

a Predictors: (Constant), Codification.

b Predictors: (Constant), Codification, Personalization

c Dependent Variable: New customer base

$p < .05$

For the result of Hypotheses 3a – 3e and 4a -4c, the following analysis was performed

Table 4.73: Between-Subjects Factors

		Value Label	N
Dominant KM Tools	0	Codification Tools	425
	1	Personalization Tools	109
	2	Balanced Tools	25
Organization Size	0	Small Size	126
	1	Medium Size	153
	2	Large Size	280
Industry Type	0	Non Knowledge Intensive Manufacturing Type	78
	1	Non Knowledge Intensive Service Type	28
	2	Knowledge Intensive Manufacturing type	211
	3	Knowlege Intensive Service Type	242

The analysis result in Table 4.74 indicated that the dependent variables have relationships among them at the .01 level of significance, thus passing the condition to use MANOVA for data analysis.

Table 4.74: Bartlett's Test of Sphericity[a]

Likelihood Ratio	.000
Approx. Chi-Square	1.029E4
df	20
Sig.	.000

Tests the null hypothesis that the residual covariance matrix is proportional to an identity matrix.

a. Design: Intercept + SelectedKMtools + DUMSIZE3 + DUMTYPE + SelectedKMtools * DUMSIZE3 + SelectedKMtools * DUMTYPE + DUMSIZE3 * DUMTYPE + SelectedKMtools * DUMSIZE3 * DUMTYPE

All items in Table 4.75 showed sig = .000, meaning that all dependent variables (organizational innovations) would have different results depending on different KM strategies in varying organization sizes and in different industry types.

Table 4.75: Multivariate Tests[c]

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.741	2.499E2[a]	6.000	525.000	.000
	Wilks' Lambda	.259	2.499E2[a]	6.000	525.000	.000
	Hotelling's Trace	2.856	2.499E2[a]	6.000	525.000	.000
	Roy's Largest Root	2.856	2.499E2[a]	6.000	525.000	.000
Selected KMtools	Pillai's Traces	.111	5.172	12.000	1.052E3	.000
	Wilks' Lambda	.890	5.225[a]	12.000	1.050E3	.000
	Hotelling's Trace	.121	5.278	12.000	1.048E3	.000
	Roy's Largest Root	.100	8.729[b]	6.000	526.000	.000
DUMSIZE3	Pillai's Trace	.142	6.692	12.000	1.052E3	.000
	Wilks' Lambda	.862	6.738[a]	12.000	1.050E3	.000
	Hotelling's Trace	.155	6.784	12.000	1.048E3	.000
	Roy's Largest Root	.116	10.143[b]	6.000	526.000	.000
DUMTYPE	Pillai's Trace	.155	4.798	18.000	1.581E3	.000
	Wilks' Lambda	.851	4.845	18.000	1.485E3	.000
	Hotelling's Trace	.168	4.880	18.000	1.571E3	.000
	Roy's Largest Root	.105	9.245[b]	6.000	527.000	.000
Selected KMtools * DUMSIZE3	Pillai's Trace	.165	5.125	18.000	1.581E3	.000
	Wilks' Lambda	.843	5.155	18.000	1.485E3	.000
	Hotelling's Trace	.178	5.169	18.000	1.571E3	.000
	Roy's Largest Root	.100	8.754[b]	6.000	527.000	.000
Selected KMtools * DUMTYPE	Pillai's Trace	.203	3.740	30.000	2.645E3	.000
	Wilks' Lambda	.809	3.811	30.000	2.102E3	.000
	Hotelling's Trace	.221	3.853	30.000	2.617E3	.000
	Roy's Largest Root	.125	10.985[b]	6.000	529.000	.000

(Continued)

Table 4.75 (continued): Multivariate Tests[c]

Effect		Value	F	Hypothesis df	Error df	Sig.
DUMSIZE3 * DUMTYPE	Pillai's Trace	.193	2.929	36.000	3.180E3	.000
	Wilks' Lambda	.819	2.984	36.000	2.308E3	.000
	Hotelling's Trace	.207	3.014	36.000	3.140E3	.000
	Roy's Largest Root	.111	9.828[b]	6.000	530.000	.000
Selected KMtools * DUMSIZE3 * DUMTYPE	Pillai's Trace	.238	3.131	42.000	3.180E3	.000

a. Exact statistic

b. The statistic is an upper bound on F that yields a lower bound on the significance

level.

c. Design: Intercept + SelectedKMtools + DUMSIZE3 + DUMTYPE +

SelectedKMtools * DUMSIZE3 + SelectedKMtools * DUMTYPE + DUMSIZE3

* DUMTYPE + SelectedKMtools * DUMSIZE3 * DUMTYPE

Table 4.76: Levene's Test of Equality of Error Variances[a]

	F	df1	df2	Sig.
Efficiency of the value chain	1.951	28	530	.003
Speed	1.526	28	530	.043
New products/ services and quality	2.453	28	530	.000
Customization	2.155	28	530	.001
New customer base	2.307	28	530	.000
Overall-organizational Innovation	1.791	28	530	.008

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + SelectedKMtools + DUMSIZE3 + DUMTYPE +

SelectedKMtools * DUMSIZE3 + SelectedKMtools * DUMTYPE + DUMSIZE3

* DUMTYPE + SelectedKMtools * DUMSIZE3 * DUMTYPE

In Table 4.77, all independent variables as KM strategies with different organization size would affect each construct of organizational innovation.

To test Hypotheses 3a-3e, Table 4.78 was prepared to show mean and standard error for each combination of the dependent variable, KM tool, and organization size.

Table 4.77: Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	Efficiency of the value chain	86.477[a]	28	3.088	4.448	.000
	Speed	119.305[b]	28	4.261	3.783	.000
	New products/ services and quality	112.514[c]	28	4.018	4.441	.000
	Customization	110.304[d]	28	3.939	4.134	.000
	New customer base	117.930[e]	28	4.212	4.558	.000
	Overall-organizational innovation	91.490[f]	28	3.267	4.699	.000
Intercept	Efficiency of the value chain	1031.480	1	1031.480	1.486E3	.000
	Speed	1144.962	1	1144.962	1.017E3	.000
	New products/ services and quality	982.896	1	982.896	1.086E3	.000
	Customization	1069.290	1	1069.290	1.122E3	.000
	New customer base	811.984	1	811.984	878.710	.000
	Overall-organizational innovation	996.279	1	996.279	1.433E3	.000
Selected KM tools	Efficiency of the value chain	23.138	2	11.569	16.663	.000
	Speed	19.268	2	9.634	8.554	.000
	New products/ services and quality	13.150	2	6.575	7.267	.001
	Customization	21.437	2	10.719	11.248	.000
	New customer base	13.750	2	6.875	7.440	.001
	Overall-organizational innovation	19.100	2	9.550	13.734	.000

(Continued)

Table 4.77 (continued): Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
DUMSIZE3	Efficiency of the value chain	21.441	2	10.720	15.441	.000
	Speed	18.509	2	9.254	8.217	.000
	New products/ services and quality	11.980	2	5.990	6.620	.001
	Customization	21.069	2	10.535	11.055	.000
	New customer base	14.524	2	7.262	7.859	.000
	Overall-organizational innovation	17.381	2	8.691	12.498	.000
DUMTYPE	Efficiency of the value chain	6.015	3	2.005	2.888	.035
	Speed	9.784	3	3.261	2.896	.035
	New products/ services and quality	17.185	3	5.728	6.331	.000
	Customization	11.733	3	3.911	4.104	.007
	New customer base	25.925	3	8.642	9.352	.000
	Overall-organizational innovation	10.202	3	3.401	4.890	.002
Selected KMtools * DUMSIZE3	Efficiency of the value chain	20.287	3	6.762	9.740	.000
	Speed	18.367	3	6.122	5.436	.001
	New products/ services and quality	12.409	3	4.136	4.571	.004
	Customization	26.929	3	8.976	9.420	.000
	New customer base	21.711	3	7.237	7.832	.000
	Overall-organizational innovation	19.058	3	6.353	9.136	.000

(Continued)

Table 4.77 (continued): Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Selected KMtools * DUMTYPE	Efficiency of the value chain	18.951	5	3.790	5.459	.000
	Speed	25.161	5	5.032	4.468	.001
	New products/ services and quality	9.744	5	1.949	2.154	.058
	Customization	20.990	5	4.198	4.405	.001
	New customer base	29.611	5	5.922	6.409	.000
	Overall-organizational innovation	18.502	5	3.700	5.321	.000
DUMSIZE3 * DUMTYPE	Efficiency of the value chain	7.650	6	1.275	1.836	.090
	Speed	10.894	6	1.816	1.612	.142
	New products/ services and quality	15.556	6	2.593	2.865	.009
	Customization	11.168	6	1.861	1.953	.071
	New customer base	3.380	6	.563	.610	.723
	Overall-organizational innovation	7.322	6	1.220	1.755	.106
Total	Efficiency of the value chain	5982.769	559			
	Speed	6694.000	559			
	New products/ services and quality	5502.312	559			
	Customization	6149.120	559			
	New customer base	4715.800	559			
	Overall-organizational innovation	5669.501	559			

(Continued)

Table 4.77 (continued): Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Total	Efficiency of the value chain	454.451	558			
	Speed	716.211	558			
	New products/ services and quality	592.079	558			
	Customization	615.350	558			
	New customer base	607.683	558			
	Overall-organizational innovation	460.042	558			
Selected KMtools * DUMSIZE3 * DUMTYPE	Efficiency of the value chain	10.298	7	1.471	2.119	.040
	Speed	16.787	7	2.398	2.129	.039
	New products/ services and quality	22.588	7	3.227	3.566	.001
	Customization	14.418	7	2.060	2.161	.036
	New customer base	27.798	7	3.971	4.297	.000
	Overall-organizational innovation	13.561	7	1.937	2.786	.007
Error	Efficiency of the value chain	367.974	530	.694		
	Speed	596.906	530	1.126		
	New products/ services and quality	479.565	530	.905		
	Customization	505.046	530	.953		

Table 4.77 (continued): Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
	New customer base	489.754	530	.924		
	Overall-organizational innovation	368.553	530	.695		

a. R Squared = .190 (Adjusted R Squared = .148)

b. R Squared = .167 (Adjusted R Squared = .123)

c. R Squared = .190 (Adjusted R Squared = .147)

d. R Squared = .179 (Adjusted R Squared = .136)

e. R Squared = .194 (Adjusted R Squared = .151)

f. R Squared = .199 (Adjusted R Squared = .157)

Table 4.78: Dominant KM Tools and Organization Size

Dependent Variable	Dominant KM Tools	Organization Size	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
Efficiency of the value chain	Codification Tools	Small Size	3.359	.143	3.078	3.640
		Medium Size	3.230	.130	2.975	3.484
		Large Size	3.249	.083	3.085	3.412
	Personalization Tools	Small Size	2.650	.166	2.324	2.976
		Medium Size	2.364	.181	2.008	2.719
		Large Size	3.133	.163	2.813	3.454
	Balanced Tools	Small Size	.[a]	.	.	.
		Medium Size	1.050[b]	.361	.341	1.759
		Large Size	**3.433[b]**	.200	3.040	3.825
Speed	Codification Tools	Small Size	3.523	.182	3.164	3.881
		Medium Size	3.356	.165	3.031	3.680
		Large Size	3.328	.106	3.119	3.537
	Personalization Tools	Small Size	3.033	.212	2.617	3.449
		Medium Size	2.522	.230	2.069	2.974
		Large Size	3.173	.208	2.765	3.580
	Balanced Tools	Small Size	.[a]	.	.	.
		Medium Size	1.000[b]	.460	.097	1.903
		Large Size	**3.524[b]**	.255	3.024	4.024
New products/ services and quality	Codification Tools	Small Size	3.025	.164	2.704	3.347
		Medium Size	3.133	.148	2.843	3.424
		Large Size	3.068	.095	2.881	3.255

(Continued)

Table 4.78 (continued): Dominant KM Tools and Organization Size

Dependent Variable	Dominant KM Tools	Organization Size	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
	Personalization Tools	Small Size	2.499	.190	2.126	2.871
		Medium Size	2.174	.206	1.768	2.579
		Large Size	3.051	.186	2.685	3.416
	Balanced Tools	Small Size	.[a]	.	.	.
		Medium Size	1.500[b]	.412	.691	2.309
		Large Size	**3.190[b]**	.228	2.742	3.639
Customization	Codification Tools	Small Size	3.312	.168	2.982	3.641
		Medium Size	3.363	.152	3.065	3.661
		Large Size	3.184	.098	2.992	3.376
	Personalization Tools	Small Size	2.495	.195	2.112	2.877
		Medium Size	2.224	.212	1.808	2.640
		Large Size	3.293	.191	2.918	3.669
	Balanced Tools	Small Size	.[a]	.	.	.
		Medium Size	1.350[b]	.423	.520	2.180
		Large Size	**3.590[b]**	.234	3.130	4.050
New customer base	Codification Tools	Small Size	2.718	.165	2.394	3.043
		Medium Size	**3.012**	.149	2.718	3.306
		Large Size	2.698	.096	2.509	2.887
	Personalization Tools	Small Size	1.839	.192	1.462	2.215
		Medium Size	2.029	.209	1.619	2.439
		Large Size	3.005	.188	2.635	3.374

(Continued)

Table 4.78 (continued): Dominant KM Tools and Organization Size

Dependent Variable	Dominant KM Tools	Organization Size	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
	Balanced Tools	Small Size	.^a	.	.	.
		Medium Size	1.450^b	.416	.632	2.268
		Large Size	3.005^b	.231	2.552	3.458
Overall organizational Innovation	Codification Tools	Small Size	3.205	.143	2.924	3.487
		Medium Size	3.206	.130	2.951	3.461
		Large Size	3.125	.083	2.961	3.289
	Personalization Tools	Small Size	2.481	.166	2.155	2.808
		Medium Size	2.265	.181	1.909	2.620
		Large Size	3.129	.163	2.809	3.449
	Balanced Tools	Small Size	.^a	.	.	.
		Medium Size	1.225^b	.361	.516	1.934
		Large Size	**3.358^b**	.200	2.965	3.751

a. This level combination of factors is not observed, thus the corresponding population marginal mean is not estimable.

b. Based on modified population marginal mean.

Table 4.78 shows results for test of Hypotheses 3a-3e and summarized in Table 4.79

Hypothesis 3a: The effect of balance strategy in the efficiency of value chain is greater in large organizations than it is in small-medium organizations.

Hypothesis 3b: The effect of balance strategy in new products/services is greater in large organizations than it is in small-medium organizations.

Hypothesis 3c: The effect of balance strategy in customization is greater in large organizations than it is in small-medium organizations.

Hypothesis 3d: The effect of codification strategy in new customer base is greater in small-medium organizations than it is in large organizations.

Hypothesis 3e: The effect of personalization strategy in speed is greater in large organizations than it is in small-medium organizations.

Table 4.79: Descriptive Statistics and Results of Hypotheses 3a-3e

Hypo	Mean	SE	Mean	SD	Support/Not Support
	Balanced strategy				
	Large organization		Small-medium organizations		
3a	3.433	.200	1.050	.361	Supported
3b	3.190	.228	1.500	.412	Supported
3c	3.590	.234	1.350	.423	Supported
	Codification strategy				
3d	2.398	0.96	3.012	.149	Supported
	Personalization strategy				
3e	3.173	.208	3.033	.212	Supported

To test Hypotheses 4a-4c, Table 4.80 was prepared to show the descriptive statistics.

Table 4.80: Dominant KM Tools and Industry Type

Dependent Variable	Dominant KM Tools	Industry type	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
Efficiency of the value chain	Codification Tools	Non knowledge intensive manufacturing type	3.139	.150	2.845	3.434
		Non knowledge intensive service type	**3.621**	.217	3.194	4.048
		Knowledge intensive manufacturing type	3.170	.071	3.030	3.311
		Knowledge intensive service type	3.186	.063	3.063	3.309
	Personalization Tools	Non knowledge intensive manufacturing type	2.330	.227	1.884	2.775
		Non knowledge intensive service type	2.422	.254	1.924	2.920
		Knowledge intensive manufacturing type	2.674	.145	2.389	2.958
		Knowledge intensive service type	**3.437**	.133	3.175	3.699
	Balanced Tools	Non knowledge intensive manufacturing type	1.883[a]	.295	1.305	2.462
		Non knowledge intensive service type	.[b]	.	.	.

(Continued)

Table 4.80 (continued): Dominant KM Tools and Industry Type

Dependent Variable	Dominant KM Tools	Industry type	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
		Knowledge intensive manufacturing type	**3.981**[a]	.315	3.362	4.600
		Knowledge intensive service type	2.325[a]	.329	1.678	2.972
Speed	Codification Tools	Non knowledge intensive manufacturing type	3.272	.191	2.897	3.648
		Non knowledge intensive service type	**3.657**	.277	3.114	4.201
		Knowledge intensive manufacturing type	3.432	.091	3.253	3.611
		Knowledge intensive service type	3.247	.080	3.090	3.403
	Personalization Tools	Non knowledge intensive manufacturing type	2.500	.289	1.933	3.067
		Non knowledge intensive service type	2.833	.323	2.199	3.468
		Knowledge intensive manufacturing type	2.745	.184	2.382	3.107
		Knowledge intensive service type	**3.559**	.170	3.225	3.892

(Continued)

Table 4.80 (continued): Dominant KM Tools and Industry Type

Dependent Variable	Dominant KM Tools	Industry type	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
	Balanced Tools	Non knowledge intensive manufacturing type	1.500[a]	.375	.763	2.237
		Non knowledge intensive service type	.[b]	.	.	.
		Knowledge intensive manufacturing type	**4.571[a]**	.401	3.783	5.359
		Knowledge intensive service type	2.500[a]	.419	1.676	3.324
New products/ services and quality	Codification Tools	Non knowledge intensive manufacturing type	2.740	.171	2.404	3.077
		Non knowledge intensive service type	**3.606**	.248	3.120	4.093
		Knowledge intensive manufacturing type	2.887	.082	2.727	3.047
		Knowledge intensive service type	3.068	.071	2.927	3.208
	Personalization Tools	Non knowledge intensive manufacturing type	2.083	.259	1.575	2.592
		Non knowledge intensive service type	2.708	.289	2.140	3.277

(Continued)

Table 4.80 (continued): Dominant KM Tools and Industry Type

Dependent Variable	Dominant KM Tools	Industry type	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
		Knowledge intensive manufacturing type	2.476	.165	2.151	2.801
		Knowledge intensive service type	**3.030**	.152	2.731	3.329
	Balanced Tools	Non knowledge intensive manufacturing type	1.500[a]	.336	.839	2.161
		Non knowledge intensive service type	.[b]	.	.	.
		Knowledge intensive manufacturing type	**4.071[a]**	.360	3.365	4.778
		Knowledge intensive service type	2.750[a]	.376	2.011	3.489
Customization	Codification Tools	Non knowledge intensive manufacturing type	3.049	.176	2.704	3.394
		Non knowledge intensive service type	**3.770**	.254	3.271	4.270
		Knowledge intensive manufacturing type	3.082	.084	2.918	3.247
		Knowledge intensive service type	3.243	.073	3.099	3.387

(Continued)

Table 4.80 (continued): Dominant KM Tools and Industry Type

Dependent Variable	Dominant KM Tools	Industry type	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
	Personalization Tools	Non knowledge intensive manufacturing type	2.133	.266	1.611	2.655
		Non knowledge intensive service type	2.467	.297	1.883	3.050
		Knowledge intensive manufacturing type	2.604	.170	2.271	2.937
		Knowledge intensive service type	**3.479**	.156	3.172	3.786
	Balanced Tools	Non knowledge intensive manufacturing type	2.050[a]	.345	1.372	2.728
		Non knowledge intensive service type	.[b]	.	.	.
		Knowledge intensive manufacturing type	**4.171**[a]	.369	3.447	4.896
		Knowledge intensive service type	2.600[a]	.386	1.842	3.358
New customer base	Codification Tools	Non knowledge intensive manufacturing type	2.512	.173	2.172	2.852
		Non knowledge intensive service type	**3.361**	.250	2.869	3.853

(Continued)

Table 4.80 (continued): Dominant KM Tools and Industry Type

Dependent Variable	Dominant KM Tools	Industry type	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
		Knowledge intensive manufacturing type	2.613	.082	2.451	2.775
		Knowledge intensive service type	2.752	.072	2.610	2.894
	Personalization Tools	Non knowledge intensive manufacturing type	1.422	.262	.908	1.936
		Non knowledge intensive service type	2.233	.293	1.659	2.808
		Knowledge intensive manufacturing type	2.441	.167	2.113	2.769
		Knowledge intensive service type	**3.066**	.154	2.764	3.368
	Balanced Tools	Non knowledge intensive manufacturing type	1.400[a]	.340	.732	2.068
		Non knowledge intensive service type	.[b]	.	.	.
		Knowledge intensive manufacturing type	4.114[a]	.363	3.401	4.828
		Knowledge intensive service type	2.500[a]	.380	1.754	3.246

(Continued)

Table 4.80 (continued): Dominant KM Tools and Industry Type

Dependent Variable	Dominant KM Tools	Industry type	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
Effectiveness of Innovation	Codification Tools	Non knowledge intensive manufacturing type	2.971	.150	2.676	3.266
		Non knowledge intensive service type	3.601	.217	3.174	4.027
		Knowledge intensive manufacturing type	3.034	.072	2.893	3.174
		Knowledge intensive service type	3.109	.063	2.986	3.232
	Personalization Tools	Non knowledge intensive manufacturing type	2.119	.227	1.673	2.564
		Non knowledge intensive service type	2.450	.254	1.952	2.948
		Knowledge intensive manufacturing type	2.599	.145	2.315	2.884
		Knowledge intensive service type	**3.332**	.133	3.070	3.594
	Balanced Tools	Non knowledge intensive manufacturing type	1.767[a]	.295	1.187	2.346
		Non knowledge intensive service type	.[b]	.	.	.

(Continued)

Table 4.80 (continued): Dominant KM Tools and Industry Type

Dependent Variable	Dominant KM Tools	Industry type	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
		Knowledge intensive manufacturing type	**4.067[a]**	.315	3.448	4.686
		Knowledge intensive service type	2.463[a]	.330	1.815	3.110

a. Based on modified population marginal mean.

b. This level combination of factors is not observed, thus the corresponding population marginal mean is not estimable.

Hypothesis 4a: The effect of personalization strategy in organizational innovation is greater in knowledge-intensive service organizations than non knowledge-intensive service organizations.

Hypothesis 4b: The effect of balanced strategy in organizational innovation is greater in knowledge-intensive manufacturing organizations than non knowledge-intensive manufacturing organizations.

Hypothesis 4c: The effect of codification strategy in organizational innovation is greater in non knowledge-intensive service organizations than knowledge-intensive service organizations.

Table 4.81 presents the results of Hypotheses tests.

Table 4.81: Descriptive Statistics and Results of Hypotheses 4a-4c

Hypo	DV	Mean	SE	Mean	SD	Support/ Not Support
		Personalization Strategy				
		KIS		NKIS		
4a	Efficiency of value chain	3.437	.133	2.422	.254	Supported
	Speed	3.559	.170	2.833	.323	
	New products/ services	3.030	.152	2.708	.289	
	Customization	3.479	.156		.297	
	New customer base	3.066	.154	2.233	.293	
	Overall – Organizational innovation	3.332	.133	2.450	.254	
		Balanced Strategy				
		KIM		NKIM		
4b	Efficiency of value chain	3.981	.315	1.883	.295	Supported
	Speed	3.432	.091	3.272	.191	
	New products/ services	4.071	.360	1.500	.336	
	Customization	4.171	.369	2.050	.345	
	New customer base	4.114	.363	1.400	.340	
	Overall – Organizational innovation	4.067	.315	1.767	.295	

(Continued)

Table 4.81 (continued): Descriptive Statistics and Results of Hypotheses 4a-4c

Hypo	DV	Mean	SE	Mean	SD	Support/ Not Support
		Codification Strategy				
		Non-knowledge-intensive		knowledge-intensive		
4c	Efficiency of value chain	3.621	.217	3.186	.063	Supported
	Speed	3.657	2.77	3.247	.080	
	New products/ services	3.606	.248	3.068	.071	
	Customization	3.770	.254	3.243	.073	
	New customer base	3.361	.250	2.752	.072	
	Overall – Organizational innovation	3.601	.217	3.109	.063	

Summary

This chapter presents the result of statistical analysis and a summary of all

Hypotheses tested was given in Table 4.82

Table 4.82: Summary of all Hypotheses Tested

Hypo	Description	Results
1a	A codification strategy of KM increases efficiency of the value chain	Supported
1b	A codification strategy of KM increases new products/services and quality	Supported
1c	A codification strategy of KM increases speed	Supported
1d	A codification strategy of KM increases customization	Supported
1e	A codification strategy of KM increases new customer base	Supported
2a	A personalization strategy of KM increases efficiency of the value chain	Supported
2b	A personalization strategy of KM increases new products/services and quality	Supported
2c	A personalization strategy of KM increases speed	Supported
2d	A personalization strategy of KM increases customization	Supported
2e	A personalization strategy of KM increases new customer base	Supported
3a	The effect of balance strategy in the efficiency of value chain is greater in large organizations than it is in small-medium organizations.	Supported
3b	The effect of balance strategy in new products/services is greater in large organizations than it is in small-medium organizations.	Supported
3c	The effect of balance strategy in customization is greater in large organizations than it is in small-medium organizations.	Supported
3d	The effect of codification strategy in new customer base is greater in small-medium organizations than it is in large organizations.	Supported
3e	The effect of personalization strategy in speed is greater in large organizations than it is in small-medium organizations.	Supported

(Continued)

Table 4.82 (continued): Summary of all Hypotheses Tested

Hypo	Description	Results
4a	The effect of personalization strategy in organizational innovation is greater in knowledge-intensive service organizations than non knowledge-intensive service organizations.	Supported
4b	The effect of balanced strategy in organizational innovation is greater in knowledge-intensive manufacturing organizations than non knowledge-intensive manufacturing organizations.	Supported
4c	The effect of codification strategy in organizational innovation is greater in non knowledge-intensive service organizations than knowledge-intensive service organizations.	Supported

CHAPTER 5

CONCLUSION AND IMPLICATION

This chapter has three sections. The first section summarizes the study's findings about KM strategy and its effect on organizational innovation. The second section elaborates implications of the results for management, including limitations of the present study. The last section suggests directions for future research.

Summary of Results

Major Findings of the Study

The purpose of this paper was to explore the effect of KM strategy (i.e., codification and personalization) on organizational innovation. The research results indicate that both codification and personalization KM strategies positively and significantly affect organizational innovation. There is positive relationship between codification KM strategy and efficiency of value chain, speed, new products/services and quality. Also, there is a positive relationship between codification vs. personalization KM strategy and customization and new customer base. The industry type and organizational size are intermediary factors in the relationship of KM strategy and organizational innovation.

The results confirm the beliefs of many, and scattered partial support in the literature, and shed a new light on the relationships between KM strategy and organizational innovation. The results also indicate that industry type and organizational size are intermediary factors that influence on the relationship.

<u>Conclusions</u>

This research gives the top management personnel a guide to make more surefooted decisions about which KM strategy to focus for organizational innovation. The effective KM strategy will maximize the benefits of KM implementation and innovation performance of the organization.

1. <u>Managerial Implications</u>

Table 5.1 presents the general guidelines for management concerning KM strategy implementation. As the results indicated that industry type and organizational size are intermediary factors in the relationship of KM strategy and organizational innovation, organizations should pay attention to the selection of the most appropriate KM strategy that best fits with their current organizational characteristics.

Table 5.1: Guideline for Management for KM Strategy Implementation

Non Knowledge-Intensive Manufacturing Industry (NKIM)			
<u>Value Creation Objective</u>	<u>Small Size</u>	<u>Medium Size</u>	<u>Large Size</u>
Efficiency of the value chain	Codification	Codification	Codification
Speed	Codification	Codification	Codification
Customization	Codification	Codification	Codification
New product/service	Codification	Codification	Codification
New customer base	Codification	Codification	Codification
Organizational innovation (overall)	Codification	Codification	Codification

(Continued)

Table 5.1 (continued): Guideline for Management for KM Strategy Implementation

Non Knowledge-Intensive Service Industry (NKIS)			
Value Creation Objective	Small Size	Medium Size	Large Size
Efficiency of the value chain	Codification	Codification	Personalization
Speed	Codification	Codification	Personalization
Customization	Codification	Codification	Personalization
New product/service	Codification	Codification	Personalization
New customer base	Codification	Codification	Personalization
Organizational innovation (overall)	Codification	Codification	Personalization
Knowledge-Intensive Manufacturing Industry (KIM)			
Value Creation Objective	Small Size	Medium Size	Large Size
Efficiency of the value chain	Codification	Codification	Balance
Speed	Codification	Codification	Balance
Customization	Codification	Codification	Balance
New product/service	Codification	Codification	Balance
New customer base	Codification	Codification	Balance
Organizational innovation (overall)	Codification	Codification	Balance
Knowledge-Intensive Service Industry (KIS)			
Value Creation Objective	Small Size	Medium Size	Large Size
Efficiency of the value chain	Personalization	Personalization	Balance
Speed	Personalization	Personalization	Balance
Customization	Personalization	Personalization	Balance
New product/service	Personalization	Codification	Balance
New customer base	Personalization	Personalization	Balance
Organizational innovation (overall)	Personalization	Personalization	Balance

Figure 5.1 presents an overview of KM strategy and associated KM tools and types for organizational innovation (Wan, Zhao, & Guo, 2007)
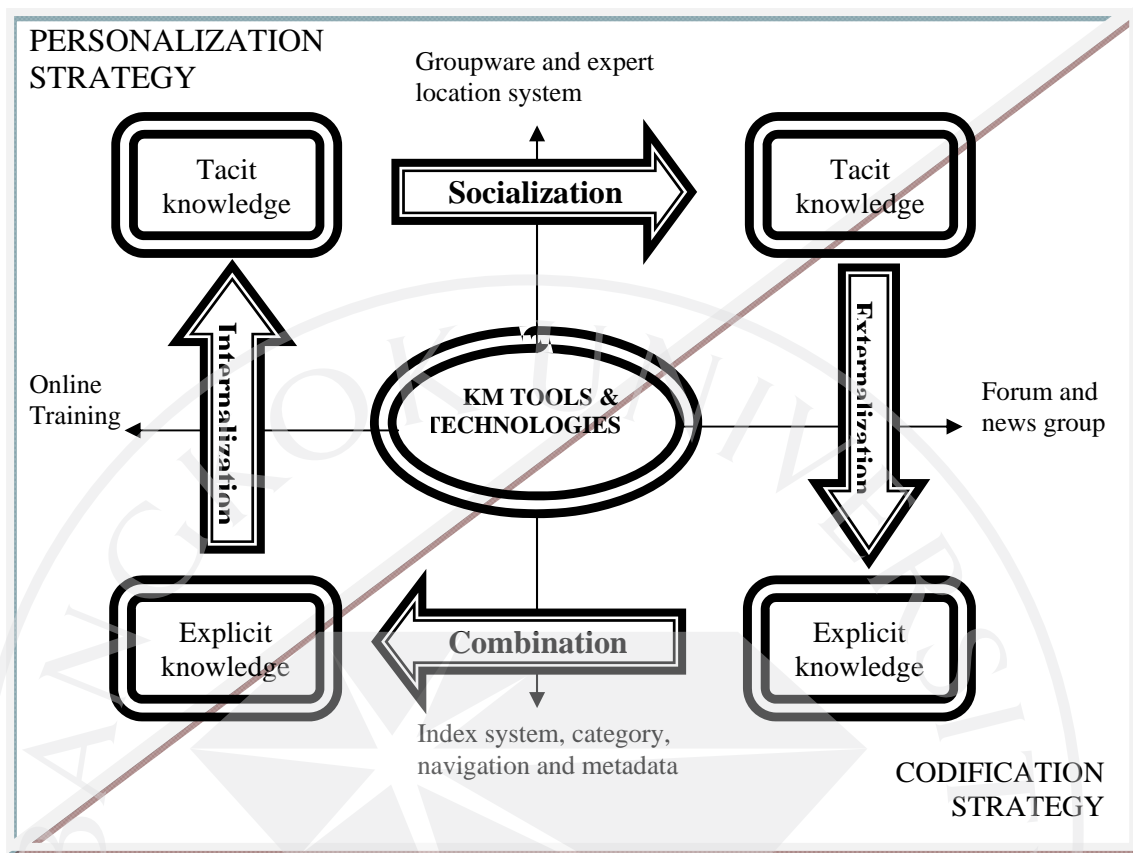
Figure 5.1: KM Strategy and Associated KM Tools for Organizational Innovation

Knowledge transferring model adapted from Wan, Zhao, and Guo (2007)

2. Limitation of the Study and Future Research

Like all research, this study has some limitations. The main limitations related

to the snapshot data of the study. An important shortcoming of this study is the fact

the results are based on the data representing only a snapshot of organizational life.

The relationship between knowledge management strategy and effectiveness of

organizational innovation is developed incrementally throughout the life of an

organization. It could not develop in a short period of time. Although the snapshot

data enabled us to conduct the analysis answer the research questions, it limits our

ability to a trend over time. Therefore, for a robust analysis of the relationship of knowledge management strategy and effectiveness of organizational innovation, longitudinal research is recommended. Furthermore, this type of study should be conducted in several countries or regions to capture a picture of the relationship in different cultures and economic conditions.

This study attempted a more detailed definition and measurement of organizational innovation by providing a typology and different approaches of measuring organizational innovation. Due to the complexity of organizational innovation, this paper did not attempted to design a universally applicable research approach. Rather, this study aimed to get a better understanding about different types of KM strategy for effective organizational innovation. Thus, more research is needed for theoretical conceptualization of organizational innovation under different sets of cultural, economic, and organizational conditions.

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Appendix A:

The name of respondent companies;

Acap Advisory	Newcity (Bangkok)
ACAP Corporate Service	Nittaya Thai Curry Products
Acme Chemical	NT Seimitsu (Thailand)
Advanced Info Service	NT Seimitsu(Thailand)
Advance Information Technology	OGA Syncom
Ageless (Thailand)	P.Fium &Video
Airport of Thailand (AOT)	Pacific Star International (Thailand)
Ampol Food Processing	Pato Chemical Industry
Asdecon corporation	PB Asia
Asia Plus Securities	PC Land Technologies
Asia Space Create (Thailand)	PCBK International
Aviat Networks	Pearl Oil (Thailand) Ltd.
Bangchak Petroleum	Pharmatech
Bangkok Airport Industry	Pricewaterhousecoopers
Bangkok Dusit Medical Services	Pro-En Technologies
Bangkok Property Appraisal	Project Asia
Bank of Ayudhaya	PTT Chemicals
Bayer Thailand (MTP Plant)	Rich Asia Steel
Beker & Mckenzie	Rock Garden
Bertram Chemical (1982)	Sabina Fareast
Betagro Dainippon Techno-EX	Samitivej Hospitals
Brooker Group	Sammakorn
Bumrungrad International Hospital	Sang-Rusmee Osoth
Burapha Dispensary	SC Asset Corporation
Burton Technical Solution	SCG Building Materials
Castle Peak Holdings	SCG Building Materials
CAT Telecom	SCG Chemicals
CDG System	Sea Consulting Engineering
Central Pattana	Seagate Technology (Thailand)
Channakorn Engineering	SEC Auto Sale and Service
CherdChai Kollakarn	Se-Education
Chokechai Ranch Group	Shiroki Corporation (Thailand)
Community Pharmacy Pubic Company	Siam Cement
Consultant of Technology	Siam City Cement
Continental Farm	Siam Commercial Leasing
Country Group Securities	Siam Mongkol Marine
Cox Laboratories	Siam Premier International Law Office
CP All	Sicco

D&T Advisory

Daicel Safety Systems (Thailand).

Daidomon Group

Dframe

Dharmniti Accountitng and Taxation

Dhipaya Insurance

Dinasty ceramic

Direction Plan

East Water

EGCOMP

Ekarat Engineering

Electronics Industry PLC.

Ensol

EPSON (Thailand)

Ernst&Young

Essilor Manufacturing Thailand (EMTC)

Excellent Energy International

Express Transport System

Expressway Authority of Thailand

F.E Pharma

Focus Development and Construction

Focus Mechanic

Furukawa Metal(Thailand)

Genco

General Drugs House

GFPT Public Company Limited

Giant System Design

Giss Marketing

Global Connections

Global Wireless

Globlex Securities

GMS Power

Golden Cup Pharmaceutical

Golden Line Business

Grande Asset Hotels and Property

Gsoft Solutions

Guarantee Engineering

Halcrow(Thailand)

Halcyon Technology

Hicom Automotive(Thailand)

Home Furniture Class

Home Furniture Complex

Siceo Security

Simat Technologies

Singer Thailand

Sirivit-Stanley

SMC Consulting Engineers

SNC Former

Soft Project

Sony Supply Chain Solutions (Thailand)

Southern Concrete Pile

Spansion (Thailand)

Srichand United Dispensary

T.O. Med

TCC Land

Team Consulting Engineeiing and Management

Telephone organization of Thailand (TOT)

Teletrol-One

Thai Airways

Thai Central Mechanic

Thai Edible Oil

Thai German Products

Thai Honda Manufacturing

Thai Kandenco

Thai Meiji Pharmaceutical

Thai Oil

Thai Optical Group

Thai Plaspac

Thai Plastic bags Industries

Thai Plus Technology Plus

Thai President Food

Thai Professional Engineer Consulting

Thai Rayon

Thai Reinsurance

Thai Stanley Electric

Thai strategic capital

Thai Sugar Terminal

Thai union paper

Thai Vegetable Oil

Thai Wacoal

Thaicom

Thailuxe Enterprises

Thanachart Bank

Thanant Chemical

Hongsa Asset	Thanulux
ICC International	Tipco Asphalt
ICP Fertilizer	Thai Military Bank
Imerys Kiln Furniture (Thailand)	Toyota Boshoku Filtration System (Thailand)
Inoue Rubber (Thailand)	TP Drug Laboratory
Integrated Communication	TPI Polene
Inter Consultants Law & Accounting Associates	Transuwan
International Law Consultant (Thailand)	Tricor Outsourcing (Thailand)
International Research Corporation	Tropical Canning (thailand)
IT Consulting	True Corporation
Janome Diecasting (Thailand)	True Move
Kang Yong Electric	True Multimedia
Kasikorn Bank	TSC Innovation
Kasikorn Leasing	Tukcom
Krung Thon Hospital	Ubis Asia
Krungthai Bank	Umeda
Krungthep Thanakom	Union Plastic
Kuang Pei San Food Products	Union Textile
Leo Medical	Univentures
Liha Panich	Universal Polymers Co.,Ltd.
Madison products	U-thong Bio-mass
Management solution international	Vesco Pharmaceutical
Masa Lab	Vibhavadi Hospital
Matching Maximize Solution	Worakarn Property
MCS Steel	Workpoint Entertainment
Minibear	Yess Furniture
Mold Furutani (Thailand)	ZTE (Thailand)
Nestle (Thai)	

Appendix B:

SURVEY QUESTIONNAIRE

KNOWLEDGE MANAGEMENT STRATEGY AND THE EFFECT ON ORGANIZATIONAL INNOVATION: AN EMPIRICAL STUDY OF THAI FIRMS

Dear Respondent:

The objective of this questionnaire is to study the relationships between knowledge management (KM) strategy and effect on organizational innovation. Please take a few minutes to answer all the questions to the best of your ability. Please complete the questionnaire by 30 August, 2010 by mail, fax, or internet. You may complete and return this survey questionnaire in the enclosed postage-paid envelop or fax it. Otherwise, point your web browser to the internet survey at *https://www.surveymonkey.com/s/JL53CDC*. It should take about 15-20 minutes to complete the survey. All responses are anonymous and confidential.

Thank you for your participation

Saweeya Prathanadi

Doctoral Candidate

Ph.D.BA in full cooperation of Bangkok University & University of Nebraska-Lincoln, USA

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E-mail: prpraiya@hotmail.com

A. GENERAL INFORMATION OF THE RESPONDENT & ORGANIZATION

1. Company, Agency and division:

   _____

2. Name (Optional):

   _____

3. Job title:

   _____

4. Position level (Check only one):
   - ☐ Executive
   - ☐ Manager/Director
   - ☐ Technical staff
   - ☐ Support staff
       - ☐ Other (Please specify): _____

5. Industry type:
   - ☐ computer & office automation equipments
   - ☐ Pharmaceutics
   - ☐ Semi-conduct
   - ☐ Scientific instrument
   - ☐ Automobile
   - ☐ Electrical machinery
   - ☐ Chemical engineering
   - ☐ Resources/ Energy
   - ☐ Biotechnology
   - ☐ Telecommunications
   - ☐ Software service
   - ☐ Banking / Insurance
   - ☐ Healthcare service
   - ☐ Consultant service
   - ☐ Legal service
   - ☐ Transportation and logistic
   - ☐ Other (Please specify):_____

6. Main business orientation: ☐ Services and/or ☐ Products

7. Does the company offer ☐ Standardized and/or ☐ Customized products/service?

8. Does the company have a ☐ New/Innovative and/or ☐ Mature product/service?

9. When solving problems, employees rely more on knowledge that is:
   (use% e.g., 20%, 80% Total must be 100%)

   ___ % tacit knowledge (in people's mind)   ___ % explicit (codified/document)

10. Total full-time workforce
    - ☐ <25 people
    - ☐ 26 - 50
    - ☐ 51 - 200
    - ☐ 201 -1,000
    - ☐ >1,000 people

11. Status of KM in your organization
    - ☐ KM in place
    - ☐ Currently setting up KM
    - ☐ Examining need of KM
    - ☐ No program/not considering

12. Does your organization have a Chief Knowledge Officer?
    - ☐ Yes
    - ☐ No
    - ☐ Don't Know

    Yes, but we call _____ for same job description

13. How long have you worked for KM projects in your company?
    __year(s)___month(s)
14. How long have your company been implementing KM projects?
    __year(s)__month(s)
    If you want to receive a copy of the overall survey results once the research has been
    completed, please   mention your email address: _____

B. _KNOWLEDGE MANAGEMENT STRATEGY_

Please circle ○ the most appropriate number for each statement which is truly relative to your present operations.

Which strategy is best described as KM adoption in your organization?	Level of Importance				
	Not Important	_Less Important_	_Average_	_Important_	_Most Important_
1. Knowledge transfer by focusing on IT system	1	2	3	4	5
2. Storing operating knowledge that can be codified in the database	1	2	3	4	5
3. Knowledge resources are used to solve problems in daily operations	1	2	3	4	5
4. Heavy investment for reusable codified knowledge on IT infrastructure	1	2	3	4	5
5. Many occasions for reusing the operating information	1	2	3	4	5
6. Reward system for addition to the knowledge base	1	2	3	4	5
7. Operating knowledge is highly linked with person	1	2	3	4	5
8. Directory of experts for accessing needed information	1	2	3	4	5
9. Frequent transferring of employees among departments	1	2	3	4	5
10. Culture of encouraging interactions among employees	1	2	3	4	5
11. Reward system for knowledge transferring and idea sharing among employees	1	2	3	4	5
12. Considerable portions of training programs involving interactions among employees	1	2	3	4	5

To what extent do you use the listed technologies, practices processes and support tools to help generate, organize, share and leverage knowledge in your organization?	Level of usage				
	Never	_Rarely_	_Sometimes_	_Often_	_Regularly_
1. Email – listserv	1	2	3	4	5
2. Corporate intranet – extranet - internet	1	2	3	4	5
3. Database management systems (DBMS: Oracle, Informix, etc)	1	2	3	4	5
4. Search engines – web portals – intelligent agents – information retrieval systems	1	2	3	4	5
5. Data warehouses – data marts	1	2	3	4	5
6. Web-based training – e-learning – online	1	2	3	4	5

training					
To what extent do you use the listed technologies, practices processes and support tools to help generate, organize, share and leverage knowledge in your organization?	**Level of usage**				
	Never	*Rarely*	*Sometimes*	*Often*	*Regularly*
7. Help-desk applications	1	2	3	4	5
8. Multimedia repositories	1	2	3	4	5
9. Document management system (EDMS)	1	2	3	4	5
10. Content management system (CMS)	1	2	3	4	5
11. Data mining and knowledge discovery tools	1	2	3	4	5
12. Decision support systems (DSS) (Executive Information; Expert Systems)	1	2	3	4	5
13. Knowledge mapping	1	2	3	4	5
14. Web forum – discussion groups - news group	1	2	3	4	5
15. Index system – category	1	2	3	4	5
16. Navigation –metadata	1	2	3	4	5
17. Business intelligence (BI)	1	2	3	4	5
18. Taxonomies	1	2	3	4	5
19. Expertise locators – corporate yellow pages – who's who – directory of expertise	1	2	3	4	5
20. Communities of practice (CoP's) - communities of interest (CoI's)	1	2	3	4	5
21. Brainstorming – peer interaction/conversation	1	2	3	4	5
22. Groupware (as a collaborative tool e.g. Lotus Notes)	1	2	3	4	5
23. Teleconferencing (shared applications, whiteboards)	1	2	3	4	5
24. Lessons learned & best practices repository	1	2	3	4	5
25. Videoconferencing (using audio and/or video)	1	2	3	4	5
26. Mentoring – tutoring	1	2	3	4	5
27. Story telling – success story sharing (SSS)	1	2	3	4	5
28. After action review (AAR)	1	2	3	4	5
29. Dialogue	1	2	3	4	5
30. Online chat & instant messaging (IM)	1	2	3	4	5
31. Weblogs (Blogs)	1	2	3	4	5
32. Wikis	1	2	3	4	5
33. Rich site summary (RSS)	1	2	3	4	5
34. Social network analysis (SNA)	1	2	3	4	5
35. Social bookmarking	1	2	3	4	5
36. Folksonomies - tagging	1	2	3	4	5

C. *EFFECTIVENESS OF ORGANIZATIONAL INNOVATION*

Please circle ○ the most appropriate number for each statement which is truly relative to your present operations.

Which are the results from your KM implementation?	Level of Achievement				
	0%-20%	21%-40%	41%-60%	61%-80%	81%-100%
1. Productivity enhancement	1	2	3	4	5
2. Improving employee skills and competency	1	2	3	4	5
3. Lower cost incurred	1	2	3	4	5
4. Increase of sales/ profit growth rate/ return on investment	1	2	3	4	5
5. Better decision making	1	2	3	4	5
6. Faster response to key business issues	1	2	3	4	5
7. Reduction of problem solving time	1	2	3	4	5
8. Better customer handling eg. reduction of customer complaints	1	2	3	4	5
9. Improving product/ service quality	1	2	3	4	5
10. New enterprise system	1	2	3	4	5
11. Better selection, coordination, communication with suppliers	1	2	3	4	5
12. E-purchasing	1	2	3	4	5
13. Inventory reduction by produce only what is required, in the correct quantity and at the correct time	1	2	3	4	5
14. Transformation by eliminating waste e.g. error, delay, defect and non-value added activities	1	2	3	4	5
15. Streamlining the distribution channel eg. disintermediation	1	2	3	4	5
16. Providing speed/ responding almost instantaneously to customer needs	1	2	3	4	5
17. Innovative product or service launched	1	2	3	4	5
18. New ways of doing old tasks in a much improved manner	1	2	3	4	5
19. New business model	1	2	3	4	5
20. Providing superior customer value e.g. additional functions, convenience, space, saver, enjoyment, comfort, feeling of security	1	2	3	4	5
21. Providing exactly or beyond customers' expectations	1	2	3	4	5
22. Ability to satisfy customers' needs	1	2	3	4	5
23. Retaining and better satisfying existing customers	1	2	3	4	5
24. Customer relationship management : CRM	1	2	3	4	5
25. Customer designed products	1	2	3	4	5
26. New customer base	1	2	3	4	5
27. Customer communities	1	2	3	4	5
28. Ability to service customer online (e-customers)	1	2	3	4	5
29. Ability to support global customer	1	2	3	4	5
30. global e-business	1	2	3	4	5

<div align="center">

แบบสอบถาม

KNOWLEDGE MANAGEMENT STRATEGY AND EFFECT ON ORGANIZATIONAL INNOVATION: AN EMPIRICAL STUDY OF THAI FIRMS

</div>

คำชี้แจงเกี่ยวกับแบบสอบถาม

แบบสอบถามนี้เป็นส่วนหนึ่งของการวิจัยเรื่อง "กลยุทธ์ในการจัดการความรู้และผลของนวัตกรรมด้านการบริหาร จัดการองค์กร: การศึกษาเชิงประจักษ์ของบริษัทในประเทศไทย" (Knowledge Management Strategy and Effect of Organizational Innovation: An Empirical Study of Thai Firms) วิจัยโดยนักศึกษาปริญญาเอกด้าน บริหารธุรกิจ มหาวิทยาลัยกรุงเทพ และ University of Nebraska-Lincoln ประเทศสหรัฐอเมริกา

งานวิจัยนี้มีวัตถุประสงค์เพื่อศึกษากลยุทธ์ในการจัดการความรู้และประสิทธิผลของนวัตกรรมด้านการบริหาร จัดการองค์กร ซึ่งงานวิจัยนี้จะช่วยให้องค์กรธุรกิจต่างๆ สามารถเลือกวิธีการหรือกลยุทธ์ที่จะดำเนินการด้าน จัดการความรู้ภายในองค์กรได้อย่างเหมาะสมและมีโอกาสที่จะทำให้องค์กรประสบความสำเร็จโดยมีนวัตกรรม ใหม่ในการบริหารจัดการองค์กร

คำตอบของท่านมีความสำคัญอย่างมากต่อความสำเร็จของงานวิจัย จึงขอความกรุณาช่วยสละเวลาตอบแบบ สอบ ถามทุกข้อ และโปรดส่งแบบสอบถามกลับทางจดหมาย ซึ่งได้ส่งซองจดหมายพร้อมติดแสตมป์ไว้ให้แล้ว หรือส่งกลับทางโทรสาร หรือตอบแบบสอบถามทางอินเตอร์เน็ต โดยเข้าไปที่ https://www.surveymonkey.com/s/JL53CDC

การตอบแบบสอบถามนี้ใช้เวลาประมาณ 15-20 นาที และกรุณาส่งแบบสอบถามกลับมาภายในวันที่ 25 กันยายน 2553 จะเป็นพระคุณยิ่ง ข้อมูลทุกอย่างในแบบสอบถามจะถูกเก็บเป็นความลับ

ขอบพระคุณอย่างสูงที่ให้ความร่วมมือ

สวียา ปรารถนาดี
นักศึกษาปริญญาเอก
โทรศัพท์มือถือ: 080-088-0855
โทรสาร: 02-733-7808 ต่อ 715
prpraiya@hotmail.com

<u>ตอนที่ 1 ข้อมูลทั่วไปของผู้ตอบแบบสอบถามและองค์กร</u>

1. กรุณาให้ข้อมูลดังต่อไปนี้

    ชื่อบริษัทของท่าน _____

    แผนกที่ท่านทำงาน _____

    ชื่อตำแหน่งงานของท่าน _____

2. ตำแหน่งงานของท่านอยู่ในระดับใด

☐ ผู้บริหารระดับสูง   ☐ พนักงานฝ่ายสนับสนุน/ ปฏิบัติการ

☐ ผู้อำนวยการ/ผู้จัดการ   ☐ อื่นๆ (โปรดระบุ)_____

☐ พนักงานฝ่ายเทคนิค

3. องค์กรของท่านอยู่ในอุตสาหกรรมประเภทใด

☐ คอมพิวเตอร์และอุปกรณ์   ☐ เทคโนโลยีสารสนเทศและการ
    สำนักงาน   สื่อสาร

☐ ยา/ เครื่องมือแพทย์   ☐ ซอฟต์แวร์

☐ ชิ้นส่วนอิเล็กทรอนิกส์/สารกึ่งตัวนำ   ☐ การเงิน/ ธนาคาร/ ประกันภัย

☐ อุปกรณ์เครื่องมือทางวิทยาศาสตร์   ☐ บริการทางการแพทย์

☐ ยานยนต์   ☐ บริการให้คำปรึกษา

☐ เครื่องจักรไฟฟ้า   ☐ บริการทางกฎหมาย

☐ ปิโตรเคมีและเคมีภัณฑ์   ☐ การขนส่งและโลจิสติกส์

☐ พลังงานและสาธารณูปโภค   ☐ อื่นๆ (โปรดระบุ)

☐ อสังหาริมทรัพย์และก่อสร้าง   _____

☐ เทคโนโลยีชีวภาพ

4. องค์กรของท่านดำเนินงานหลัก (Main business orientation) เกี่ยวกับข้อใด

☐ สินค้า   ☐ บริการ

5. สินค้าหรือบริการขององค์กรของท่านมีลักษณะเป็นอย่างไร

☐ สินค้าหรือบริการมาตรฐาน (Standardized products/services)

☐ สินค้าหรือบริการพิเศษที่เพิ่มหรือลดตามความต้องการของลูกค้า (Customized products/services)

6. องค์กรท่านมีสินค้าหรือบริการเป็นไปตามข้อใด

☐ เป็นสินค้าหรือบริการที่มีมานาน (Mature)

☐ เป็นสินค้าหรือบริการที่ออกใหม่/ คิดขึ้นมาใหม่ (New / Innovative)

7. เพื่อแก้ปัญหาในการปฏิบัติงาน พนักงานในองค์กรเชื่อถือและใช้ความรู้ประเภทต่างๆต่อไปนี้เป็น สัดส่วนเท่าใด (เช่น 20%, 80% ผลรวมของทั้ง 2 ประเภทต้องเท่ากับ 100%)

%

7.1 *ความรู้แบบฝังลึก (Tacit Knowledge)* เป็นความรู้ที่แฝงอยู่ในตัวคน เป็นภูมิปัญญา มีรากฐาน มาจากการกระทำและประสบการณ์ที่สั่งสมมายาวนาน ต้องการการฝึกฝนเพื่อให้เกิดความชำนาญ

7.2 *ความรู้ชัดแจ้ง (Explicit Knowledge)* เป็นความรู้ที่กระจ่างชัด รวบรวมได้ง่าย สามารถสกัดเป็น ความรู้ที่นำไปปฏิบัติเผยแพร่ได้ในรูปแบบที่เป็นทางการที่เข้าถึงได้ทุกคน เช่น เอกสาร และคู่มือ ปฏิบัติงาน

8. องค์กรของท่านมีพนักงานที่ทำงานเต็มเวลาจำนวนเท่าใด

- ☐ ไม่เกิน 25 คน
- ☐ 51-200 คน
- ☐ มากกว่า 1,000 คน
- ☐ 26 – 50 คน
- ☐ 201-1,000 คน

9. สถานะเกี่ยวกับการจัดการความรู้ (Knowledge Management: KM) ในองค์กรของท่านเป็นอย่างไร

- ☐ มีการจัดการความรู้ในองค์กร
- ☐ กำลังพิจารณาความต้องการให้มีจัดการ
- ☐ อยู่ระหว่างการริเริ่มโครงการจัดการ ความรู้
- ความรู้
- ☐ ไม่มี

10. องค์กรของท่านมีผู้ดำรงตำแหน่งผู้บริหารด้านการจัดการความรู้ (Chief Knowledge Officer: CKO) หรือไม่

- ☐ มี
- ☐ ไม่มี
- ☐ ไม่ทราบ
- ☐ มี ลักษณะงานเหมือนกัน แต่เรียกผู้รับผิดชอบงานนี้ว่า_____

11. กรุณาตอบคำถามต่อไปนี้

ท่านทำงานให้กับโครงการจัดการความรู้ขององค์กรเป็นระยะเวลา _____ปี_____เดือน เท่าใด

องค์กรของท่านได้ดำเนินการโครงการจัดการความรู้เป็นระยะเวลา _____ปี_____เดือน เท่าใด

12. หากท่านมีความสนใจและต้องการผลของการวิจัยเมื่อแล้วเสร็จ กรุณาแจ้งอีเมลล์ของท่าน

_____

ตอนที่ 2 กรุณาตอบคำถามตามความเห็นที่ตรงกับองค์กรของท่าน (วงกลมเพียง 1 ข้อต่อ 1 คำถาม)

KNOWLEDGE MANAGEMENT STRATEGY					
2.1 จงบอกระดับความสำคัญของกลยุทธ์ต่อไปนี้ ที่แสดงให้เห็น ถึงการนำระบบการจัดการความรู้ไปใช้ภายในองค์กรของท่านได้ ดีที่สุด	ระดับความสำคัญ				
	ไม่ สำคัญ	สำคัญ น้อย	สำคัญ ปานกลาง	สำคัญ มาก	สำคัญ มาก ที่สุด
1. องค์กรใช้ระบบเทคโนโลยีสารสนเทศหรือระบบคอมพิวเตอร์เพื่อ การแบ่งปันความรู้ (Knowledge Transfer) ให้กับพนักงานภายใน องค์กร	1	2	3	4	5
2. องค์กรจัดเก็บความรู้เกี่ยวกับการปฏิบัติงานซึ่งแฝงเร้นในตัว พนักงานโดยแปลงมาเป็น *"ความรู้ที่นำไปปฏิบัติเผยแพร่ได้ (Codified Knowledge)"* ไว้ในฐานข้อมูลเพื่อแบ่งปันให้กับคนอื่น สามารถเรียนรู้ได้	1	2	3	4	5
3. วิธีการแก้ไขปัญหาที่เกิดขึ้นในการปฏิบัติงานในแต่ละวัน ได้นำมา จากคลังข้อมูลความรู้ขององค์กร (Knowledge Resources)	1	2	3	4	5
4. องค์กรได้ลงทุนเป็นจำนวนมากเพื่อที่จะสามารถนำ *"ความรู้ที่นำไป ปฏิบัติเผยแพร่ได้ (Codified Knowledge)"* มาใช้งานได้บนระบบ เทคโนโลยีสารสนเทศ	1	2	3	4	5
5. องค์กรเล็งเห็นว่า*"ความรู้ที่นำไปปฏิบัติเผยแพร่ได้ (Codified Knowledge)"* มีโอกาสที่จะนำมาใช้ประโยชน์ซ้ำได้	1	2	3	4	5
6. องค์กรมีระบบการให้รางวัล (Reward System) เพื่อส่งเสริมให้ พนักงานเพิ่มเติมความรู้ที่ตนมีลงในฐานความรู้ขององค์กร (Knowledge Base)	1	2	3	4	5
7. ความรู้ในการปฏิบัติงานขององค์กรส่วนใหญ่ มีลักษณะเชื่อมโยง ติดกับตัวบุคคลสูงมาก กล่าวคือเป็นความรู้แฝงเร้นอยู่ในคนทำงาน และผู้เชี่ยวชาญในแต่ละเรื่อง	1	2	3	4	5
8. องค์กรได้รวบรวมรายชื่อผู้เชี่ยวชาญในด้านต่างๆ เพื่อให้พนักงาน ได้รับข้อมูลที่ต้องการโดยเข้าถึงตัวบุคคลซึ่งเป็นผู้เชี่ยวชาญได้ อย่างถูกต้อง	1	2	3	4	5
9. องค์กรมักให้พนักงานมีการหมุนเวียนงาน (Rotation)	1	2	3	4	5
10. องค์กรมีวัฒนธรรมที่ส่งเสริมให้พนักงานมีปฏิสัมพันธ์ สื่อสารกันและ กัน	1	2	3	4	5
11. องค์กรมีระบบการให้รางวัลเพื่อส่งเสริมให้พนักงานมีการถ่ายทอด ความรู้และแลกเปลี่ยนความคิดซึ่งกันและกัน	1	2	3	4	5
12. องค์กรมีโปรแกรมการฝึกอบรมที่เน้นให้พนักงานมีปฏิสัมพันธ์ต่อ กัน	1	2	3	4	5

2.2 องค์กรได้นำเครื่องมือและเทคโนโลยีต่างๆ ต่อไปนี้มาใช้ใน การสร้าง แบ่งปัน จัดเก็บและจัดการความรู้ มากน้อยเพียงใด	ระดับการใช้งาน				
	ไม่ได้ ใช้	ใช้ น้อย มาก	ใช้เป็น บางครั้ง	ใช้ บ่อย	ใช้เป็น ประจำ
1. Email (จดหมายอิเล็กทรอนิกส์) - listserv (การใช้งานผ่านอีเมล์ ซึ่ง ส่งไปยังผู้ใช้ได้เป็นกลุ่ม สนทนาและแลกเปลี่ยนความคิดเห็นกันได้)	1	2	3	4	5
2. Corporate intranet (เครือข่ายภายในองค์กร) – extranet (เครือข่ายภายนอกองค์กร) – internet (เครือข่ายสากล)	1	2	3	4	5
3. Database management systems: DBMS (ระบบบริหาร ฐานข้อมูล)	1	2	3	4	5
4. Search engines – intelligent agents –web portals– information retrieval systems (เครื่องมือที่ช่วยในการค้นหาต่างๆ)	1	2	3	4	5
5. Data warehouses (**คลังข้อมูล**) – data marts (คลังข้อมูลย่อย ระดับแผนก)	1	2	3	4	5
6. Web-based training (บทเรียนคอมพิวเตอร์ช่วยอบรมบน เว็บไซต์) – e-learning (การเรียนรู้ทางไกลผ่านสื่ออิเล็กทรอนิกส์) - Online training (การอบรมออนไลน์)	1	2	3	4	5
7. Help-desk applications (ระบบศูนย์กลางความช่วยเหลือในการ รวบรวมปัญหาและคำถามทางด้าน IT ขององค์กรและจัดการกับ งานบริการที่ถูกขอเข้ามา)	1	2	3	4	5
8. Multimedia repositories (คลังจัดเก็บมัลติมีเดีย เช่น ภาพถ่าย, รูปภาพ, วิดีโอ, ภาพยนตร์ ตลอดจนเสียงตามสาย ระบบโทรทัศน์ ภายในองค์กร)	1	2	3	4	5
9. Document management system: EDMS (ระบบจัดเก็บ เอกสารอิเล็กทรอนิกส์)	1	2	3	4	5
10. Content management system: CMS (ระบบการจัดการ เนื้อหา)	1	2	3	4	5
11. Data mining (การทำเหมืองข้อมูล)- Knowledge discovery (การหาวิธีเข้าถึงข้อมูลที่ไม่เคยเข้าได้มาก่อน ให้อยู่ในรูปแบบที่ เข้าถึงได้ทุกคน)	1	2	3	4	5
12. Decision Support Systems: DSS; Executive Information Systems; Expert Systems (ระบบสนับสนุนการตัดสินใจ โดย ใช้คอมพิวเตอร์ทำงานโต้ตอบกับผู้ใช้เพื่อช่วยค้นหาข้อมูลเพื่อการ บริหารและตัดสินใจ)	1	2	3	4	5
13. Knowledge mapping (แผนที่ความรู้ ระบุแหล่งบุคคลที่มีความรู้ ขององค์กร รวมทั้งองค์ความรู้ใดสำคัญและจำเป็นสำหรับองค์กร)	1	2	3	4	5

2.2 องค์กรได้นำเครื่องมือและเทคโนโลยีต่างๆ ต่อไปนี้มาใช้ใน การสร้าง แบ่งปัน จัดเก็บและจัดการความรู้ มากน้อยเพียงใด	ระดับการใช้งาน				
	ไม่ได้ ใช้	ใช้ น้อย มาก	ใช้เป็น บางครั้ง	ใช้ บ่อย	ใช้เป็น ประจำ
14. Web forum – discussion groups - news group (กระดานข่าว ใช้ในการตั้งกระทู้ถามตอบปัญหาในลักษณะของการสนทนา)	1	2	3	4	5
15. Index system – Category (ระบบดัชนีและจัดหมวดหมู่)	1	2	3	4	5
16. Business Intelligence :BI (ธุรกิจอัจฉริยะ; ระบบวิเคราะห์ และ การตัดสินใจทางธุรกิจ โดยการใช้ข้อมูลที่มีอยู่ได้อย่างอัจฉริยะ)	1	2	3	4	5
17. Taxonomies (อนุกรมวิธาน; การจัดสารบบความรู้เป็นหมวดหมู่ ที่มีคนในวิชาชีพเป็นผู้กำหนด เอื้อต่อการเข้าถึงสารสนเทศที่ ต้องการ)	1	2	3	4	5
18. Navigation (ระบบนำทาง) –Metadata (รูปแบบการจัดการเว็บ ด้วยการนำข้อมูลมาอธิบายรายละเอียดของอีกข้อมูลได้ (Data about data) เพื่อช่วยในการสืบค้น และง่ายในการเข้าถึงองค์ ความรู้ใหม่ๆ)	1	2	3	4	5
19. Expertise locators – corporate yellow pages – who's who (ทำเนียบผู้รู้)	1	2	3	4	5
20. Communities of practice/ purpose : CoPs (ชุมชนเครือข่าย นักปฏิบัติ) -Communities of interest : CoI's (ชุมชนที่มีความ สนใจร่วมกัน)	1	2	3	4	5
21. Brainstorming – peer interaction/conversation (การระดม สมองและสนทนา ระหว่างเพื่อนร่วมงาน)	1	2	3	4	5
22. Groupware (ระบบที่สนับสนุนการทำงานร่วมกันเป็นกลุ่มผ่าน เครือข่ายในการติดต่อสื่อสารและแบ่งปันข้อมูล เช่น Lotus Notes)	1	2	3	4	5
23. Teleconference (การประชุมทางไกล) / Desktop Computer Teleconference (การประชุมทางไกลด้วยคอมพิวเตอร์)	1	2	3	4	5
24. Lessons learned & Best practices repository (บทเรียนจาก ข้อผิดพลาดและวิธีปฏิบัติที่เป็นเลิศ)	1	2	3	4	5
25. Videoconferencing (การประชุมทางไกล ด้วยเสียงและภาพ) - Audio conferencing (การประชุมทางไกลแบบได้ยินเสียงอย่าง เดียว)	1	2	3	4	5
26. Mentoring – tutoring (ระบบพี่เลี้ยงและการให้คำปรึกษา)	1	2	3	4	5
27. Story telling & Success story sharing: SSS (การเล่าเรื่อง)	1	2	3	4	5

2.2 องค์กรได้นำเครื่องมือและเทคโนโลยีต่างๆ ต่อไปนี้มาใช้ใน การสร้าง แบ่งปัน จัดเก็บและจัดการความรู้ มากน้อยเพียงใด	ระดับการใช้งาน				
	ไม่ได้ ใช้	ใช้ น้อย มาก	ใช้เป็น บางครั้ง	ใช้ บ่อย	ใช้ เป็น ประ จำ
28. After action review :AAR (การทบทวนหลังปฏิบัติงาน)	1	2	3	4	5
29. Dialogue (สุนทรียสนทนาหรือเสวนา)	1	2	3	4	5
30. Online chat & instant messaging (การสื่อสารระหว่างบุคคล บนเครือข่าย)	1	2	3	4	5
31. Weblogs **หรือ** Blogs (การบันทึกบทความของตนเองลงบน เว็บไซต์ เช่น มุมมองในการทำงาน หรือเป็นบทความเฉพาะด้าน ต่างๆ)	1	2	3	4	5
32. Wikis ("วิกิ" เปิดโอกาสให้สร้างสารานุกรมออนไลน์ร่วมกัน ผู้ใช้มี สิทธิ์ในการเพิ่มและแก้ไขในเนื้อหาได้โดยเสรี	1	2	3	4	5
33. Rich site summary: RSS (บริการดึงหัวข้อข่าวจากเว็บไซต์ ต่างๆ ในรูปแบบ xml และ ข้อมูลข่าวสารใหม่ๆ จะส่งถึง ตลอดเวลาที่มีการ Update จากเว็บไซต์ต้นฉบับ)	1	2	3	4	5
34. Social Network Analysis : SNA (การวิเคราะห์เครือข่ายทาง สังคมเพื่อให้ทราบถึงผู้เชี่ยวชาญ ผู้เป็นตัวกลางเชื่อมต่อความรู้ ให้แก่กลุ่มหรือชุมชนเครือข่ายได้)	1	2	3	4	5
35. Social bookmarking (บริการบนเว็บไซต์ที่แบ่งปันการค้นหน้า และจัดหมวดหมู่ลิงค์เชื่อมโยงในอินเทอร์เน็ตที่น่าสนใจ)	1	2	3	4	5
36. Folksonomies – Social tagging (ปัจเจกวิธาน; การจัด หมวดหมู่แห่งสรรพสิ่งที่ผู้ใช้สนใจ และกำหนดคำค้นโดยผู้ใช้เป็น ผู้กำหนดเอง)	1	2	3	4	5

ตอนที่ 3 กรุณาตอบคำถามตามความเห็นที่ตรงกับองค์กรของท่าน (วงกลมเพียง 1 ข้อต่อ 1 คำถาม)

ORGANIZATIONAL INNOVATION					
3.1 จงบอกระดับความสำเร็จของผลลัพธ์ต่อไปนี้ซึ่งได้รับจาก การดำเนินงานด้านการจัดการความรู้ในองค์กรของท่าน	ระดับความความสำเร็จ				
	0%- 20%	21%- 40%	41%- 60%	61%- 80%	81%- 100%
1. ขีดความสามารถในการผลิตหรือให้บริการ (Productivity)สูงขึ้น	1	2	3	4	5
2. พนักงานมีทักษะและความสามารถเพิ่มขึ้น	1	2	3	4	5
3. ความสามารถในการลดต้นทุน/ควบคุมต้นทุนได้	1	2	3	4	5
4. การเพิ่มขึ้นของรายได้ / อัตรากำไร / ผลตอบแทนจากการลงทุน	1	2	3	4	5

3.1 จงบอกระดับความสำเร็จของผลลัพธ์ต่อไปนี้ซึ่งได้รับจาก การดำเนินงานด้านการจัดการความรู้ในองค์กรของท่าน	ระดับความความสำเร็จ				
	0%-20%	21%-40%	41%-60%	61%-80%	81%-100%
5. การตัดสินใจดีขึ้น	1	2	3	4	5
6. ความสามารถในการตอบสนองต่อปัญหาทางธุรกิจต่างๆได้เร็วขึ้น	1	2	3	4	5
7. ความรวดเร็วในการแก้ไขปัญหา	1	2	3	4	5
8. ความสามารถในการจัดการดูแลลูกค้า เช่น คำร้องเรียนจากลูกค้าลดลง	1	2	3	4	5
9. การปรับปรุงคุณภาพของสินค้าและหรือบริการ	1	2	3	4	5
10. การมีระบบใหม่ในองค์กร (New enterprise system)	1	2	3	4	5
11. การคัดเลือก ติดต่อประสานงาน และสื่อสารกับผู้ขายได้ดีขึ้น	1	2	3	4	5
12. การมีระบบจัดซื้ออิเล็กทรอนิกส์ (e – Purchasing) บริหารงานด้านเอกสารการจัดซื้อและอำนวยความสะดวกให้กับผู้ใช้งานในการจัดซื้อแต่ละครั้ง	1	2	3	4	5
13. ความสามารถในการใช้ระบบการจัดส่งสินค้าและผลิตแบบทันเวลาพอดี (Just - in - time system)	1	2	3	4	5
14. ความสามารถในการกำจัดเวลาและความสูญเปล่า ตั้งแต่การจัดหา การผลิต/ให้บริการ การจัดส่ง การกำจัดของเสีย เข้าไว้ด้วยกัน (Lean supply chain)	1	2	3	4	5
15. การลดขั้นตอนการมีคนกลางในระบบธุรกิจ (Disintermediation)	1	2	3	4	5
16. ความรวดเร็วของการผลิตสินค้า/ ขนส่งสินค้า /ส่งมอบบริการ/ตอบสนองความต้องการของลูกค้าได้ทันท่วงที	1	2	3	4	5
17. การมีนวัตกรรมด้านสินค้าหรือบริการใหม่ๆ	1	2	3	4	5
18. การมีวิธีการทำงานใหม่ๆสำหรับงานที่มีอยู่เดิมในลักษณะที่เห็นถึงการปรับปรุง	1	2	3	4	5
19. การมีรูปแบบธุรกิจใหม่ (New business model)	1	2	3	4	5
20. การจัดหาคุณค่าในสินค้าหรือบริหารใหม่ๆที่เหนือกว่าเดิมให้แก่ลูกค้า เช่น การเพิ่มฟังก์ชั่น พื้นที่ ความประหยัด ความสะดวกสบาย ความปลอดภัย เป็นต้น	1	2	3	4	5
21. การจัดหาสินค้าหรือบริหารใหม่ๆที่ตรงหรือเหนือกว่าที่ลูกค้าคาดหวัง	1	2	3	4	5

3.1 จงบอกระดับความสำเร็จของผลลัพธ์ต่อไปนี้ซึ่งได้รับจากการดำเนินงานด้านการจัดการความรู้ในองค์กรของท่าน	ระดับความความสำเร็จ				
	0%-20%	21%-40%	41%-60%	61%-80%	81%-100%
22. ความสามารถในการทำให้ลูกค้าพึงพอใจในสิ่งที่ต้องการ	1	2	3	4	5
23. ความสามารถรักษาลูกค้าเดิมและทำให้ลูกค้าเหล่านี้มีความพึงพอใจยิ่งขึ้น	1	2	3	4	5
24. การใช้เทคโนโลยีและใช้บุคลากรสร้างความสัมพันธ์กับลูกค้า (CRM) เช่น ระบบรองรับการบริการลูกค้า การบริหารการขาย และระบบลูกค้าสัมพันธ์ (Call Center)	1	2	3	4	5
25. การนำความเห็นจากลูกค้ามามีส่วนร่วมในการออกแบบสินค้าหรือบริการให้ตรงกับความต้องการ (Customer designed products)	1	2	3	4	5
26. การมีฐานลูกค้ากลุ่มใหม่	1	2	3	4	5
27. การมีกลุ่มชุมชนลูกค้า (customer communities) ที่ใช้สินค้าหรือบริการของบริษัท	1	2	3	4	5
28. การบริการลูกค้าทางเวปไซต์ (e-customers)	1	2	3	4	5
29. การมีบริการลูกค้าทั่วโลก (Global customer)	1	2	3	4	5
30. การทำธุรกรรมทุกขั้นตอนผ่านสื่ออิเล็กทรอนิกส์ เช่น การซื้อขาย การติดต่อประสานงาน รวมถึงกิจกรรมต่างๆที่เกิดขึ้นภายในสำนักงาน (e-Business)	1	2	3	4	5

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