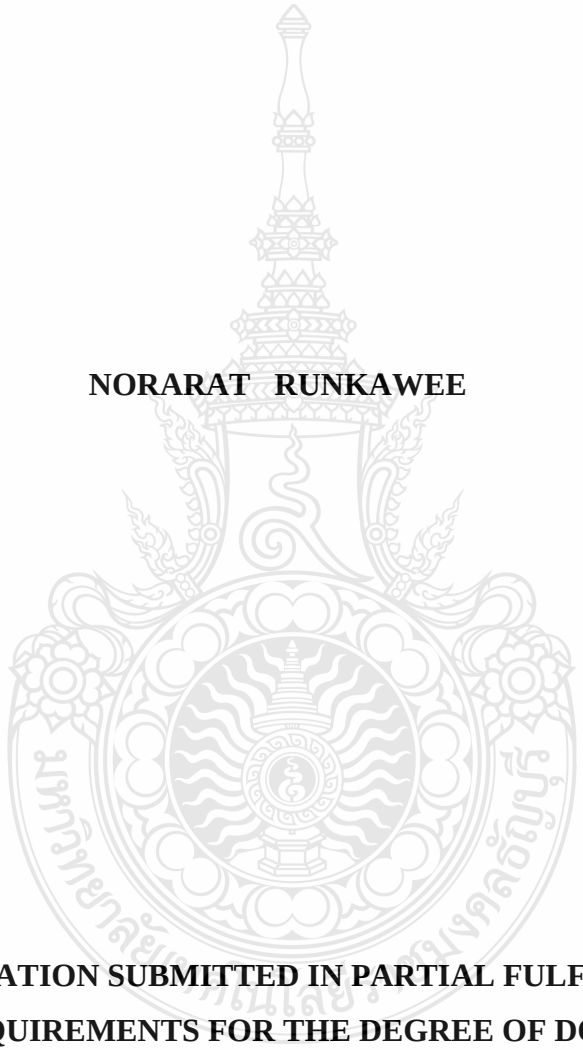
THE EFFECTS OF INNOVATIVENESS AND LEARNING ORIENTATION ON FIRM PERFORMANCE

NORARAT RUNKAWEE



A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY PROGRAM IN BUSINESS ADMINISTRATION FACULTY OF BUSINESS ADMINISTRATION RAJAMANGALA UNIVERSITY OF TECHNOLOGY THANYABURI ACADEMIC YEAR 2015

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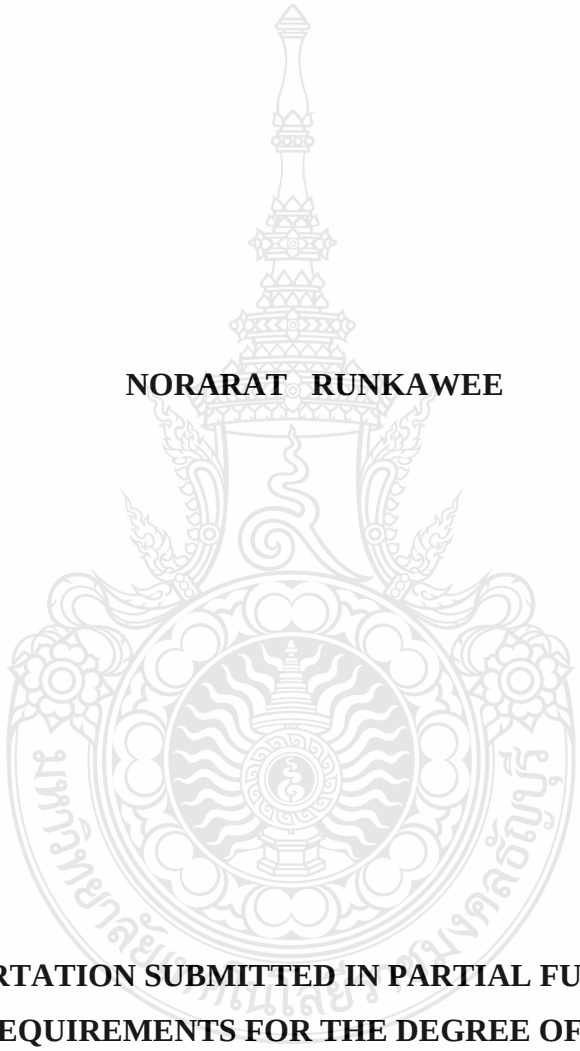

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Dissertation Title	The Effects of Innovativeness and Learning Orientation on Firm Performance
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Program	Business Administration
Dissertation Advisor	Associate Professor Chanongkorn Kuntonbutr, D.B.A.
Academic Years	2015

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April 22, 2016

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ABSTRACT

The purpose of this study was to investigate the effects of learning orientation on innovativeness and firm performance, the effects of innovativeness on firm performance, and the effects of the elements of learning orientation relationships on innovativeness and firm performance in the electronic/electrical industry. Learning orientation is comprised of commitment to learning, shared vision, open-mindedness, and intra-organizational knowledge sharing, whereas innovativeness consists of product innovation and process innovation. In this study, the return on assets (ROA) was obtained from firms' financial statements, and two measurement models were used.

The unit of this study was at the firm level with the focus on factory managers or manufacturing managers in the electronic/electrical product and parts industry in Thailand. Later, one hundred and eighty samples were obtained based on a simple random sampling method. The population sample came from the database of the Department of Export Promotion, Ministry of Commerce of Thailand. Then, the simple random sampling was applied, and data were analyzed based on descriptive statistics and Structure Equation Modeling.

The findings revealed two results from the global model and the specific model. According to the global model obtained from the financial statements, learning orientation had effects on innovativeness, but learning orientation and innovativeness had no effects on firm performance. The ROA did not have any effects on the business operation because it required more time to get the result when the longitudinal period was considered. According to the specific model obtained from the same financial statement data, the elements of learning orientation, including the commitment to learning, shared vision, open-mindedness and intra-organizational knowledge sharing, were measured with innovativeness and firm performance. It was found that the

commitment to learning, shared vision and intra-organizational knowledge sharing had effects on innovativeness, but open-mindedness had no effects on innovativeness. Additionally,the commitment to learning, shared vision, and open-mindedness had no effects on firm performance, and only intra-organizational knowledge sharing had effects on firm performance. The intra-organizational knowledge sharing was considered important to the elements of learning orientation necessary for ROA, which means that a good level of the intra-organizational knowledge sharing should be considered a priority because it would increase the performance on the ROA as well.

Keywords: learning orientation, innovativeness, firm performance (ROA)

Acknowledgement

I would like to express greatly appreciation to Associate Professor Dr.Wai Chamornmarn, who really supported and gave me valuable inspiration to proceed with this dissertation during hard times till its completion. In addition, I wish to express my appreciation to Associate Professor Dr.Chanongkorn Kuntonbutr, Dr.Meta Suteraroj, Associate Professor, Dr.Netpanna Yaviratch, and Dr.Krisada Chienwattanasook for their valuable suggestions. I am extremely grateful for comments and suggestions in statistical analyses from Assistant Professor Dr.Sungworn Ngudgratoke and Dr.Duangporn Puttawong. I wish to express my appreciation to Assistant Professor Dr.Supa Tongkong and Assistant Professor Dr.Napaporn Nilapornkul for her valuable suggestions and encouragement. Besides, I would like to thank the staff members from Faculty of Business Administration, Rajamangala University of Technology Thanyaburi.

I was very fortunate to have many help from colleague at the Faculty of Business Administration at Rajamangala University of Technology Isan at Nakornratchasima. I wish to express my appreciation to Associate Professor Dr.Vinij Choatsawang, Associate Professor Dr.Suwattana Tungsawat, Assistant Professor Pornpimol Tanprawat, Associate Professor Suratin Preungvate, Assistant Professor Dr.Saowaluk Jitnoom, and Dr.Patima Tanimkarn for their suggestions and assistance. I also appreciate Mrs.Sirinart Thongchimplee, not only for English improvement but for constructive guidance in my dissertation as well.

I gratefully acknowledge to my parents and my friends for all their support throughout the period of this research.

Finally, I would like to thank for everyone who helped me to complete this dissertation.

Norarat Runkawee

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CHAPTER 1
INTRODUCTION

1.1 Background to the Research

Today the global business trend shows the increasing number of competitors in international markets and more competitiveness in all industries. Most of firms are realized about the customers' needs and satisfaction. In order to gain the maximum profit, the majority of companies have managed to add value to both their products and services under a highly competitive market environment. Some customers are familiar with local brands because raw materials are available locally eventhoughsome brands are imported. Also, the currency is another factor that has directly effected most imported products and services. However, the main factors that influence firm performance include firm characteristics, firm resources, and marketing innovation.

The business world has changed due to uncertain environmental changes. Nowadays international marketing has multiplied the competition more severely because the significant number of competitors has risen. Besides, the number of competitors has created significant impacts on every industry because of the customers' demand. At the same time, the world economy is slowing down which effects business at all levels so doing business internationally will help increase the cost of goods and gain the maximum profit.

The majority of consumers are familiar with locally made products with local trademark. Using locally available materials will increase either importing or exporting business circulation in the country. Moreover, the important factor that promotes an economy growth is the rate of exchange.

In the last decade, the research showed that one of many significant factors of an international marketing included a problem of quantity expansion. The international marketing during the last ten years has become the prominent factor of the following relation (Albaum, Strandskov, & Duerr, 2002) by creating the commercial wall, by investing internationally, by doing an interprovincial treaty, and by engaging exporting goods and services with foreign countries. The efficient expansion of the distribution is to increase the capital in an importing and exporting business in the current world

market. Doing business transactions through the E-commerce can help to communicate widely in today's marketing world. Therefore, E-commerce can help the modern business organizations and many industries to easily connect within the country and with foreign countries. Besides, using local raw materials can increase more investment transactions from foreign countries. In the early days, the international market had less regulations compared with today's market world. Many countries have power to produce and increase the production quality as well as product innovation. According to the level of saving in economics of scale, the production has increased both domestically and internationally. To enter into the new market, it is necessary to keep the highest demand in the market. Also, the number of workers can have direct effects on both foreign marketing and the exporting industry as well. Generally speaking, today's business world keeps growing very fast which leads to an international market expansion. As a result, the international market expansion forces many organizations to change their management nature such as the product innovation, the use of a new technology, the production of better quality goods and services (Frambach, 1993) by applying the business format and marketing innovation. Nord and Tucker (1987) studied the market demand or the new invention that cause a market change. They said that the business expansion, an innovation, and a new change will bring a new opportunity for the competition within today's market share by creating more efficient products and services as their commercial wall. For this reason, a firm must increase the production ability to serve both a provincial market and a foreign market. Also, the producers must protect their market share against new competitors. Morever, the change of business environment such as goods and new services will lead to the expansion of a new business opportunity. To maintain both short-termed and long-termed survival of goods and services, the international marketing firms should consider factors in a foreign market, world environment, and the organizational change. Small organizations are later encouraged inside a country to consider becoming exporters. The market expansion will motivate foreign investors to do business with local entrepreneurs. Also, today the communication system has developed rapidly so it can help the business to manufacture more exporting goods and products easily. It is very

necessary, in order to survive in the today world market, to understand and precede business strategy .

In the last 40 years, the business structure in Thailand has changed and it is similar to a new industry in many Asian countries such as Taiwan, South Korea, and Singapore. Nowadays new creative designs are continuously increasing and at the same time the proportion of an investment in research and development to national products is to be considered. In Thailand, there is the lowest (GDP) proportion compared with other industrial Asian countries. As a result, the innovation system in Thailand shows signs of weakness that lead to competition disadvantages (National Science and Technology Development Agency, 2005). Recently the national research found that Thailand has increased an innovation capability and the investment activities to the market expansion. Some of the research and development do not have any relation with any income in the exporting business because the majority of some industrial groups are competitors, not exporters. The majority of goods sold in the country is more than the amount of goods for exporting; therefore, innovativeness will have significant impacts on market expansion in the country and in other countries (National Innovation Agency, 2007). The science and the technology include the research and development which will help enhance an innovation and also the change of entrepreneurial form (Chairat, 2004). An entrepreneur should be considered not only as a business owner, an executive and an inventor but also as an innovator as well (Smith, 2006). Moreover, to make an organization survive, one must have outstanding competitive advantage more than the competitors. Important factors in building competitive advantages are firm performance, innovativeness, and learning orientation.

Table 1.1 Exports Structure

Description	Value : million baht		
	2010	2011	2012
Total	6,113,335.5	6,707,989.5	7,082,491.0
1. Agricultural products	679,718.6	875,661.1	724,266.3
2. Agro-industrial products	419,318.7	526,749.9	560,658.3
3. Principle manufacturing products	4,697,001.7	4,906,495.1	5,324,306.0
4. Mining and fuel products	317,296.5	399,083.4	473,260.4
5. Others (special transaction)	-	-	-

Source: Information and Communication Technology Center with Cooperation of the Customs Department (2013)

Innovativeness is defined as a willingness and a tendency to engage in business to support creativity, to experimentation, to introducing new products/services, novelty, technological leadership, and R & D in developing new processes (Lumpkim & Dess, 2001). The innovation means an important modification in a sense of a technology, a knowledge that is derived from discovering innovation that increases (Garcia & Calantone, 2002; Garcia, 2010) from the marketing point of view so the innovation market is a kind of the innovation that increases (Grewal & Tansuhaj, 2001) the ability in marketing analysis, marketing research, and is more effective than competitors (Dannels, 2002 ; O'Connor & Rice, 2001).

All of the innovation begin with and are created by a person and the staffs from the starting point of the innovation process with an aim to invent something new (Amabile, Conti, Lazenby, & Herron, 1996; Amabile & Pillemer, 2012). Therefore, innovativeness will help to compete with the competitors both domestically and internationally.

In the past, the research did not pay attention to the link between beliefs in the ability of an organization to rapidly change related to the innovation (Moorman & Slottegraaf, 1999). Hargodon and Sutton (2000) said the encouragement of innovation in all aspects is related to the organization and the attitudes of people in the organization. Knowledge and learning of the employees in the organization is another

key factor of innovativeness. Due to the rapidly changing environment, organizations must have the ability to comprehend energy and creativity (King & Tucci, 2002; Winter, 2003). One way to help people in the organization increase their ability to innovate is to adjust the organizational system to encourage all of the employees in the organization to achieve their creativity. Moreover, the research and development can help the company to achieve its goals. Then the innovation includes the links between the knowledge and the ability to learn in the organization. And the learning orientation has affected innovativeness and a firm performance.

This study used the sample of population from the electronic/electrical industry. First, it is a technology based industry whose products and process depend on technological progress, so R & D activity should be its important strategy. Secondly, electronic industry is very important to Thai economy. It has been one of the country's top export industries since the middle of 1980's and it has become a leading industry of Thailand.

Table 1.2 Principal Exports by Destination

No	Description	Value : million baht		
		2010	2011	2012
1	Motor cars, parts and accessories	561,108.8	511,503.6	707,712.2
2	Automatic data processing machines and parts thereof	596,677.7	513,710.1	588,398.7
3	Refine fuels	245,996.2	303,794.8	397,858.7
4	Chemical products	182,464.7	250,053.8	263,027.9
5	Polymers of ethylene, propylene, etc in primary forms	200,326.0	265,381.6	263,587.2
6	Precious stones and jewelry	366,818.3	371,239.3	408,040.2
7	Rubber products	203,428.1	253,054.9	259,768.0
8	Rubber	249,262.5	382,903.5	270,153.8
9	Iron and steel and their products	147,698.3	150,433.1	217,430.1
10	Machinery and parts thereof	154,486.5	184,492.1	192,682.7

Table 1.2 Principal Exports by Destination (cont.)

No	Description	Value : million baht		
		2010	2011	2012
11	Electronic integrated circuits	155,322.1	238,173.4	206,462.1
12	Air conditioning machine and parts thereof	107,903.3	116,906.1	126,036.0
13	Prepared or preserved fish, crustaceans, mollusks in airtight containers	130,086.0	152,080.5	161,415.4
14	Rice	168,193.1	193,842.5	142,976.2
15	Other electrical equipment and parts thereof	141,535.9	151,246.2	145,441.1
16	Radio-broadcast receivers, television receiver and parts thereof	127,511.3	127,612.7	130,811.3
17	Sugar	69,318.5	109,447.5	122,285.1
18	Plastic products	90,285.2	98,378.2	102,846.5
19	Spark-ignition reciprocating internal combustion piston engines and parts thereof	79,280.4	88,771.6	99,018.8
20	Tapioca products	68,592.1	79,805.2	87,289.0
	Total 20 records	4,146,295.0	4,542,830.7	4,893,240.9
	Other	1,967,040.6	2,165,158.8	2,189,250.1
	Total	6,113,335.5	6,707,989.5	7,082,491.0

Source: Information and Communication Technology Center with Cooperation of the Customs Department (2013)

In conclusion, the researcher has reviewed the literature and studied variables influencing the effects of learning orientation on innovation and firm's performance. In addition, the researcher has studied effects of innovation on firm's performance.

1.2 Purposes of the Study

The purposes of this study are as follows:

1. To investigate the effects of learning orientation on innovativeness.
2. To investigate the effects of learning orientation on a firm performance (ROA).
3. To investigate the effects of innovativeness on a firm performance (ROA).
4. To investigate the effected elements of learning orientation relationships on innovativeness and a firm performance (ROA).

1.3 Scope of Study

To study electronic/electrical product and parts industry from the database of the Department of Export Promotion, Ministry of Commerce of Thailand (Thai Exporter List 2012).

1.4 Research Questions and Hypotheses:

1. Do learning orientation and innovativeness have effects on firm performance (ROA)?
2. Does innovativeness have effects on firm performance (ROA)?
3. Do elements of learning orientation have effects on innovativeness ?
4. Do elements of learning orientation have effects on firm performance (ROA)?

Hypotheses

H1: Learning orientation has positive effects on innovativeness.

H2: Learning orientation has positive effects on firm performance (ROA).

H3: Innovativeness has positive effects on firm performance (ROA).

H4: Commitment to learning has positive effects on innovativeness.

H5: Shared vision has positive effects on innovativeness.

H6: Open-mindedness has positive effects on innovativeness.

H7: Intra organizational knowledge sharing has positive effects on innovativeness.

H8: Commitment to learning has positive effects on firm performance (ROA).

H9: Shared vision has positive effects on firm performance (ROA).

H10: Open-mindedness has positive effects on firm performance (ROA).

H11: Intra organizational knowledge sharing has positive effects on firm performance (ROA).

1.5 Conceptual Framework

Two models of the conceptual framework were depicted in Figures 1.1 and 1.2.

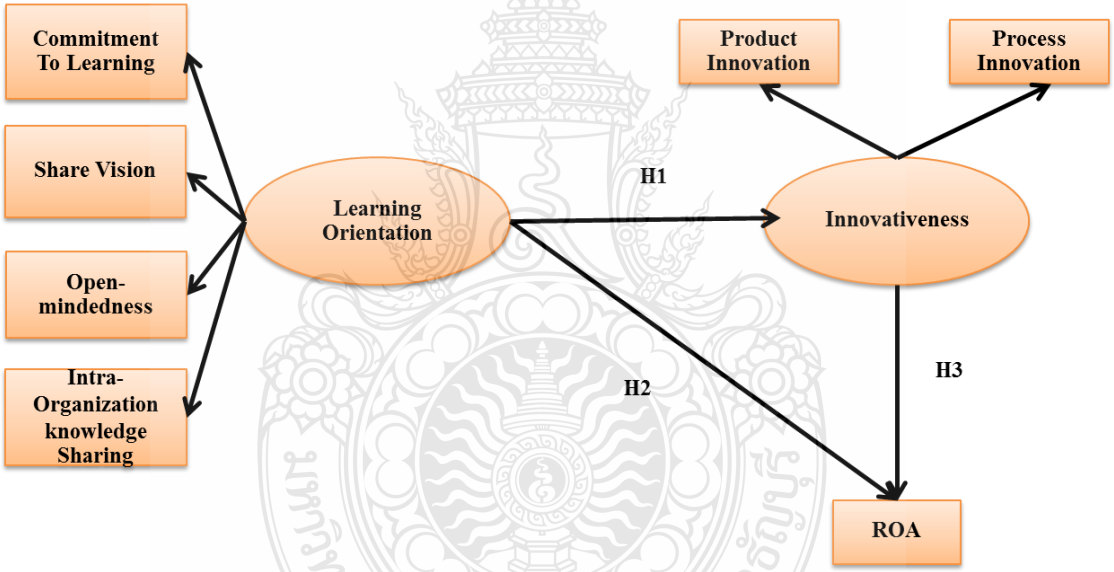

Figure 1.1 The Global Model of Conceptual Framework

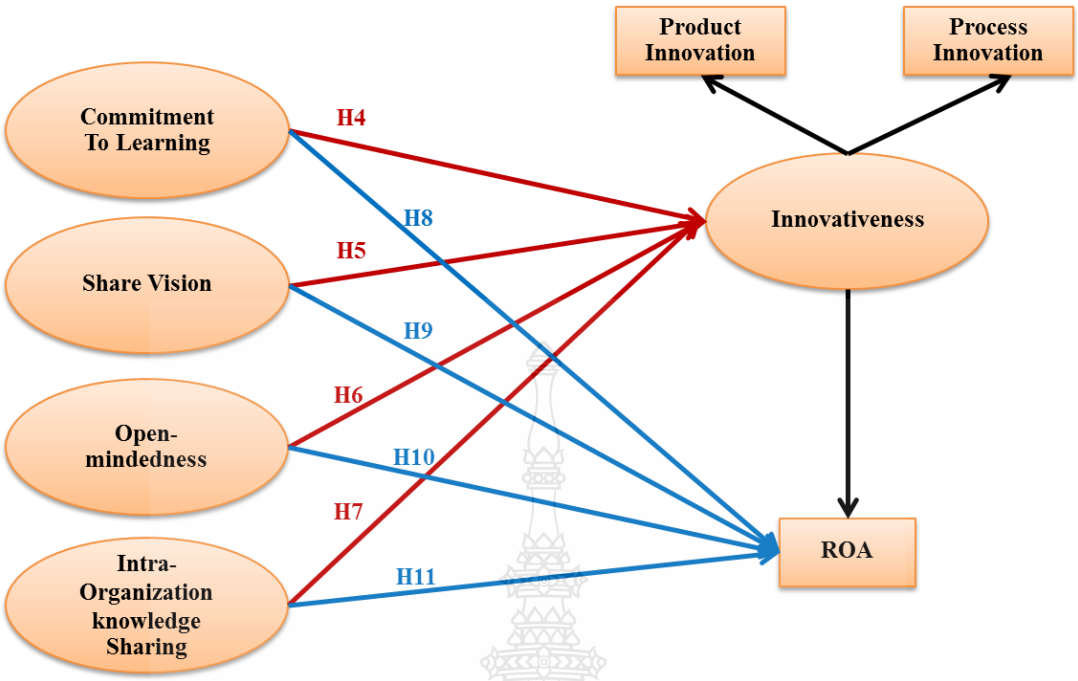

Figure 1.2 The Specific Model of Conceptual Framework

1.6 Definition of Terms

Learning orientation: organizations with knowledge of leaning orientation in order to create an innovation (Higgins, 1995; Tidd, Bessant, & Pavitt, 2001).

Commitment to learning: organizational employees are motivated to cooperate in developing an innovation (Dundon, 2002) and the organization has considered supporting learning so it will be a key factor that guarantees the survival of the organization (Higgins, 1995).

Shared vision: an organization has strategic vision, mission, and goals particularly concerning an innovation (Higgins, 1995; Denton, 1999; Tidd et al., 2001; Greenberg & Baron, 2002) the purpose of an innovation is consistent with the mission of the organization (Greenberg & Baron, 2002) and organizational development strategy and vision by establishing clear plans and activities (Dundon, 2002).

Open-mindedness: a hearing in case employees have different opinions from the policies of the organization (Denton, 1999) and they work in the atmosphere that allows everyone to make comments openly (Denton, 1999; Tidd et al., 2001; Dundon, 2002).

Intra organizational knowledge sharing: Organizations have contributed to the

working atmosphere in which the risk of failure is taken and accepted (Denton, 1999) and while a job rotation is provided to achieve a wide range of knowledge (Denton, 1999) and a communication system for both formal and informal communication is supported (Higgins, 1995; Denton, 1999; Tidd et al., 2001).

Innovativeness: the ability to recommend products, process or new ideas of employees in organizations (Damanpour, 1991). It is a selection of ideas or behaviors related to company policies, programs, systems, processes, products or services that are new to an organization (Zaltman, Duncan, & Holbek, 1973).

Product innovation: products that are developed and commercialized to customers who acquire and use them (Sandvik & Sandvik, 2003).

Process innovation: an introduction to some important modifications in the production process such as new machines or new methods of an organization (Nieto & Santamartia, 2010).

Business performance: the focus on profitability to ensure survival and financial efficiency such as ROI, ROA, and sales growth used as an ultimate outcome (Sandvik & Sandvik, 2003).

1.7 Structures of the Study

This research structure is as follows:

Chapter 1 is an introduction to the important of the problems, research questions, the objectives of the research, a limitation of a research, and a research framework.

Chapter 2 includes literature review, the theory and the research related to fixing factors or variables influential on the operation of the organization. The idea framework and research hypotheses were used to test for answering research questions.

Chapter 3 is research methodology, the use of random sampling to determine the practice and create a data collecting tool, data collecting method, and the use of statistics to analyze the data.

Chapter 4 concerns research results, describing the characterisics of research samples, and showing the results of data analysis.

Chapter 5 includes research conclusions and recommendations, providing theoretical suggestions, practices, policies and suggestions for future research.

CHAPTER2
REVIEW OF THE LITERATURE

2.1 Introduction

This research aimed to study the factors that influenced the learning orientation on the firm's success in terms of innovativeness. The influences of the success in terms of innovativeness on the firm performance so it will influence how the firms are operated. The researcher's major interest was on innovation from the very start of the research. Also, learning has effects on the innovation and, in this chapter, leading to the effects of learning orientation on innovativeness, learning orientation on firm performance, and innovativeness on firm performance.

Nowadays business organizations have to deal with a lot of competitions and more competitors. So to ensure the survival of the business organizations, a firm must understand the business characters better than its competitors. The important factor that creates competitive advantages is the overall operation of a firm performance. Among various factors, the most important one is innovativeness.

2.2 Innovation

Innovation is critical for creating competitive advantages in every country in the world (Porter, 1990). In Thailand, organizations should focus on their ability to innovate in more specific research with a focus in each particular industry. One of Thailand's industries generating high income is the electronics/electrical product and part industry. The executives must recognize the importance of the development and implementation of organizational strategy. It requires a valuable resource from the organization's ability to innovate and to create sustainable competitive advantages (Barney, 1991). According to Hurley and Hult (1998), it is almost impossible to find industries that have a need for continuous innovation. Because the nature of the industry which needs to innovate and ensure to catch up with the rapid changes. The key elements to success in the organization are to build capacity for innovation related to the ability of the organization, to enable innovation by introducing new ideas into the production process of organizations. The most critical factor is the firm's innovation

ability because it can influence the operation of the organization (Schumpeter, 1934; Burns & Stalker, 1961; Porter, 1990). However, Siguaw, Simpson and Enz (2006) found that most research does not present any clear pattern or framework for understanding the structure and its innovation ability. The context of the previous studies showed that marketing or technology except the level of bureaucracy is sometimes unclear and inconsistent about the factors that effect the creative ability of the innovation. The definitions of workshops focusing on innovation concluded that the ambiguity lies in the role that innovative organizations can perform.

To determine the overall organizational management and the ability to innovate across the entire organization, Hurley and Hult (1998) concluded in their study that a change needs to be made within the organization. Powell (1992) explained that the focus of the organization is moving in the same direction as the source of competitive advantage. The past research concerning innnovation has not paid attention to the link between beliefs in the ability of an organization to rapidly change (Moorman & Slottegraaf, 1999). Hargodon and Sutton (2000) stated that encouraging innovation in all aspects can be related to the organization and the attitudes of people in that organization. The knowledge and learning of the employees in the organization is another key factor of innovation. Because of the rapidly changing environment, organizations must have the ability to perform with full energy and creativity (King & Tucci, 2002; Winter, 2003). However, in their previous study, Subramanian and Youndt (2005) believed that several studies have found the unexplained factors such as learning and knowledge within the organization is related to the accumulation of innovative capabilities. Also, the focus on innovation is related to the structure of the organization to recognize any changes. The organizations are able to create a dynamic working environment from the customers needs while learning to create new knowledge in the development process (Siguaw et al., 2006). However, there are relatively rare study to focus neither on human resources in the organization nor to support a new innovation (Shipton, West, Dawson, Birdi, & Patterson, 2006).

Nonaka (1994) suggested that the innovation occurs when employees start to share their knowledge within the organization so the new knowledge can generate new

and common insights, in a process of divergence and convergence and new key capabilities can enhance innovation in the firm.

The review of the previous studies suggests that organizations with only innovative products or services are not adequate to establish a long-termed survival. The long-termed survival requires an understanding of or the belief in the acceptance in the organization. If employees at all levels and of all functions always seek the new idea, this can lead to an ongoing process and a sustainable competitive advantage (Siguaw et al., 2006). In order to help people in the organization to gain the ability to innovate more; the organizations need to adjust the system to suit all in the organization to achieve creativity. Further research and development indicated that to achieve the goal of innovation, links to knowledge and learning of the organization are to be included. Besides the innovation is what makes a sustainable competitive advantage. However, innovation requires organizations to have more important factors which is the key research interest and focus. Learning orientation can influence the innovation. The learning orientation equips organizations with the ability to create innovative products. Therefore, this study and process innovation allow organizations to build capacity for innovation to realize the influential factors.

During the 1950, the importance of innovation in the organization was shown in the study of Drucker (1959) who was among the first scholars to focus on innovation and represented a neglected research on innovation in organizations. The research on the most innovative organizations can be found in the literature on the diffusion of innovation (Rogers, 1995). These results suggested that organizations need to innovate to make the move in a rapidly changing environment (Johnson, Meyer, Bertkowitz, Ethington, & Miller, 1997) stated that the effects of competition and pressure from global environment with a greater variability have brought more attention to innovation as the key to organizational success (Cohen & Levinthal, 1990; Leonard-Barton, 1995; Brown & Eisenhardt, 1997; McGrath, 2001; Tsai, 2001) mentioned that if the department is exposed to more innovative products and technologies, organizations can make the difference by adapting and presenting in a new format (Shoonhovan, Eisenhardt, & Lyman, 1990). This innovation in an organization has a variety of forms such as business models, products, services, processes or distribution channels (Carr,

1990). Such innovations need to meet the needs of customers in order to differentiate the organization's products or services from its competitors. The organization can survive by creating a sustainable environment and the variance is extremely complex (Freeman, 1994; Lawless & Anderson, 1996; Eisenhardt & Brown, 1999). The research and development lead to the spread of innovation (Miles & Snow, 1978; Freeman, 1994; Van de Ven, Polley, Garud, & Venkataraman, 1999). Tushman (1979) explained that the target of an innovation in organizations is to establish a capacity that leads to innovation.

Moreover, various levels of government and private business enterprises enhance the competitive advantage in the country and maintain competitiveness as well. Based on the results of an innovation in the organization one must understand in a wide range of an innovation, that it is necessary to firstly include the new technology then to know how to work with new creative ways (Porter, 1990). As Sanae (2005) stated, the innovation is important to the organization.

1. Individual Excellence: the idea of the person causing the innovations is made possible by modern technology. The power of ideas can lead to the innovation in science and technology. Critical thinking skill needs to be integrated and promoted in learning and education. Moreover, creative thinking makes innovation possible.

2. Teamwork Excellence: participation or team is essential for faster learning. Brainstorming and team work can help generate more innovative ideas. I believe that the modern concept like team work can lead to learning and give rise to innovation. Thus, innovation is the result of a learning team.

3. Organization Excellence: a good organization is another factor that can cause the innovation. Theories on how to become an innovational enterprise are:

3.1 Learning organization

3.2 Intelligent organization

3.3 Strategic organization

3.4 Triple I organization

3.5 Research and development organization

Type of innovation

In this research, innovation is divided into several categories according to the extent and the purposes. Innovation and good management help to identify the target of innovation so it can be divided into product innovation and process innovation.

Product Innovation: The National Science and Technology Development Agency defined product innovation as the development and offering of new products and new technology as a way to improve existing product and quality and even better performance (Ruk, 2004). Innovative products help organization or business to produce it maybe in the form of products or services (Smith, 2006; Schilling, 2008). The main parameters of the product innovation have 2 variables: 1) the potential of technology to the body of knowledge in science and technology, equipments and processes enable development, and 2) the need of market refers to the needs of the user with the requirements of new products and are ready to buy or use. The innovation results in the owners' benefits economically or socially (Capon, Farley, Lehmann, & Hulbert, 1992 ; Ettlit & Reza, 1992 ; Gopalakrishnan & Damanpour, 1997). Ruk (2004) stated that the product innovation process consists of 5 steps.

1. Environmental Signals: environment, including marketing environment, technology or its competitors market research. It is often obtained by exploring and monitoring scope and the movement of the market. Also, the signaling technology, the research network, and new information acquiring are included.

2. Invention: the invention is effective only when the concept and features of the product are clear. The invention or compositions of the invention is derived from the combination of the existing organization of the new knowledge generated by signal processing, marketing and technology.

3. Market Development and Product Development: the advertising is realised to the current market several months before the product is actually launched especially electronics products.

4. Market Launch: the marketing tools include consumer feedback, suitability for use, influence of products with the products of the others, the competitors, media, and intermediaries in the distribution.

5. Learning and Re-Innovation: through various stages of the market achievements and the obstacles encountered, the organization has learned the lessons which yield valuable information necessary for the innovative development.

Process Innovation: According to the National Science and Technology Development Agency, innovation process means the application of concepts, methods, or processes. That results in the production process and the overall efficiency and effectiveness which increases dramatically as the use of computers in the design of new processes and so on (Ruk, 2004). The meaning as such is the reflection of the innovation process as a matter of change in organizations whether it is a process of production, distribution or organization's management style. It aims to contribute to the development of innovative products and also to reach the consumer or the organization effectively and efficiently as much as possible (Capon et al., 1992; Ettlit & Reza, 1992; Gopalakrishnan & Damanpour, 1997). Although product innovation is clearly visible over the innovation process, it is very important as well to make a business a competitive advantage (Schilling, 2008). Innovations processes mainly focus on the issue of quality control to continue improving productivity and operating. Also, the focus is on the activities or process-related components in the system, namely input, process, and output (Abernathy & Utterback, 1978; Tushman & Nadler, 1986; Gopalakrishnan, Bierly, & Kessler, 1999; Damanpour & Gopalakrishnan, 2001). The explanation of Ruk (2004) about the hierarchy of the innovation process is as follows:

1. Innovation in a gradual manner by improving the system to look up individually which may be seen more frequently than any other innovation processes.

2. Innovation in the hierarchy to improve manufacturing process changes to make a difference, forming the product including the concept of the production process.

3. Innovation acuteness which entirely changes processes and concepts in production.

4. Innovation in a manner that completely changes the way innovation is produced the process of which is usually found in the range of industries.

Innovativeness

As mentioned above, the literature concerning this type of innovation revealed that the present type of innovation could be said to have a different format for the purpose of exploitation, such as product innovation and education. First, the innovation on the action. Second, the innovation acuteness. Third, the innovation in a gradual manner. Fourth, the innovative technologies and Innovation Management (Utterback, 1994; Cooper, 1995; Smith, 2006; Schilling, 2008; Ambad & Wahab, 2013).

Innovativeness is defined as a willingness and a tendency to engage in and support creativity and experimentation in introducing new products/services, and novelty, technological leadership, and R & D in developing new processes (Lumpkim & Dess, 2001). The innovation means an important change in the sense of a modern technology and the knowledge that is born from the discovery of innovation (Garcia & Calantone, 2002). In terms of the marketing innovation, the increasing number of innovation was shown (Grewal & Tansuhaj, 2001). Therefore, the ability to analyse will help an organization to search for an innovation faster than its rivals (Dannels, 2002; Hamel, 2000; O'Connor & Rice, 2001). Innovativeness is defined here as the capacity to introduce some new process, products, or ideas in the organization (Damanpour, 1991; Hurley et al., 1998). An innovation can be a new product or service, a new production process, or a new structure or administrative system.

Initially, all innovations begin with the creativity of a person or staffs (Amabile, Conti, Lazenby, & Herron). The place for distribution such marketing innovation means the adaptation in the product design, the distribution places, marketing, and pricing (Deshpande, Farley, & Webster, 1993; Hurley & Hult, 1998).

Innovativeness is implicitly associated with changes and as such has always been a challenge for management. Therefore, innovation requires a commitment to continuous learning. Innovativeness is increasingly one of the key drivers of the long-term success of a firm in today's competitive markets and the reason is that companies are innovative and are able to respond to environmental challenges faster and better than non-innovative companies (Jimenez et al., 2008)

According to Schumpeter (1934), to connect between the importance of the innovation and an organization, it is necessary to have an innovation in order. Also, an

innovation will help the economic growth and Drucker (1994) emphasized that the organization should develop research ability, product design, and innovation through the marketing channel for business success.

The business organization role will have effects on innovation development. The important thing is the organizational knowledge can bring a new concept to a business. According to Gurteen (1998), the organization should be able to understand and efficiently manage knowledge in order to create a new innovation (Cardinal, Allessandri, & Turner, 2001; Darroch & McNaughton, 2002; Pyka, 2002; Adams & Lamont, 2003; Shani, Sena, & Olin, 2003; Bessant & Tidd, 2007) stated that the knowledge is a very important element to create an innovation for both at an individual and at an organization level (National Innovation Agency, 2007).

Besides, according to the literature review, the administrative knowledge management will have an effect on an organizational operation. Particularly, the ability of a product innovation, the knowledge administration and an organizational performance can be summarized into 3 characteristics; the efficiency, the adaptability, and the innovativeness (Freeze, 2006).

1) The Efficiency

One advantage received from knowledge administration is an effective economical organization (Nonaka, 1991; Grant, 1996; O'Dell & Grayson, 1998; Davenport, De Long, & Beers, 1998) stated that working efficiency can help an organization to save cost and also to increase productivity. Particularly, the product expansion (Johannessen, Olsen, & Olaisen, 1999) included proficient team work, the efficient data searching, knowledge sharing, and the use of a new technology (Darroch & McNaughton, 2002; Lamont, 2006).

2) Adaptability

The competitive environment is changing all the time; therefore, some of the factors such as a rapid change of the technology are required by consumers' demand (Sallis & Jones, 2002). Besides the change of new laws and regulations, the change of population characters, the new technology can have effects on an organization's survival. Therefore, the company should learn to adapt to any changes and it should have the ability to adjust the attitude towards a company's culture, adapt to new

technology, and adapt to organizational structure change (Levinthal & March, 1993; Kraatz, 1998). Prior to the organization's adaptation to changes, it should learn about the company's environmental changes, and learn to understand all effects on an organization. Also, the administrative knowledge or management can help an organization looking for changes, to use knowledge to solve problems, and use knowledge to prevent an organization's failure in the future (Freeze, 2006).

3) Innovativeness

The literature review revealed that there are many companies that use administrative knowledge because they realized how important it is (Freeze, 2006). The innovativeness of an organization depends on the amount of knowledge and the administrative ability that exists in an organization (Cardinal et al., 2001; Darroch & McNaughton, 2002; Pyka, 2002; Adams & Lamont, 2003; Shani et al., 2003; Plessis, 2007; Parlby & Taylor, 2000) stated that knowledgeable and efficient administration can give support to an organization which will be resulted in a new innovation. The innovativeness includes having the product's innovation and the innovation's procedures. The extreme innovation that can force a change to the innovation is a new technological innovation, and the administration innovation (Gopalakrishnan & Damanpour, 1997; Smith, 2006; Bessant & Tidd, 2007).

Recently there has been a significant interest in product and firm innovativeness. An innovation is defined as an idea or object that is perceived as new by an individual or an agency (Rogers, 1995) "The perceived newness of the idea from the individual's point of view determines his or her reaction to it. If the idea seems new to the individual, it is an innovation" (Robertson & Yu, 2001). An innovation consists of technology know how about the things can be done better than its existing products (Tyler, 2001). A firm's innovation capability is aimed to invent new products that give opportunities to the company's growth, new market share, and to enhance a competitive advantages. Innovation is defined as the generation, acceptance, and implementation of new ideas, processes, products or services. The innovation process includes the acquisition, dissemination and use of new knowledge (Calantone et al., 2002) to implement successfully of new creative ideas within an organization (Amabile et al., 1996). There seems to be an agreement by many scholars on how to measure such a

learning climate, a corporate entrepreneurship, and a firm innovativeness (Hurley & Hult, 1998; Liu et al., 2002). Corporate entrepreneurship focuses on experiments, involving innovativeness, risk taking, and proactiveness (Baker & Sinkula, 1999). As a result, it can generate a competitive advantage to an organization in dynamic and or even in unstable markets.

Innovation allows firms to establish dominant competitive positions. Thus, it allows new coming firms an opportunity to increase a market share. It is also associated with high risks and may encounter with firm resources requirement. Firm innovativeness consists of different dimensions; product innovativeness is examined both from customers' and firm's perspective, innovation in production processes (Victor, Boynton, & Stephens, 2000), workplace, and human resource management practices (Baer & Frese, 2002). A product or a process orientation of a firm innovativeness will experience successful results if the firm undertakes actions valued by the market (Harmsen, Ruuls, Nijman, Niewold, Frenken, & de Geus, 2000). A product-oriented firm need to understand customers' needs and ensure that customers recognize the production possibilities facilitated by its processes (Erdil, 2004).

However, studies on innovativeness ability of enterprises are another point to be mentioned. They revealed that product innovativeness and process innovativeness are abilities helpful to entrepreneurs with the details below.

Product Innovativeness

Product innovation capabilities reflect the ability of businesses to create and implement new ideas in the development of new products or services to bring economic benefits to businesses (Fritz, 1989). Therefore, the development of a consistent new product or service at the appropriate timing of entry into the market will gain more competitive advantages to its competitors (Wang & Ahmed, 2004). Zaltman, Duncan, and Holbek (1973) suggested that one of the stages of the innovativeness process is initiation. In addition, Henard and Szymanski (2001) also mentioned that the product innovation capabilities should be considered the nature of the Newness, Uniqueness and Originality. The Uniqueness can be considered both from the consumer's point of view and the operator's such as the prospective customers. The operators with such perspectives of the consumer may be considering innovative features, risk taking, and

the effects on the behavior of consumers. The operators also consider the level of technology to marketing strategy for business innovation (Atuahene-Gima, 1995; Denneels & Kleinschmidt, 2001).

Process Innovativeness

Most studies in the innovation processes can be a part of technological innovation capability. The technological innovation is mostly associated with the use of machinery and production methods which is an important part of the innovation process (Avlonitis, Kouremenos, & Tzokas, 1994). The ability of innovation is the latency ability of product and process innovation. It is about the manufacturing process and management systems which are developed with a new technology or innovation, technological innovation itself (Wang & Ahmed, 2004). For this reason, the innovation process is to consider the issue of the ability to deploy new technologies and technological changes that are used in the manufacturing process and to create a new product or service of the business itself (Salavou, 2004).

One thing that is difficult for research on innovation is the real meaning of the innovation. Thompson (1965) defined innovation as what creates acceptance and implementation of new ideas, processes, products or services used. Zaltman, Duncan and Holbek (1973) and Rogers (1983, 1995) explained that innovation is an idea, to practices, or materials that have been recognized as a new agency to use. It is an idea to introduce innovative ideas, processes, products or procedures for application in organizations. These are new units used and significant benefits to the organization or society (West & Farr, 1990). Amabile et al. (1996) defined innovation as the creation of a new idea to a successful organization (Herley & Hult, 1998). If you look at the overview of definitions, it can be concluded that innovation is something new that has never been produced before and also it can be practical and useful, economically or socially.

One of the new features of innovation is the new definition of innovation has changed the perspective of academic and how it can be applied (Burgelman & Sayles, 1986). This new perception is divided into two views (Dannells & Kleinschmidt, 2001; Wang & Ahmed, 2004); one of which is a new perspective and new customers from the view of the organization. According to the new viewpoint of the customer's

consideration on innovative features, it can adopt the risk and the level of behavioral changes that affect clients. A new viewpoint of an organization is on the consistency between the organization's external environment, such as technology or marketing (Atuahene-Gima, 1995; Cooper & de Brentani, 1991) and another innovative aspect of innovation that can be used (Gronhang & kaufman, 1988; Padmore, Schuetze, & Gibson, 1998). These characteristics make an innovative variant, so sometimes the invention may be applied in practice especially from the viewpoint of the business while innovation can create more value in the performance of the organization.

In addition, various issues have been mentioned such as what schools focused on the perspectives of innovation. So the innovation can be the process or the results (Ettlie, 1980, Kimberly, & Evanisko, 1981; Rogers, 1983). This difference depends on the purpose of the study, for example, the battle of the innovation process, innovation's being the process of a virtual organization, and the organization's becoming an organization of innovation. This study will look at the results of an innovative form of innovation, however, in view of the diverse academic, as the share of innovation by innovative product or process innovation. Divided by the level of innovation is an innovation that changed the gradation or changes the pace of innovation or the innovation management by objective or technical innovation (Cooper, 1998). Although innovation has multiple formats, it is significant for changes in the organization that respond to the environmental changes occuring within or outside the organization and also prepares for the influences of the environment (Hult, Hurley & Knight, 2004).

Some scholars explained each employee can create something new (Rogers & Shoemaker, 1971; Hurt, Joseph, & Cook, 1977; Hurt & Teigen, 1977); therefore, in this sense the research focuses on an individual person, not the organization. Rogers and Shoemaker (1971) believed that one person or one group of people who come up with ideas or newly developed technology is an innovation. Those new creations must be new when compared to other individuals or groups. Regarding the meaning of the innovation box, Hurley and Hult (1998) provided a clear explanation that innovation is an open-mindedness to new ideas in the perspective of organizational culture. The organization with a focus on innovation has dedicated resources to create a superior product (Berthon, Hulbert, & Pitt, 1999).

Also an innovation can be a new concept to be practiced in the overall organization (Hurley & Hult, 1998). Furthermore, an innovation could be the ability to recommend products or process of people in the organization (Damanpour, 1991). In short, an innovation is the use of an idea or behaviour associated with programs, policies, systems, processes, products or services that are new to the organization (Zaltman, Duncan, & Holbek, 1973). Wang and Ahmed (2004) emphasized the importance of innovation starting with the overall innovation capability of the organization to create new products in the industry or open new markets through strategic focus on the behavior and process of innovation, organizational innovation is very important for organizations to survive in the changing environment (Rogers & Shoemaker, 1971; Damanpour, 1991; Rogers, 1995). The management can lead to innovative solutions for organizational survival and success of the organization (Hult et al., 2004). Hurt et al. (1997) described the organizational innovation as the nature of the organization with the intention of changing. The critical components are openness to innovation (Zaltman et al., 1973) and capacity to innovation (Burns & Stalker, 1997). Hurley and Hult (1998) explained that organizational innovation is open to new ideas in organizational innovation perspective. So the focus is on innovation as a function of the organization in delivering innovation as delivering values to customers (Homburg, Hoyer, & Fassnacht, 2002). The organizational concepts include the processes or new products used, a willingness to innovate and a component of the innovation-oriented organizations (Kundu & Katz, 2003).

Organizations need constant innovation. Because innovation is a critical element enabling organizations to create competitive advantages from having a higher performance compared with the competitors (Porter, 1990; Damanpour, 1991; Henard & Szymanski, 2001). Innovative achievements affect the operational reflectiveness for a better organization. The organization can achieve its profitability with the high growth of market share or success in the strategic objectives of the organization (Damanpour, 1991). The result of an organization's innovative approach in response to changes in the internal or external environment is that the organization is planning to change the environment with the application of knowledge to create a new product or service (Roger & Love, 2004). However, as management staff in many organizations

commented, it is difficult to achieve more sustainable innovation (Katila & Ahuja, 2002). Innovation organizations need employees who are constantly searching for useful information on doing this to focus on responding to customer needs while the organization's ability to innovate without losing time and resources in the education market but could not convert this knowledge into practice it (Hult et al., 2004).

2.3 Learning Orientation

The concept of organizational learning is the subject of an increasingly growing body of literature with theoretical roots in a range of disciplines including psychology (Nonaka & Takeuchi, 1995; Dixon, 1994; Schein, 1993) and management (Stata, 1992; Huber, 1991; March, 1991; Senge, 1990; Levitt & March, 1998; Fiol & Lyles, 1985; Argyris & Schon, 1978; Cyert & March, 1963; Inkpen & Crossan, 1995; Miner & Haunschild, 1995; Pennings, Barkema, & Douma, 1994; Hamel & Prahalad, 1993; Whittington & Whipp, 1992; Dickson, 1992).

Learning orientation refers to an organization-wide activity of creating and using knowledge to enhance competitive advantages. This includes obtaining and sharing information on customer's needs, market changes, and competitor actions, as well as development of new technologies to create new products superior to those of competitors (Hurley, 1998; Moorman, 1998; Mone et al., 1998).

Learning orientation involves the development of new knowledge in the organization (Cohen & Sproull, 1996; Crossan, Lane, & White, 1999).

Innovation is closely related to the organizational learning. Thompson (1965) defines innovation as the generation, acceptance, and implementation of new ideas, processes, products, or services. Amabile et al. (1996) defines innovation as the successful implementation of creative ideas within an organization (Hurley, 1998). Based on the literature, learning orientation consists of four factors: commitment to learning, shared vision, open-mindedness, and intra organizational knowledge sharing (Hurley, 1998; Hult, 1997, 1998). In order to keep up with a current market situation, all of the 4 elements will lead to an organizational learning and begin a new innovation. Therefore, the most important of learning in an organization is not only in the executive level but also everyone in an organization.

Learning organization is a concept to develop an organization so it will focus on leadership and team learning. The objectives are to share knowledge, experiences, and skills to compete well in a current market. It helps organization and staffs to work efficiently and to get ready for a change by working as a team and process of learning. Also, staffs are allowed to make a decision and encouraged to create a good working environment to build a strong firm.

One of the critical components of the learning process within the organization is human resources. Human resources are a valuable asset to an organization, to a creator, to information storage, and to the knowledge transfer. Most employees in the organization are mature; therefore, it is important to understand the characteristics of adults and their learning process in order to achieve the working maximum efficiency (Phayat, 2006). Adults and people of a younger age have a different learning style. In fact, adults are already well developed both physically and mentally because of their experiences, values, faith, reliability, as well as other social values, learning attitudes, feelings, prejudices, and bias. Also, adults have certain expectation so they are often expected to participate in different activities for each in dividual. Therefore, in order to create a sustainable competitive advantage, most organizations need to create process to support a lifelong learning.

Many years ago organizations would focus on the learning organization (Sinkula, 1994a; Slater & Narver, 1994a, 1995; Lukas, Hult, & Ferrell, 1996). To create a competitive advantage, many reputable organizations have transformed themselves into learning organizations (Hult & Ferrel, 1997).

Cangelosi and Dill (1965), ones of the scholars who pioneered in the study of the phenomenon of learning organizations, explained that learning occurs at the levels of individual, groups, and organizations. Their work being recognized by scholars as the most famous study of organizational learning at the different levels, they concluded that the process of learning can occur similarly in the three levels (Cangelosi & Dill, 1965; March & Olsen, 1975; Argyris, 1967, 1977a, 1977b; Duncan & Weiss, 1979; Shrivastava, 1983; Daft & Weick, 1984; Fiol & Lyles, 1985; Herriott, Levinthal, & March, 1985; Levitt & March, 1988; Stata, 1989; Senge, 1990a; Parkhe, 1991; Garvin, 1993). Many theories demonstrated that organizational learning does not occur in

individuals and groups but suggested the role of the organization (Duncan & Weiss, 1979 ; Hedberg, 1981; Shrivastava, 1983; Fiol & Lyles, 1985; Lyvitt & March, 1988; Stata, 1989; Huber, 1991). The elements of the learning in an organization demonstrated by the system are the structure and also the working processes of organizations that have an impact on their learning style (Fiol & Lyles, 1985). Hedberg (1981) said that the learning takes place through individual and a learning organization is the result of the accumulated learning of the members in the organization. After the members who used to work for an organization left the company, this will lead to the change of leadership but the organization's behavior, norms, and values are still maintained. Argyris and Schon (1978) described that the transfer of knowledge from the individual to the organizational level is the result of learning in present organizations so most scholars call it a learning organization.

The learning organization has diverse meanings and concepts of philosophy. Cohen and Levinthal (1990) said it can be used to measure the ability of organizations to absorb, to collect, to distribute, and to use new knowledge. So learning is a function of the knowledge to create something new and better because it can be learned from past experiences. The efforts are made to create a variety of knowledge. This study demonstrates that organizations have absorptive capacity in order to be in control of environmental changes which lead to a higher productivity (Cohen & Levinthal, 1990). Learning philosophy discusses various elements in organizational learning, knowledge, and experiences of the existing organizations and the application of knowledge in creating a valuable resource in the organization.

Learning organization is a behavior-based process. It is responsible for the structure of learning organization (Hult & Ferrel, 1997a). The learning organization creates the skills and transfers its knowledge to change the behavior of people in organizations to reflect new knowledge and insights (Garvin, 1993). Senge (1990b) described a learning organization as a focus on congregation to stimulate and motivate all members who are eager to learn and improve the mselves over time. In order to expand their potential and organizations, cooperation in various missions is needed. Organizational structures of learning to express themselves through an atmosphere and

a culture that enhance make the learning process in the organization (Slater & Narver, 1995). The organization consists of learning and behavior (Hult & Ferrell, 1997a).

Learning organization is an important management strategy of a new organization with the focus on the development of the human resources. HR can create knowledge based on intellectual capital to be used in the products and services developed in various ways. Using human resources in the hereafter is a lifelong learning process and one must have the ability to perform professionally. Moreover, self-improvement, knowledge, and continuous skill improvement are also crucial (Senge, 1990b). The concept of the learning organization is very complex. There are many dimensions to the different levels of understanding for the creation of a variety of sub-processes (Slater & Narver, 1994a). Sinkula (1994a) and Slater and Narver (1994a, 1995) indicated that the organization of learning process consists of (1) Information Acquisition (2) Information Dissemination and (3) Shared Information. These processes occur at several levels. Therefore, the organization can learn and practice at a variety of levels. The process of learning is to keep learning and understanding adaptive (the receivable), to learn and to create a new (proactive) learning adaptive demonstrated. Effective operations while learning can create a new performance (Argyris & Schon, 1978, 1996).

Learning organization requires the administration to establish practice and to make sure that learning has spread by questioning and sharing their knowledge so it became the organization's decision-making law (Hult, 1998). Paladino (2007) identified the importance of learning as follows: (1) to offer values to customers through products and services, (2) to constantly improve the methods and processes of an organization (3) to create scarce resources (Belohlav, 1996) and to create the learning in an organization by regularly participating in the experiment and by learning and sharing of resources (Slocum, McGill, & Tei, 1993; Webster, 1994; Galunic & Rodan, 1998). Organizations can contribute to becoming the learning organization by not only realizing about the existing opportunities but also creating new opportunities for the future.

The focus on the literature review on the factors that effect job performance in the organization can help increase an organization's performance. Therefore, the important concepts are related to the variables and various details.

Many scholars have studied the concept of a learning organization and have defined it variously. Hargreaves and Jarvis (1998) said that the organization's learning process is learning to adapt themselves so learning will occur to a person, a group, an organization or even a group of organizations coordinated together. An organization must have the learning process to develop information, products, and services. At the same time, it needs to develop a perception as well as the transfer of knowledge or practices. In summary, the goal of an organization is learning so the members of the organization should learn to understand and analyze the problems that may occur literally. The development of innovative ideas concerning the product or the process in order to ensure the communication on various issues is very difficult and complex through experiences of others. According to Westover (2006), a learning organization is defined as an organization's ability to create a culture that promotes learning among members in the organization. An organization of learning can drive both single loop and double loop learning. These include the factors supporting positive thinking, risk taking, systematic thinking, effective listening, knowledge exchange, shared vision, trust in the area of physical proximity.

It can be seen that the focus of learning will be on the individual as well as organizational level. Concerning the organization of the learning, Woraphat (2005) stated that everyone at all levels can develop their capacity to constantly create the results constantly and give organizations a competitive advantage and sustainable growth. Jones (2007) defined learning organization as organizational design and organizational structure, culture, and strategy in order to increase the capacity of organizations to learn or help sustainable on going operations. Casey (1996) said learning means growth, development, and creation that lead to changes for the better. Therefore, ways of learning concerning how to make things better for the organization such as development, creation of an atmosphere of change to ensure that both the organization and members of the organization are developing the continuous progress. Knowledge management is a critical process that supports the learning organization.

Wick and Leon (1993) commented that successful organizations, whether large or small, all have the foundation as learning organizations. The future of learning organizations must include leaders who have the vision to open their minds to embrace data and analyze their own organizational goals, objectives and plans to achieve those goals. Tests begin with the attempt to invent new ways to ensure the organization's ongoing changes and then the result is put into reality.

The concept of organizational learning is the subject of a fast growing body of literature (Fiol & Lyles, 1985; Levitt & March, 1988; March, 1991; Stata, 1992; Barrow, 1993; Garvin, 1993; Schein, 1993; Sinkula, 1994; Nevis, DiBella, & Gould 1995; Cahill, 1995). The literature is replete with a wide variety of definitions of a learning organisation (see Table 2.1).

Table 2.1 Definitions of Organizational Learning

Author	Definition
Argyris(1977); Argyris & Schon (1978)	"the detection and correction of error"
Fiol & Lyles (1985)	"the process of improving actions through better knowledge and understanding"
Levitt & March (1988)	"organisations are seen as learning by encoding inferences from history into routines that guide behavior"
Huber (1991)	"an entity learns if, through its processing of information, the range of its potential behaviours is changed"
Stata (1992)	"organisational learning occurs through shared insights, knowledge and mental models and builds on past knowledge and experience"
Garvin (1993)	"an organisation skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights"

Table 2.1 Definitions of Organizational Learning (Cont.)

Author	Definition
Jashapara (1993)	"a continuously adaptive enterprise that promotes focused individual, team and organizational learning"
Bennet & O'Brien (1994)	"an organisation that has woven a continuous and enhanced capacity to learn, adapt and change its culture"
Nevis, DiBella, & Gould (1995)	"the capacity or processes within an organisation to maintain or improve performance based on experience"
Sinkula (1994); Slater & Narver (1995)	"organizational learning is a three stage process that includes information acquisition, information dissemination and shared interpretation"

Source: Mark A. Farrell

Senge's book "The Fifth Discipline" the well-known and highly regarded book in the past years and over 750,000 copies of which have been sold, has been credited by many researchers with its popularization of the notion of the LO (Zemke, 1996). In 1997, Harvard Business Review identified "The Fifth Discipline" as one of the seminal management books of the past 75 years (Smith, 2001). He said a core of learning organization has five discipline concepts which can continuously be applied to staff, team work, and a firm's opearation.

The concept of learning organization has been popular thanks to the study of Senge (1990b) on "The Fifth Discipline". Organizational learning involves the following:

1. System Thinking: This discipline focuses on the individual or team to understand the relationship between things. The administration's ability to see the image necessary to help resolve the issues of the complexity of tasks, the complexity of thinking and the complexity of the organization.

2. Personal Mastery: Candidates must have a commitment to excellence in order to excel in every aspect. Because of knowledge-based economy, it is important to keep pursuing knowledge and life-long learning.

3. Mental Model: Conceptual perspective, ways of thinking and understanding people in the story is an experience that has been accumulated since childhood by the environment around them including learning institutions, teachers, organizations and colleagues. A way of thinking and a wider perspective on the basis of maturity which affect the story or any activity in various aspects which is also a key component to the action.

4. Shared Visions: The shared vision of the organization is the integration of the aim of the organization in order to achieve a substantial increase in the future. A shared vision of the organization is critical to the new administration, that is, before any planning process, a clear vision should be defined and the details of the activities in the work plan must be taken into account whether the implementation of such method allows the organization to achieve that vision or not.

5. Team Learning: Learning together as a team with the focus on teamwork by everyone in the team must be practised together all the time. It will help increase customer values and improve the organization. This awareness helps everyone in the organization to focus on the need to learn from experiences together and vigorously support and realize one idea. Learning together as a team can help to strengthen the talent of the team as well.

A learning organization depends on various elements of academic and field studies in the marketing literature. Day (1991, 1994) introduced four learning capabilities: Open –Minded Inquiry, Synergistic Information Distribution, Mutually Informed Interpretation, and the Accessible Memory. This is the basic learning of the organization Sinkula (1994b) commented that learning organization consists of a group of learning foundation which have a shared vision, learning axioms and cross-functional sharing as well. Tobin (1993) offered the basis of different criteria for measuring organizational learning which included visible leadership, thinking literacy, functional myopia, leaning team, and manager as enablers. Table 2.2 demonstrates the ability to learn by Day (1991) and a separate group-based learning, proposed by Tobin (1993) and

Sinkula (1994b) are very similar and have agreed with the study by Senge (1990b). Additionally, other subjects about the structure of organizational learning have a similar approach. There may be a different element of the wider structure of learning organization with a different terminology. Organizational learning can be divided according to academic studies shown in Table 2.2.

Table 2.2 Composition of Organizational Learning by Academics

Academic	Issues Described	Elements
Senge (1990b)	Learning Disciplines	1. Personal Mastery 2. Mental Models 3. Shared Vision 4.Team Learning 5. System Thinking
Day(1991, 1994)	Learning Capability	1. Open-Minded Inquiry 2. Information Distribution 3. Interpretation Capability 4. Accessible Memory
Galer and Van Der Heijden (1992)	Learning Checklist	1. Cultural Learning. 2. Openness 3. Freedom to Experience 4. Commitment to Learning 5. Closeness in Planning and Action 6. Capture of Lessons Learned 7. Mutual Trust 8. Coordination of Activities
Mckee (1992) Norman (1985)	Learning Skills	1. Interpersonal Skills 2. Analytical Skills 3. Organization Skills 4. Ecological Skills

Table 2.2 Composition of Organizational Learning by Academics (Cont.)

Academic	Issuesdescribed	Elements
Tobin (1993)	Learning Foundation	1. Visible Leadership 2. Thinking Literacy 3. Function Myopia 4. Learning Teams 5. Manager as Enablers
Wick and Leon (1993)	Learning Elements	1. Defined Vision 2. Measurable Action Plan 3. Sharing of Information 4. Inventiveness 5. Implementation Ability
Sinkula (1994b)	Learning Foundation	1. Shared Vision 2. Learning Axioms 3. Cross-Functional Teamwork 4. Open-Mindedness 5. Experience Sharing
Slater and Narver (1994b, 1995)	Learning Element	1. Entrepreneurship 2. Facilitative Leadership 3. Organic Structure 4. Decentralized Strategic Planning 5. Market Orientation
Hult and Ferrel (1997a)	Organizational Learning Orientation	1. Team Orientation 2. System Orientation 3. Learning Orientation 4. Memory Orientation
Marquardt (2002)	Learning Subsystem	1. Systems Thinking 2. Mental Models 3. Personal Mastery 4. Self-Directed Learning 5. Dialogue

Source: Adapted from Hult and Ferrell (1997a) and Marquadt (2002)

In connection with the concept of a learning organization which is a source of competitive advantage (Stata, 1989), many scholastic studies on learning organization represents the ability of organizations to adapt to the environment (Hedberge, 1981) and to distribute organizational useful knowledge. The viewpoints towards particular valuable resource for organizations as a learning organization have been improved through the experiences of the staff (Nanda, 1996). According to Hamel and Prahalad (1990), organizational learning can occur due to a new performance. And regarding capability-building perspective, the virtual learning in organizations is emphasized as a critical aspect in the evolution of the ability to generate economic benefits (Stata, 1989).

Learning organization is a characteristic of organizations with extensive resources to create and use knowledge to achieve competitive advantage. The competitive advantage includes obtaining and sharing information about customer needs, changes in the market and the performance of competitors which lead to the development of new technologies, and also the capable rivals (Hurlay & Hult, 1998; Moorman & Miner, 1998; Mone et al., 1998). The focus on learning influences the type of information that needs to be collected (Dixon, 1992), interpreted (Argyris & Schon, 1978), estimated (Sinkula et al., 1997), and exchanged (Moorman & Miner, 1998).

Learning organization need to focus on learning, communication and distribution of knowledge available, including the creation of memory of the organization and the accessability to, for example, make learning a little organization because activities are often an important part of learning to use communication as an exchange of knowledge that each employee has discovered (Jelinik, 1979). Cohen (1991) stated that organizations have found the information in the process of learning and skill applying on a regular basis, so the focus on the process of the information acquisition (Sinkula, 1994a; Stater & Narver, 1994b, 1995) involving the focus on learning can be integrated into one entity with that idea in the activity. Members of the organization must develop the knowledge that is meaningful to improve future actions. Moreover, experiences of each member about the organizational knowledge will help to better understand the interaction between the organization and its environment (Kerin, Mahajan, & Varadavajan, 1990).

The review of the literature on organizational learning and innovation (Rogers, 1983, 1995; Montoya-weiss & Calantone, 1994; Browna & Eisenhardt, 1995; Hurley & Hult, 1998; Mone et al., 1998) revealed that learning is vital to its ability to innovate and to the results of organizational operations (Hurley & Hult, 1998). Organizations with a commitment to learn can lead to a better innovative products and processes (Gatignon & Xuereb, 1997). A positive correlation with the performance of the organization (Mone et al., 1998) concerned creating innovation demonstrated and accepted in the organization's thought process such as goods or services. The focus on learning is strongly correlated with organizational innovation. Many scholars focus on learning and the ability to innovate (Damanpour, 1991; Day, 1991; Cahill, 1996; Verona, 1999). Organizations need to create knowledge sharing within the organization. Calanton et al. (2002) stated that the commitment to learning, shared vision, open-mindedness and intra organizational knowledge sharing will help to measure the focus of the learning environment, learning organizations, with a focus on innovation and financial performance. Therefore, it can be concluded that focusing on learning orientation and knowledge sharing affect organizational innovation.

Huber (1991) broadly defines learning orientation as the development of new knowledge or insights that have the potential to influence behaviors through its values and beliefs within the culture of the organization. However, learning and innovativeness are separate constructs that are interrelated. In focusing on learning orientation as a cultural construct, we adopt Huber's (1991).

Bennett (1998) contended that learning-oriented organizations also exhibit the following; innovative attitudes, absence of a stifling bureaucracy, effective leadership, decentralization and open management. But "because the learning organization has been portrayed as possessing a large number of desirable attributes, the quintessential nature of learning orientation is difficult to describe" (Bennett, 1998, p. 9)

Slater and Narver (1995) suggested that learning orientation is directly related to new product success. Calantone et al. (2002) demonstrated a linkage among learning orientation, innovation, and performance in the firm.

Calantone et al. (2002) defined a firm's learning orientation as the organizational activities of creating and using knowledge to enhance competitive

advantage. Their study underscored the importance of learning orientation and linked it with innovation. Sinkula et al. (1997) conceptualized learning orientation as a firm's values (i.e. commitment to learning, open-mindedness, and shared vision) that influence its propensity to create and use knowledge. Thus, a learning orientation is the manifestation of the organisation's propensity to learn and adapt accordingly while organization learning typically is concerned with staff training and the mechanisms of knowledge and skill acquisition. Learning orientation is, therefore, a wider concept that embraces many aspects of adaptation and change.

Researchers have concluded that an organizational learning is associated with the development of a new knowledge, which is crucial for a firm innovation capability and a firm performance (Hurley, 1998). Furthermore, an innovation capability is positively related to a firm performance (Mone et., 1998). The literature review mentioned that, four factors of learning orientation include commitment to learn, shared visions, open-mindedness, and intra organizational knowledge sharing (Hurley, 1998; Hult, 1997, 1998). Moreover, learning cannot occur unless an organization has an effective and efficient system of information sharing, which allows company to re-exam their decision strategies and to implement new activities (Moorman, 1998).

Commitment to Learning: The commitment to learning involves employees of different levels in an organization who support learning and an atmosphere that encourages learning which is important for innovation (Norman, 1985; Sinkula et al., 1997). Learning happens through interaction and observation of the environment within the organization. Employees should focus on customer needs, technological changes, and uncertainty in the state tournament (Cahill, 1996). Organizations with a commitment to learning can increase the innovation capabilities in three concepts. The first concept is the promise of learning which allows organizations to reach innovation contract. Moreover, the focus on technology and innovation in the use of these technologies can increase the ability to create and achieve the great technological discoveries (Calantone et al., 2002). The second approach is being ready for the opportunity for organizations from the needs of emerging markets. The organizations need organizational knowledge and ability to understand and predict the accuracy of the customers (Damanpour, 1991; Cahill, 1996). Urban and Hauser (1993) used the

proposals as the cote benefit proposition to demonstrate that the organization needs to create a clear and true understanding of what potential is the need of the customer. The clear and concise interaction with customers has a direct link to the product strategy. It comes from a shared vision of the organization and reflects the new value to our customers (Urban & Hauser, 1993). The third concept is a commitment to learning ability to innovate among increasingly intense competitions (Damanpour, 1991). One of the attributes of the organization is an ability to track the movements of competitors (Gatignon & Xuereb, 1997). It is important to understand the strengths and the weaknesses of competitors because the organization must learn not only from its success, but also from its failure (Lant & Montgomery, 1987; Slater & Narver, 1994b).

Shared Vision: A shared vision conveys the organization to focus on learning. (Sinkula et al., 1997) Verona (1999) emphasized that a shared vision of the learning organization members is important or it can be said that although they have been motivated to learn but it is difficult to know what they learn. Without a shared vision, the problem in the spread of knowledge in the organization is arisen or a lot of creativity is not being applied (Hult, 1998). Due to the difference of the interest in the organization, there are needs to learn to focus on the feelings of employees within the organization when a new knowledge is applied and to focus on a clear direction for learning to strengthen the core competencies of the organization.

Open-Mindedness: Open-mindedness is recognized as the cause of a new concept (Sinkula et al., 1997). Today, organizations have to deal with rapidly changing technology and the need to respond to market variability. However, organizations in many industries are open-minded traditional organizations ubt still use obsolete knowledge to answer the questions (Porac & Thomas, 1990; Senge, 1992; Sinkula, 1994a; Verona, 1999). Therefore, organizations should pay more attention to the new perspective or the advanced knowledge and adapt to the changing pace.

Intra Organizational Knowledge Sharing: Knowledge sharing within the organization represents the belief that there is no accumulation or behavior that occurs on a regular basis, which is associated with the spread of learning between different departments within the organization (Zaltman et al.,1973; Moorman & Miner, 1998). The exchange of knowledge and information is a lively gathering of different sources

and the reference for future practice (Lukas et al., 1996). For example, a customer experience marketing agency, sometimes works with the research and development unit, to develop products or services that meet customer needs (Moorman & Miner, 1998).

Learning within the organization is the result of cumulative learning of employees in the organization as staff turnover and migration. The exchange of knowledge within the organization is essential to prevent loss of information (Lukas et al., 1996). The organization has a commitment to learn and share its vision of learning in an organization, without being limited to the accumulation of knowledge (Moorman & Miner, 1998).

To summary, all of the four elements will have an influence on a learning orientation to ensure a success of innovativeness and a high effectiveness of Firm Performance.

2.4 Learning Orientation and Innovativeness

Most scholars emphasized the focus on innovation because it is related to the philosophy of learning by the organization. To innovate one must have confidence about learning and sharing knowledge across the organization to all departments (Siguaw et al., 2006). Studies by Worren et al. (2002), for example, supported the mission of the organization to create an atmosphere of innovation and create new things. According to Hurley and Hult (1998), organizations need to create a culture of exposure to new ideas and to focus on new invention. Atuanhene-gima and KO (2001) suggested that organizations need to create an environment that allows employees to adjust to the pace of technological change. The philosophy of learning is essential to support creativity (Amabile, 1997; Worren et al., 2002). Being open to innovations (Zaltman et al., 1973; Berthon, Hulbert, & Pitt , 1999) is an attitude towards risk (Anabile, 1997; Atuahene-gima & Ko, 2001). However, learning and innovativeness are separate constructs that are interrelated. In focusing on learning orientation as a cultural construct, we adopt Huber's (1991). The main changes to be made under the specific organization can be empowered by the strategy of the organization, learning, and communication between departments within the organization to lead the new

invention. Pitt and Clake (1999) suggested that innovation is similar to composing music, playing in bands, orchestras, with the same purpose. The success of innovative solutions is the fruit of the knowledge and skills of the organization. Buckler and Zien (1996) reported that the organization is committed to innovation and employee motivation, communication, and shared values of the organization. Slater and Narver (1995) suggested that learning orientation is directly related to the success of a new product. Calantone et al. (2002) also demonstrated a linkage among learning orientation, innovation, and performance in the firm.

Based on the review of the literature on organizational learning and innovation (Rogers, 1983, 1995; Montoya-weiss & Calantone, 1994; Brown & Eisenhardt, 1995; Hurley & Hult , 1998; Mone et al., 1998; McNally, Cavusgil, & Calantone, 2010; Nybakk, 2012), it can be concluded that learning is necessary for its ability to innovate and yield desirable results of the organization's operation (Hurley & Hult, 1998). Organizations with a commitment to learning can lead to innovativeness of better products and processes (Gatignon & Xuereb, 1997; Adis & Jublee, 2010). A positive correlation with the performance of the organization (Mone et al., 1998) can create an innovativeness demonstrated and accepted in the organizaiton's thought process of goods or services. The focus on learning is strongly correlated with organizational innovation and thus many scholars focus on learning or on the ability to innovate more (Damanpour, 1991; Day, 1991; Cahill, 1996; Verona, 1999; Damanpour & Aravind, 2011; Jang, 2013). Organizations need to create knowledge sharing within the organization. The research by Calantone et al. (2002) used the commitment to learning, shared vision, open-mindedness and intra organizational knowledge sharing. Based on the concepts above, the hypotheses below were conducted.

Hypothesis:

H1: Learning orientation has positive effects on innovativeness.

H4: Commitment to learning has positive effects on innovativeness.

H5: Shared vision has positive effects on innovativeness.

H6: Open-mindedness has positive effects on innovativeness.

H7: Intra organizational knowledge sharing has positive effects on innovativeness.

2.5 Learning Orientation and Firm Performance

Learning orientation can influence the performance of the organization. The framework used to analyze the differences may be due to the appropriate context of the research of individual authors. Slater and Narver (1995) suggested that learning orientation is directly related to the success of a new product. Calantone et al. (2002) also demonstrated a linkage among learning orientation, innovation, and performance in the firm. Organizational learning is a characteristic of organizations with extensive resources to create and use knowledge to achieve competitive advantage. The competitive advantage is including obtaining and sharing information about customer needs. Also, changes in the market and the performance of competitors lead to the development of new technologies to compete with its competitors (Hurlay & Hult, 1998 ; Moorman & Miner, 1998; Mone et al., 1998). Learning orientation underpins firms' internal self-renewal, and is an important aspect of firms' strategizing activities (Covin et al., 2006; Hakala, 2011). The data with the focus on learning influences needs to be collected (Dixon, 1992). This information needs to be interpreted (Argyris & Schon, 1978) estimated (Sinkula et al., 1997) and knowledge needs to be exchanged (Moorman & Miner, 1998). Calantone et al. (2002) defined a firm's learning orientation as the organizational activities of creating and using knowledge to enhance competitive advantage. Their study underscored the importance of learning orientation and linked it with innovation.

In terms of the concept of learning in an organization which is a source of competitive advantage (Stata, 1989), many scholars stated that an organizational learning represents the ability of organizations to adapt to the environment (Hedberge, 1981) and it occurs when the organization has been distributing and leveraging organizational useful knowledge. The perspective of a particular valuable resource to organizations as a learning organization is the improvement through the previous experience of the staff (Nanda, 1996). Hamel and Prahalad (1990) stated that to the extent the organizational learning can occur due to a new performance and can be made much more complete by the determination to build capacity or to emphasize on learning. Learning orientation leading to firm performance includes the ability to

generate economic benefits (Stata, 1989). Based on the concepts above, the hypotheses below were conducted.

Hypothesis:

H2: Learning orientation has positive effects on firm performance (ROA).

H8: Commitment to learning has positive effects on firm performance (ROA).

H9: Shared vision has positive effects on firm performance (ROA).

H10: Open-mindedness has positive effects on firm performance (ROA).

H11: Intra organizational knowledge sharing has positive effects on firm performance (ROA).

2.6 Innovativeness and Firm Performance

Innovation ability is the most important factor affecting the firm performance (Cooper & Kleinschmidt, 1987; Li & Calantone, 1998; Mone et al., 1998; Panayides, 2006). Nonaka (1994) suggested that innovation occurs when employees share their knowledge within the organization and when this shared knowledge generates new and common insights, in a process of divergence and convergence when new key capabilities enhance innovation in the firm. Some of the report's findings revealed the direct effect between innovation and organizational performance (Subramanian & Nilakanta, 1996). According to Tatikonda and Montoya-Weiss (2001), there are factors that affect the process of organizational outcomes such as product quality and cost that will lead to the same outcomes. Damanpour and Evan (1984) and Han et al. (1998) reported that the innovation process and innovation management are positively correlated with the performance of the organization. Damanpour and Gopalakrishnan (2001) explained that organizations have a high performance due to product and process innovation. Ittner and Larcker (1997) found a significant relationship between innovation and performance measurement for example the return on assets and the rate of growth in the computer industry caused by the level of innovation in a gradual pace. Calantone et al. (2002) demonstrated a linkage among learning orientation, innovation, and performance in the firm. According to Palmer and Brookes (2002), the result of innovations is an incrementally better performance while Damanpour and

Gopalakrishnan (1999) indicated that the performance of the organization is the outcome of a function of a variety of innovations, including product innovation and technical innovation. This is consistent with Baker and Sinkula (2002) who commented that a gradual change leads to a competitive advantage in a short term. Other scholars found that creating something new and innovative products can make a jump in the performance of the organization (Vazquez et al., 2001; Marsili & Salter, 2005). Therefore, the conclusion that the innovation ability is the key factor to the performance of the organization (Mone et al., 1998) can be proved by a number of results (Cooper & Kleinschmidt, 1987; Rogers, 1983, 1995; Cooper, 2000). The suggestion is that organizations need to innovate to create a competitive advantage for the organization to survive (Li & Calantone, 1998). Based on the concepts above, the hypotheses below were conducted.

Hypothesis:

H3: Innovativeness has positive effects on firm performance (ROA).

2.7 Business in the Electronic/Electrical Products and Parts Industry

Network electronic and electrical industry is the production and assembly of components used in the electronics industry. The components include the computer electronics and telecommunications products that are complete except for some that need to be imported, need high technology production or need to produce economies of scale that cannot be done in Thailand. Some of the raw materials and machinery must be imported from abroad because the structure of the industry relies on foreign investment who owns the technology. However, Thailand, with a long experience in the production, has a production base with highly skilled labor in the industry and some technology transfer knowledge.

It is suitable to analyze electronic/electrical products and parts industry since it has many sub-industry groups. This study uses 3 sub-industries in electronic/electrical industry which have different structures to represent the electronic/electrical industry.

The electronic/electrical industry also has other interesting characteristics. First, it is technology-based industry whose products and processes depend on technological progress, so R & D activity should be the important strategy for firms. Second,

electronic industry is important to Thai economy. It has been one of country's top export industries since the middle of 1980s and has become the country's leading industry.

2.8 Conclusion

Innovation combination is the use of existing resources and skills for creating something new. In support of innovation the organizations need to create a system to deal with rapid changes. To create a learning organization and the transfer of information and skills (Paladino, 2006), it is necessary to control such resources which are likely to increase innovation. These resources need to include the necessary resources together. The study shows a very strong relationship between a valuable resource, capacity, and performance (Sharma & Vredenburg, 1998). Organizations should make it a valuable resource allowing the opportunity to present new products and innovations. In the past studies, there was an examination of the role, skills, core competencies and a positive relationship with the success of innovation to create a new product (Muffatto & Panizzlo, 1996). Although the organization was unable to confirm the superior profit ability of innovativeness, organizations can use the ability and resources to innovate continuously (Roberts, 1998). The organization must play the role of a superior resource to convert the success of new products, which can make the new market share and create a competitive advantage (Gatignon & Xuereb, 1997).

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Introduction

This chapter will present the details of research methodology. It will be discussed the selection method of research, population and samples, research developing instruments, random sampling method, data collection, and data analysis.

This research selected the electronics/electrical products and parts industry in Thailand to study the influence of a learning orientation that effects innovativeness, to study the influence of a learning orientation that effects firm performance (ROA), to study the influence of innovativeness that effects firm performance (ROA), and to study the influence of effected elements of learning orientation relationships on innovativeness and a firm performance (ROA).

By selecting an independent variable that influences the operation, this study's theoretical literature included advice from several specialists and entrepreneurs in electronics/electrical products and parts industry to create a conceptual framework and research hypothesis testing.

3.2 The Global Model of Theoretical Framework

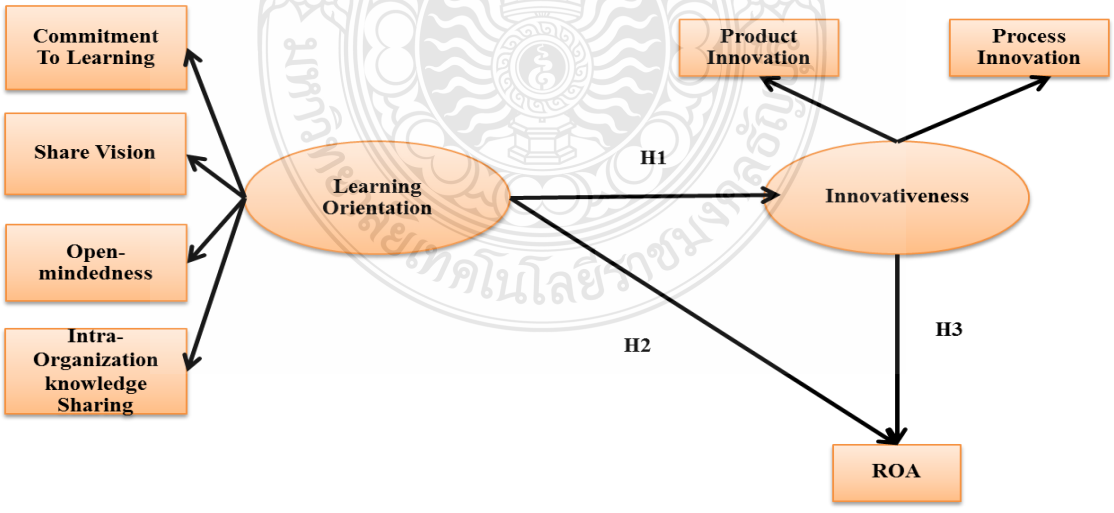

Figure 3.1 The Global Model of Theoretical Framework

The Specific Model of Theoretical Framework

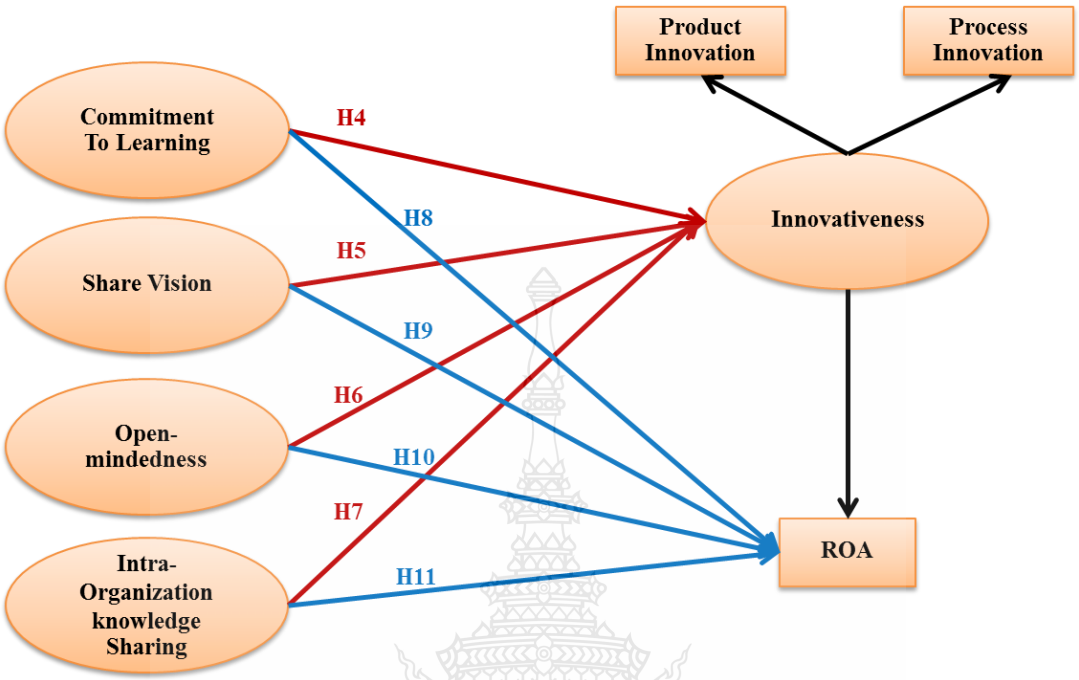

Figure 3.2 The Specific Model of Theoretical Framework

3.3 Research Design

The purpose of this study was to investigate the effects of learning orientation on innovativeness, learning orientation on a firm performance (ROA), innovativeness on a firm performance (ROA) and elements of learning orientation relationship on innovativeness and a firm performance (ROA). The researcher designed correlation study path analysis to obtain information to answer research questions by using structural model procedure that has the relationship between latent and latent variables or the relationship between latent and observed variables which are tested through structural equation model (SEM). The researcher used an appropriate methodology from the selection of the subjects as follows: sample size, instrument, data collection, and statistical analysis. The subjects of this study, in general, are factory managers or manufacturing managers in electronic/electrical product and parts industry. This research study used survey questionnaires as a key instrument in assessing the data relating learning orientation and innovativeness. Close-ended questionnaires were used for collecting data in the survey procedure; the level of measurement fell into interval scales. The inquiries were distributed during the last two to three years. The researcher

used the data from Business Online Public Company Limited (BOL) to assess the business performance. The overall research design in detail is explained in the following sections.

3.4 Selection of the Subjects

This study aimed at investigating the electronic/electrical product and parts industry in Thailand. The population sample was selected from companies in electronic/electrical product and parts industry in Thailand. The sampling frame was the list of all firms that were ensured to operate systematically under full provisions of law. This study used the sample of population from the electronic/electrical industry because it is a major industry with high foreign investment. Besides, the industry is very important because the government's policy emphasizes and supports the electronic industry and electronic equipment as Production Networks which were researched and developed in parent company's country. Then, these equipments were produced in subsidiary company's country. This brings up the question whether the innovation will be created in the subsidiary company's country or not if the R & D and production were separated.

The list of all firms in the Thai exporter list, department of export promotion, Ministry of Commerce of Thailand was selected as the sampling frame because it produced electronic/electrical product and parts and exported to other countries. There were 824 companies in Thai Exporter List. Therefore, the population of this study was 180.

3.5 Population and Samples

This study was interested in the electronic/electrical product and parts industry. The population for the study was the electronic/electrical product and parts industry in Thailand. The Thai exporter list of department of export promotion, Ministry of Commerce of Thailand with the total membership of 824 companies was used as the sampling frame.

Thailand has been promoted as the region's production hub of electronics, electrical appliances. The product lines cover computers, accessories and components,

printed circuit boards, and telephone sets, television receivers, air-conditioners, video and audio accessories and components.

- Electrical Products/ Electrical Applianoes (609 Companies)
- Electronic Products (275 Companies)

Table 3.1 Thailand's Exporters Directory

Product Categories	Number of Companies
Agricultural Products	1,078
Automotive / Auto Parts and Accessories	645
Bag / Footware / Leather	761
Building Materials / Hardware Items	1,071
Chemicals / Plastic Resin	391
Cosmetics / Toiletries / Medical Supplies / Optical Goods	1,099
Electronics / Electrical Products and Parts	**824**
Food	2,054
Furniture	800
Gifts and Decorative Items / Handicrafts	1,679
Home Textiles	309
Household Products	878
Machinery / Equipment	361
Minerals / Fuels	76
Pet and Farming Products	95
Printing Products and Service / Packaging	570
Safety Products	34
Service Trade	1,102
Sporting Good	95
Stationery / Office Supplies and Equipment	184
Taxtiles, Gaments and Fashion Accessories	1,739
Toys and Games	215
Watch / Clock / Gems and Jewelry	1,108

Source: Thai Exporter List 2012, Department of Export Promotion Website. Ministry of Commerce of Thailand.

Schreiber, Nora, Stage, Barlow & King (2006) mentioned that the general sample size for structural equation model (SEM) is 10 participants for every free parameter estimated. In this study, there were 18 free parameters; therefore, the minimum sample size was above 180.

The unit of analysis was companies on the Thai Exporter List of Department of Export Promotion, which was granted an access to superior information about most aspects of electronic/electrical product and parts in Thailand. To select the size of the sample, it is important that the units of analysis appear to be homogeneous. The members of the Thai Exporter List of Department of Export Promotion were of the same industry with a similar level of company size and number of employees, and others. The Thai Exporter List of Department of Export Promotion had a total membership of 824 companies and the simple random sampling technique was applied. The 180 samples respondents were the factory managers or manufacturing managers of electronic/electrical product and parts industry in Thailand.

3.6 Instruments and Measurement

The framework for this study was developed from theories and concepts related to the workplace. The design of this study was a quantitative approach. Quantitative approach for this study was done by using questionnaires. Furthermore, the needed information collected from those subjects was composed of various items such as learning orientation, innovativeness, and firm performance (ROA). This study developed and adapted the instrument from various sources constructed by former well known researchers to cover information needed for figuring out the research hypotheses. Furthermore, the questionnaires were conducted based on intensive literature review and the guidance of experts. Most items were derived from the literature.

The variables were in the following order:

1. Commitment to learning
2. Shared vision
3. Open-mindedness
4. Intra organizational knowledge sharing

5. Product innovation
6. Process innovation

Commitment to learning was measured using four items from Galer and van der Heijden (1992) and Sinkula et al. (1997). Shared vision was measured by four items from Sinkula et al. (1997). Open-mindedness was measured by four items from that source and from Hult and Ferrell (1997). Intraorganizational knowledge sharing was measured by four items from that source and from Hult and Ferrell (1997). Furthermore, the instrument constructed by Lukas and Ferrell (2000) was adapted for collecting information on product innovation. And two instruments generated from field research and instruments constructed by Park, Hartley and Wilson (2001), and Quesada, Syamil and Doll (2006) were applied for collecting data concerning process innovation. According to information relating business performance, the financial information was used to summarize the differences. A financial ratio as return on asset (ROA) was considered.

In considering the detail of instrument used for collecting data, the following information was explained for each group of questions.

Learning Orientation

The questionnaire of Calantone et al. (1990) included 16 items of questions on learning orientation. It was divided into four dimensions of investigation each of which comprised 4 question items: the commitment to learning, shared vision, open-mindedness, and intra organizational knowledge sharing. Each item was scored on a 5-point scale, ranging from "strongly disagree" to "strongly agree." All items included:

Commitment to learning: organizational employees are motivated to cooperate in the development of ideas of innovativeness (Dundon, 2002) and the organization has been considered to support learning so it will be a key factor that guarantees the survival of the organization (Higgins, 1995).

Commitment to learning

1. My organization's ability to learn is the key to our competitive advantage.
2. The basic values of this organization include learning as key to improvement.
3. The sense around here is that employee learning is an investment, not an expense.

4. Learning in my organization is seen as a key commodity necessary to guarantee organizational survival.

Shared vision: organizations have strategic vision, mission, and goals particularly for an innovation (Higgins, 1995; Denton, 1999; Tidd et al., 2001; Greenberg & Baron, 2002) and the purpose of innovation is consistent with the mission of the organization (Greenberg & Baron, 2002) and organizational development strategy and vision by establishing clear plans and activities (Dundon, 2002).

Shared vision

5. There is a commonality of purpose in my organization.
6. There is a total agreement on our organizational vision across all levels, functions, and divisions.
7. All employees are committed to the goals of this organization.
8. Employees view themselves as partners in charting the direction of the organization.

Open-mindedness: a hearing in case employees have different opinions from the policies of the organization (Denton, 1999) to work in the atmosphere that allows everyone to make comment openly (Denton, 1999; Tidd et al., 2001; Dundon, 2002).

Open-mindedness

9. Our organization is not afraid to reflect critically on the shared assumptions we have made about our customers.
10. Personnel in this enterprise realize that the very way they perceive the marketplace must be continually questioned.
11. We rarely collectively question our own bias about the way we interpret customers' information.
12. We continually judge the quality of our decisions and activities taken over time.

Intra organizational knowledge sharing: organizations have contributed to the working atmosphere by taking and accepting the risk of failure (Denton, 1999) and by providing a job rotation to achieve a wide range of knowledge (Denton, 1999) and a communication system both formal and informal (Higgins, 1995; Denton, 1999; Tidd et al., 2001).

Intra-organizational knowledge sharing

13. There is a good deal of organizational conversations that keep alive the lessons learned from history.
14. We always analyze unsuccessful organizational endeavors and communicate the lessons learned widely.
15. We have specific mechanisms for sharing lessons learned in organizational activities from department to department, unit to unit, and team to team.
16. We put little effort in sharing lessons and experiences.

Product Innovation

The other parts of instrument that investigate product innovation were adapted from Lukas and Ferrell (2000) and two generated from field research. Four questions focused on new products were included. Each item was scored on a 5-point scale, ranging from "strongly disagree" to "strongly agree". All items included:

Product innovation: products that are developed and commercialized to customers in acquiring and using them (Sandvik & Sandvik, 2003).

1. We have the products that have been very new to your organization but not new to your market.
2. We have the products that are new to your organization and new to your market.
3. Our organization have a research and development institution responsible for products development.
4. Our organization provides support within a sufficient time for the institution to develop products.

Process Innovation

For process innovation, the questions were adapted from the study by Park, Hartley and Wilson (2001) which included 4 questions concerning changing the intra-process and 4 questions were adapted from Quesada, Syamill and Doll (2006) based upon a 5-point scale, ranging from "strongly disagree" to "strongly agree" for each item. Those 4 questions focused on process in relationship with the performance. All items included:

Process innovation: introduction of some important modifications in the organization's production process such as new machines or new methods (Nieto & Santamartia, 2010).

1. We continuously improve processes in our plant.
2. Customers are actively involved in our new product's development process.
3. For all our processes, reducing cycle time is a priority.
4. Our company is concerned with reducing cycle time for all processes.
5. Process design is done at the same time with product design.
6. Product development group members come from various disciplines.
7. Process innovation provides high-quality products.
8. Process innovation supports our product development schedules on time.

Firm Performance

In determining firm performance, the data was separately collected from other sources. Firm performance was measured by using secondary data from Business Online Public Company Limited (BOL). BOL is the company that provides information for business decision making. The information of BOL comes from the Department of Business Development, Ministry of Commerce. Firm performance was measured by return on assets (ROA). A key figure is viewed as a reflective indicator of firm performance with each of the firm performance measures. Return on assets (ROA) was detected as a very significant performance measurement in marketing and management (Jacobson, 1992; Nulla, 2013). It was measured as net profit before taxes plus interest payments (Sandvik & Sandvik, 2003). Narver and Slater (1990) said that the performance variable in our analysis was a business's return on assets (ROA) because the principal of return on assets (ROA) served market segments and related to return on assets (ROA) of all other competitors. Return on assets (ROA) was selected to figure out the results. In this study, the researcher used the financial data from Business Online Public Company (BOL) in 2010-2012 for ROA, and used the three-year financial data to get an average information in order to make the data normal.

One way to handle the violation of univariate normality assumption – and thereby address multivariate normality – is through transformations, meaning that the original scores are converted with a mathematical operation to new ones that may be more normally distributed. The effect of applying a transformation is to compress one

part of a distribution more than another, thereby changing its shape but not the rank order of the scores. This describes a monotonic transformation. Transformations for three types of non-normal distributions and practical suggestions for using them wee offered next. Transformations for skew may also help for kurtosis. According to the data, the kurtosis type was represented and the result showed "negative skew." All the transformations just mentioned also work for negative skew when they are applied as follows: first, reflect the scores, and then add a constant so that the lowest score equals 1.0. Next, apply the transformation, and then reflect the scores again to restore the original ordering (Osborne, 2002).

To complete the instrument, the adapted questionnaires were translated from English to Thai and translated back to English to ensure that the same meaning of content was conveyed to the subjects. Moreover, those questions were validated and made reliable by other researchers. However, to ensure the validity of this study, one group of experts was asked to comment on the items along with the operational definition of its dimension in the validity investigation form.

The researcher had studied variable of the effects of learning orientation on innovativeness and firm's performance. The information was collected by using a five-point rating scale (1=strongly disagree to 5=strongly agree) that indicated varying degrees of agreement to statements about the variables to measure responses.

Regarding all parts of questionnaires, some changes were made to the items making them different from the original studies. Furthermore, the questionnaire was translated into Thai language; therefore, the validity of all parts of the questionnaires would be tested by professionals in factory such as managers or manufacturing managers of electronic industry from each company.

Pilot Study

A pilot study is a pre-study that is a small experiment designed to test logistics and to gather information prior to a larger study in order to improve the latter's quality and efficiency. A pilot study could reveal deficiencies in the design of a proposed experiment or procedure, and these could then be addressed in advance while resources are expended on large scale studies by using the 30 sets of the test and 180 sets from the data collection as shown in Table 3.2.

Reliability Analysis

Reliability is defined as the extent to which a questionnaire, test, observation or any measurement procedure produces the same results on repeated trials (Cooper & Schindler, 2003). There are three aspects of reliability which are equivalence, stability, and internal consistency. The internal consistency reliability is related to the extent to which items on the test or instrument are measuring the same thing. If the individual items are highly correlated with each other, the researcher could be confident that the instrument has high reliability of the entire scale. Therefore, the internal consistency reliability was used to measure the reliability of this study. The instrument used for the study contained two response options which were 5-point and 7-point Likert scales. Thus the coefficient alpha (Cronbach, 1951) was applied. The Cronbach's alpha refers to the extent to which the items in a test measure the same construct (Ho, 2006). The value above 0.70 is generally accepted (Nunnally, 1978; Fornell & Larcker, 1981; O'Leary-Kelly &Vokurka, 1998).

Table 3.2 The Confidence of the Questions Used in the Research

Conceptual/ Theoretical	Variables	Number of Questions	Cronbach's Alpha Coefficient (n = 30)	Cronbach's Alpha Coefficient (n = 180)
1. Learning orientation	Commitment to learning	4	0.785	0.809
	Shared vision	4	0.778	0.887
	Open-mindedness	4	0.760	0.831
	Intra organizational knowledge sharing	4	0.823	0.819
2. Innovativeness	Product innovation	4	0.774	0.799
	Process innovation	8	0.754	0.802

Learning orientation

The learning orientation instrument of this study presented sixteen items of which the alpha was 0.846. The study suggested that the instrument was reliable for the measurement of this scale.

Innovativeness

The innovativeness instrument of this study presented twelve items of which the alpha was 0.868. This suggested that the instrument was reliable for the measurement of this scale.

Validity Analysis

The validity investigation form composed of three columns (congruent, not sure, and not congruent) in which each expert had to place their comment. The "congruent" means the questions are corresponding to the meaning of the item and its dimension. The "not sure" means the questions are not exactly corresponding to the meaning of the item and its dimension. The "not congruent" means the questions are not corresponding to the meaning of the item and its dimension. If the experts' comments in the column were "not sure" and "not congruent," they were asked to recommend how to correct the related questions. After, the researcher had reviewed the questions again, the draft of the instrument was completed.

Validity refers to the extent to which the instrument accurately measures or assesses the specific concept that the researcher is intending to measure (Cooper & Schindler, 2003). Content validity: researchers examined the quality of the research instrument by using the questionnaire. The research was examined and audited by the dissertation advisor and dissertation co-advisor before being forwarded to three experts for content validity. The research needed to find an index of item-objective congruence (IOC) (Rovinelli & Hambleton, 1977) of the consistency between each question and attribute with the objectives as follows:

$$IOC = \frac{\sum R}{N}$$

R = Rate of expert's opinion

N = Number of experts

Score was set by the experts' following criteria:

+1 The"congruent" means the questions are corresponding with the meaning of the item and its dimension.

0 The “not sure” means the questions are not exactly corresponding with the meaning of the item and itsdimension

-1 The “not congruent” means the questions are not corresponding with the meaning of the item and its dimension

All the items with IOC scores of less than 0.5 were eliminated from the final instrument. After the experts had checked the quality of the questionnaire’s content validity, it was found that the content validity ranged from 0.6 and above. It showed that the questions in the questionnaire were appropriate due to its consistence with the objectives of the research questions, the context accuracy, language appropriation, and clarification that covered the study. The research was conducted after the questions had been revised based on the advisors’ suggestions such as the clarity of the questions, the use of an official language rather than an informal one and the elimination of unnecessary questions according to the suggestions of three university professors who are experts on the innovation and Human Resource Management.

Construct validity was tested by confirmatory factor analysis (CFA) including p-value, factor loading, average variance extracted (AVE), and discriminant validity. First, p-value associated with each loading should be significant. Second, factor loading was above 0.3 (Hair, Black, Babin, & Anderson, 2010). Third, AVE should be greater than 0.5 if AVE for each construct was greater than its shared variance with any other construct and discriminant validity was supported (Fornell & Larcker, 1981).

3.7 Data Collection

The period of collecting data was during October–December 2013. The unit of analysis was companies from the Thai Exporter List of Department of Export Promotion, Ministry of Commerce of Thailand**.** A total of 824 copies of the questionnaire were distributed to the companies’ factory managers or manufacturing managers of electronic/electrical product and parts industry in Thailand. Return envelopes were enclosed with the questionnaires to ensure the response and the confidentiality of the data. Respondents were requested to complete the survey within one month. Later on, until the end of the data collection period, follow-up was carried out by the researcher to certain respondents who had not returned the questionnaires

until the number of the returned questionnaires met the required minimum sample size of 180.

The researcher collected data on the performance according to the secondary data that was obtained from the Business Online Public Company Limited (BOL) database. BOL is a leading provider of business information services that helps to check a company's credibility. Firm performance was measured by return on assets (ROA) to demonstrate the performance of funds after investment whether such assets could generate profit, to demonstrate the use of the asset and to make comparison with other companies in the same industry. It indicated that the competitiveness of enterprises in the management yielded greater profit than the others.

3.8 Data Analysis

Prior to data analysis, this research measured the non-response bias on the first group and after the second group had returned the questionnaires via postal mail which were used for bias testing. Both groups used samples with the same characteristics. Statistics used included Descriptive Statistics, Factor Analysis, and Structural Equation Modeling (SEM).

Descriptive Statistics

Descriptive statistics are the disciplines of quantitatively describing the main features of data collection that aims to summarize a data set of population such as mean, mode, median, variance, and standard deviation. The descriptive statistics was used to describe the data in this study including respondents'gender, age, marital status, educational background, job positions, type of business organization, form of business, number of employees, capital, and years in operating.

Factor Analysis

Factor analysis is the study of interrelationships among the variables in an effort to find a new set of variables. There are two types of factor analysis, which are exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). EFA is used when there is an uncertainty about the number of factors which are appropriate to explain the interrelationships among a set of items, whereas CFA is used when the researchers have some knowledge about the number of factors which are appropriate to explain the interrelationships among a set of items. According to the instrument, it was

translated into Thai language, and the data was collected from Thai organizations where the different context may affect the structure of each factor. Therefore, CFA was used in this study. In this study, the CFA analysis was in accordance with the structure of the relationship among the previous observation of variables that were related to other research literature review. The study included the normal distribution testing, composite reliability (CR), average variance extracted (AVE), convergent validity, and discriminant validity. Fornell and Larker (1981) recommended that composite reliability (CR) be greater than 0.60 and average variance extracted (AVE) be greater than 0.50.

CR = Composite Reliability

$= (\Sigma \text{ of standardized loading})^2/[(\Sigma \text{ of standardized loading})^2 + \Sigma \text{ of } \varepsilon j]$

AVE = Σ of $(\text{standardized loading})^2/[\Sigma \text{ of } (\text{standardized loading})^2 + \Sigma \text{ of } \varepsilon j]$

In this study, factor analysis was also used to test the structure of factors of learning orientation which innovativeness.

Structure Equation Model (SEM)

Wright (1921) defined that SEM is a statistical technique for testing and estimating causal relations using a combination of statistical data and qualitative causal assumptions (Wright, 1921). Byrne (2010) further defined that SEM is a statistical methodology that takes a confirmatory approach such as hypothesis-testing to the analysis of a structural theory bearing on some phenomenon. SEM consists of two procedures. The first procedure is a measurement model that latent variables are proposed and tested through factor analysis. The second procedure is a structural model that the relationships between latent and latent variables or the relationship between latent and observed variables are tested through regression which is in a causal and rational way. In this study, a framework was presented by two models. The global model (Figures 3.1) measured the influence between the factors of learning orientation, innovativeness and firm performance (ROA). And the specific model (Figures 3.2) measured the influence between the elements of learning orientation , innovativeness and a firm performance (ROA) which was tested by structural equaltion modeling based on the conceptual framework with empirical data to verify the coexistence of the research mode by using the path analysis to analyze data.

The following indices were used to check the consistency of the model with empirical data.

1. Chi-square (χ^2) or CMIN is the commonly used statistical test in order to check if the harmony is significant. To indicate that the model is consistent with empirical data merging, the chi-square or CMIN must have p> 0.05 (Diamantopoulos & Siguaw, 2000).

2. χ^2/df or CMIN/df is used in order to indicate the model's harmony with empirical data. The value of less than 2.00 indicates that the model is in harmony with the empirical data (Bollen, 1989).

3. Root Mean Square Residual (RMR) represents the averge residual value derived from the fitting of the variance – covariancematrix for the hypothesized model ($\sum$) to the variance – covariancematrix of sample data. RMR should be consistent with value of less than 0.08 (Browne & Cudeck, 1993).

4. Comparative Fit Index (CFI) belongs to a class of fit statistics known as incremental or comparative fit indices, which are among the most widely used in SEM and can assess the relative improvement in harmony with the researcher's model compared with a baseline model. CFI should be consistent with values up to 0.90 (Diamantopoulos & Siguaw, 2000).

5. Goodness of Fit Index (GFI) is used for checking the consistency and should be 0.80 or above (Sharma, 1996).

6. Adjusted Goodness of Fit Index (AGFI) is considered consistent when it is 0.80 or above (Sharma, 1996).

7. Normed Fit Index (NFI) is considered consistent when it is 0.80 or above (Hu & Bentler, 1999).

8. Root Mean Square Error of Approximation (RMSEA) is considered good fit when it is less than 0.50 and considered reasonable fit when between 0.05 and 0.08 (Browne & Cudeck, 1993; MacCullum, Browne, & Sugawara, 1996).

9. Hoelter is the acceptable minimum sample size which indicates that expected models are in harmony with the empirical data. The Hoelter with the value of greater than 200 indicates that a sample size is large enough for analysis (Hoelter, 1983).

This study examined the conditions for normal distribution by checking the skewness and kurtosis values. Curran, West and Finch (1996) suggested that if the

absolute value of the skewness index is more than 3, this means that the data is asymmetric or does not have a normal distribution. If the absolute value of the kurtosis index is more than 10, it indicates that the variable is normally distributed. In addition, the significance at 0.1 level, p-value was less than 0.1; the significance at 0.05 level, p-value was less than 0.05; the significance at 0.01 level, p-value was less than 0.01; and the significance at 0.001 level, p-value was less than 0.001 (Arbuckle, 2011).

3.9 Conclusion

Chapter 3 concerns the research methodology including the theoretical framework, research design, selection of the subject, population and sample, data collecting tool, and data analysis. The next chapter will present the results of this study.

CHAPTER 4
RESEARCH RESULTS

Learning orientation and innovativeness are well-known in management area. In this study, they acted as the key factors. The component of learning orientation in this study was composed of commitment to learn, shared visions, open-mindedness, and intra organizational knowledge sharing (Hurley, 1998; Hult, 1997, 1998). This study aimed for the outcomes of the learning orientation through innovativeness as a firm performance. Firm performance was a measurable factor used for indicating results of the relationship's outcomes. In this study, firm performance was measured against theoretical framework models. These models were used for measuring the return on assets (ROA) with the information from Business Online Public Company Limited (BOL). Structural Equation Modeling (SEM) was applied to investigate the research questions. Therefore, this chapter explained all of the following:

- Data preparation
- The analysis results of general information of factory managers or manufacturing managers in electronic/electrical product and parts industry
- The analysis of learning orientation, innovativeness, and firm performance using descriptive statistics
- Label of latent variable
- Construct assessment and validity analysis
- Empirical assessment of proposed models
- Model assessment
- Hypotheses testing and results

4.1 Data Preparation

4.1.1 The Population and Response Rate

This thesis used 420 questionnaires to get complete information from factory managers or manufacturing managers in electronic/electrical product and parts industry in Thailand. After one month and a half, the total number of 152 questionnaires was

returned to the researcher. Then, the follow-up procedure was conducted via e-mail and telephone calls and 14 additional questionnaires were returned to the researcher. Therefore, the total of data was added up to the total number of 166 questionnaires. However, this study required at least 180 queries so another 100 questionnaires were sent out and a month later, the total of 39 replies was received. Finally, 205 questionnaires, representing a response rate of 39.42%, were analyzed.

4.1.2 Treatment of the Missing Data

The researcher obtained a secondary data of each electronic/electrical industry by using the financial information from the Business Online Public Company Limited (BOL). However, the BOL database did not contain all of the electronic/electrical industry information so the data could not be used in the experiment. Another reason why the research could not be completed was that some of the financial statements were missing between 2010 and 2012. Also the total of 25 companies' information had been omitted such as the outlier values from a boxplot graph; therefore, only 180 companies were included in this analysis.

4.1.3 Normal Distribution of Samples

Before the statistical analysis being performed, the normal distribution of this sample was checked by using skewness and kurtosis value. Curran, West and Finch (1996) suggested that if the absolute skewness index is more than 3, this means the data is asymmetric or does not have a normal distribution. If the absolute kurtosis index is more than 10, it indicates that there is not normal distribution.

Besides, Vanichbuncha (2013) suggested that the skewness value should be between -1 and +1 to assume a normal distribution. In this study, the skewness value was between -0.193 to -0.942 (as shown in Table 4.3, and Table 4.4). Kurtosis value was between -0.655 to +1.711 (as shown in Table 4.3, and Table 4.4). In summary, the data was normally distributed and could be analyzed through a structural equation model.

4.2 The Analysis Results of General Information of Respondents and Electronic/ Electrical Industry

The analysis results of the basic statistics in the electronic/electrical industry descriptive classification were as follows: 1) the general information of managerial level consisted of their gender, age, marital status, educational background, and the number of years of employment; and 2) the general information of organizations consisted of type of business organization, form of business, number of employees, capital, and number of years in operating. The detail was shown in the table below:

Table 4.1 Respondents' Profile (General Information of the Managerial Level)

Demographic Data	Frequency	Percent
Gender		
Male	101	56.1%
Female	79	43.9%
Age		
Less than 30	14	7.8%
30-39	62	34.4%
40-50	73	40.6%
More than 50	31	17.2%
Marital Status		
Single	48	26.7%
Married	130	72.2%
Other	2	1.1%
Educational Background		
Below Bachelor's degree	21	11.7%
Bachelor's degree	93	51.7%
Master's degree	64	35.6%
Doctoral degree	2	1.1%
Number of Years of Employment		
Less than 5 years	23	12.8%

Table 4.1 Respondents' Profile (General Information of the Managerial Level) (Cont.)

Demographic Data	Frequency	Percent
5-10 years	48	26.7%
11-15 years	26	14.4%
16-20 years	30	16.7%
21-25 years	21	11.7%
More than 25 years	21	17.8%

Table 4.2 Respondents' Profile (General Information of Organization)

Demographic Data	Frequency	Percent
Types of Business Organization		
Public Limited Company	19	10.6%
Limited Company	151	83.9%
Partnership	8	4.4%
Others	2	1.1%
Form of Business		
Thai Firms	96	53.3%
Joint Venture	41	24.4%
Foreign Firms	40	22.2%
Number of Employees		
Less Than 50 Employees	31	17.2%
50 – 150 Employees	34	18.9%
111 – 250 Employees	34	18.9%
More Than 250 Employees	81	45.0%
Capital		
Less Than 1,000,000 Baht	17	9.4%
1,000,000 - 50,000,000 Baht	86	47.8%
50,000,001 - 100,000,000 Baht	37	20.6%
More Than 100,000,000 Baht	40	22.2%

Table 4.2 Respondents' Profile (General Information of Organization) (Cont.)

Demographic Data	Frequency	Percent
Number of Years in Operating		
Less Than 5 Years	6	3.3%
5-10 Years	17	9.4%
11-15 Years	11	6.1%
More Than 15 Years	144	81.1%

Data was collected from 180 queries sent to respondents of the management level. The characteristics of the majority were as follows: 56.1 percent of respondents were male, 40.6 percent were aged between 41 and 50, 72.2 percent were married, 51.7 percent obtained a bachelor's degree and 26.7 percent had been working for this company for 5 to 10 years.

Moreover, the majority of organizations were registered as a limited company which accounted for 83.9 percent. Also, 53.3 percent were the companies run by Thai owners with the hiring rate of more than 250 employees which accounted for 45 percent. Moreover, 47.8 percent were companies with capital in business between 1,000,000 to 50,000,000 baht and 81.1 percent were companies with more than 15 years in operating.

4.3 The Analysis Results of Learning Orientation, Innovativeness, and Firm Performance (ROA).

4.3.1 Learning Orientation

Learning orientation could be categorized into four areas: commitment to learn, shared visions, open-mindedness, and intra organizational knowledge sharing. Concerning the study on the opinions of managers on learning orientation, the five-point scales were used: (1) = strongly disagree, (2) = disagree, (3) = neutral, (4) = agree, and (5) = strongly agree. The level of opinions on the learning orientation:

Table 4.3 The Data Analysis of Learning Orientation

Learning Orientation	Mean	S.D.	Skewness	Kurtosis
Commitment to Learning				
1. My organization's ability to learn is the key to our competitive advantage.	3.89	0.90	-0.558	0.210
2. The basic values of this organization include learning as a key to improvement.	4.03	0.70	-0.437	0.245
3. The sense around here is that employee learning is an investment, not an expense.	3.87	0.80	-0.607	0.824
4. Learning in my organization is seen as a key commodity necessary to guarantee organizational survival.	3.89	0.85	-0.902	1.557
Shared Vision				
1. There is a commonality of purpose in my organization.	3.98	0.81	-0.605	0.412
2. There is a total agreement on our organizational vision across all levels, functions, and divisions.	3.93	0.79	-0.569	0.490
3. All employees are committed to the goals of this organization.	3.92	0.79	-0.193	-0.655
4. Employees view themselves as partners in charting the direction of the organization.	3.72	0.83	-0.376	-0.050
Open-mindedness				
1. Our organization is not afraid to reflect critically on the shared assumptions we have made about our customers.	3.96	0.84	-0.586	0.130
2. Personnel in this enterprise realize that the very way they perceive the marketplace must be continually	3.88	0.83	-0.611	0.621

Table 4.3 The Data Analysis of Learning Orientation (Cont.)

Learning Orientation	Mean	S.D.	Skewness	Kurtosis
questioned.				
3. We rarely collectively question our own bias about the way we interpret customer information.	3.93	0.84	-0.774	0.845
4. We continually judge the quality of our decisions and activities taken over time.	4.07	0.77	-0.555	0.055
Intra-organizational Knowledge Sharing				
1. There is a good deal of organization conversation that keeps alive the lessons learned from history.	4.10	0.79	-0.942	1.711
2. We always analyze unsuccessful organizational endeavors and communicate the lessons learned widely.	4.06	0.75	-0.564	0.597
3. We have specific mechanisms for sharing lessons learned in organizational activities from department to department (unit to unit, team to team.)	3.85	0.80	-0.639	0.871
4. We put little effort in sharing lessons and experiences.	3.73	0.98	-0.687	0.190

Table 4.3 provided an analysis of the learning orientation in electronic/electrical industry. It showed that the respondents had a high level of agreement in all questions. The data indicated that concerning commitment to learning, the attitude towards "the basic values of this organization included learning as a key to improvement" had the highest mean score of 4.03 whereas the attitude towards "the sense around here is that employee learning is an investment, not an expense" had the lowest mean score of 3.87.

Concerning shared vision, the attitude towards “there is a commonality of purpose in my organization” had the highest mean score of 3.98 whereas the attitude towards “employees view themselves as partners in charting the direction of the organization” had the lowest mean score of 3.72. Concerning open-mindedness, the attitude towards “we continually judge the quality of our decisions and activities taken over time” had the highest mean score of 4.07 whereas the attitude towards “personnel in this enterprise realize that the very way they perceive the marketplace must be continually questioned” had the lowest mean score of 3.88. Concerning intra- organizational knowledge sharing, the attitude towards “there is a good deal of organization conversation that keeps alive the lessons learned from history” had the highest mean score of 4.10 whereas the attitude towards “we put little effort in sharing lessons and experiences” had the lowest mean score of 3.73. The consideration of the results of the analysis showed that the standard deviation in the criteria did not cause any problems to the analysis of structural equation modeling. The problems can occur when the variance’s difference is more than 10 times (Kline, 2011).

Concerning skewness and kurtosis value, skewness value ranged between -0.193 and -0.942 and kurtosis value ranged between -0.050 and +1.711, indicating that the data was normally distributed.

4.3.2 Innovativeness

Innovativeness was divided into two areas: product innovation, and process innovation. To study the opinions of managers on innovativeness in electronic/electrical industry, the five-point scales were used: (1) = strongly disagree, (2) = disagree, (3) = neutral, (4) = agree, and (5) = strongly agree.

Table 4.4 The Data Analysis of the Innovativeness

Innovativeness	Mean	S.D.	Skewness	Kurtosis
Product Innovation				
1. Our organization have the products that have been very new to your organization but not new to your market.	3.53	1.02	-0.667	-0.003
2. Our organization have the products that are new to our organization and new to the market.	3.69	0.95	-0.549	0.088
3. Our organization have a research and development institution that is responsible for product development.	3.77	0.98	-0.518	-0.111
4. Our organization provides support within a sufficient time for the institution to develop products.	3.86	0.93	-0.467	-0.245
Process Innovation				
1. Our organization continuously improved processes in our plant.	3.87	0.92	-0.402	-0.489
2. Customers are actively involved in our new product development process.	4.07	0.84	-0.585	-0.302
3. For all our processes, reducing cycle time is a priority item.	4.02	0.87	-0.703	0.147
4. Our company is concerned with reducing cycle time for all processes.	4.09	0.80	-0.503	-0.396

Table 4.4 The Data Analysis of the Innovativeness (Cont.)

Innovativeness	Mean	S.D.	Skewness	Kurtosis
5. Process design is done at the same time as product design.	3.72	1.05	-0.599	-0.277
6. Product development group members came from various disciplines.	3.91	0.85	-0.585	0.364
7. Process innovation provides high-quality products.	3.53	1.15	-0.457	-0.450
8. Process innovation supports our product development schedules on time.	3.54	1.09	-0.515	-0.169

Table 4.4 provided data analysis of the innovativeness in electronic/electrical industry. It was found that the respondents highly agreed with innovativeness. Data indicated that concerning product innovation, the attitude towards "our organization provides support within a sufficient time for the institution to develop products" had the highest mean score of 3.86 whereas the attitude towards "our organization have the products that have been very new to your organization but not new to your market" had the lowest mean score of 3.53. Concerning process innovation, the attitude towards "our company is concerned with reducing cycle time for all processes" had the highest mean score of 4.09 whereas the attitude towards "process innovation provided high-quality products" had the lowest mean score of 3.53. The results of the analysis showed that the standard deviation in the criteria did not cause any problems in the analysis of structural equation modeling. The problems can occur when the variance's difference is more than 10 times (Kline, 2011).

Skewness and Kurtosis value ranged from -0.402 to -0.703 and Kurtosis value ranged from -0.003 to 0.364, which was acceptable so it showed that the data was normally distributed.

4.3.3 Return on Assets (Data from Business Online Public Company Limited)

Table 4.5 The Average of Return on Assets (ROA)

Years	Mean	S.D.	Skewness	Kurtosis
2010	4.52	8.92	0.306	0.803
2011	3.18	10.67	-1.618	5.416
2012	3.12	14.20	-1.576	3.922

Table 4.5 showed the average of return on assets was 4.52 in 2010, was 3.18 in 2011 and was 3.12 in 2012. The skewness value ranged from -1.618 to 0.306, and kurtosis value ranged from 0.803 to 5.416, suggesting the normal distribution.

4.4 Label of Latent Variable

The variables of learning orientation and innovativeness for the structure on the elements that influenced the performance of this study used the following abbreviations in the process of data analysis.

Table 4.6 Abbreviation

Construct	Abbreviation
Learning Orientation	LO
Innovativeness	IN
Commitment to Learn	CL
Shared Visions	SV
Open-mindedness	OM
Intra-organizational Knowledge Sharing	IOK
Product Innovation	PDI
Process Innovation	PCI
Performance ROA (from BOL)	ROA

4.5 Construct Assessment and Validity Analysis

The factor structure of the measurement was based on the elements structure according to the revision which included the validity that met the criteria.

Confirmatory factor analysis (CFA) is the study of relationship between observed variable and latent variable. Confirmatory factor analysis is the factors measured by observed multiple variables that would reduce the discrepancy or an error from observed variable measurement. Confirmatory factor analysis is a framework for measuring the variables to determine whether the structure is based on a review of the research. The factor analysis is to examine whether the analysis is possible or whether the observed variables are related.

4.5.1 Leaning Orientation

The researcher analyzed confirmatory factor analysis (CFA). The framework included commitment to learn, shared visions, open-mindedness, and intra organizational knowledge sharing. The framework was used for determining factors loading of the composition of the list of questions including to confirmation that indicated or observed variables which was based on a literature review.

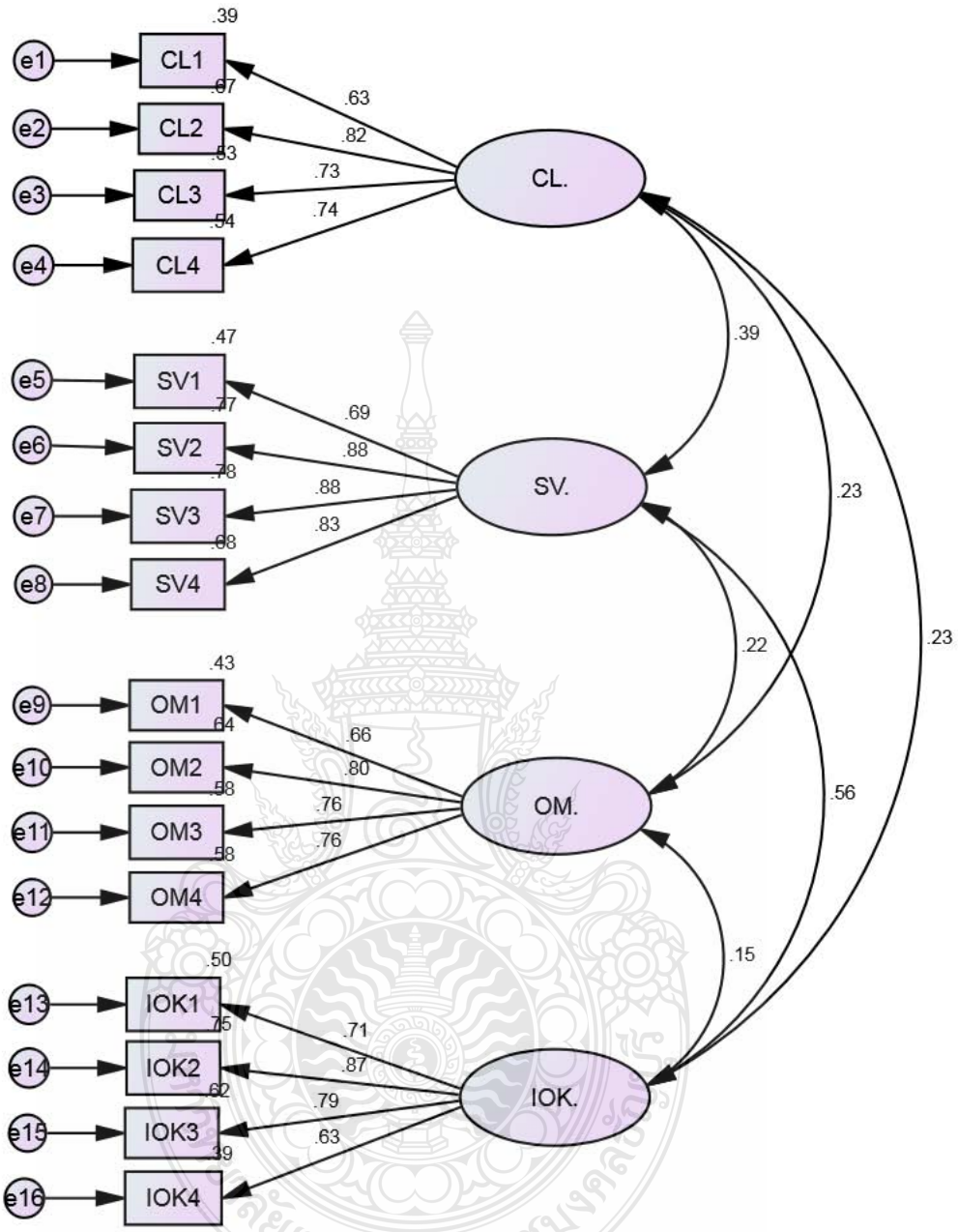

Figure 4.1 The Initial Measurement Model of Learning Orientation

Figure 4.1 showed that confirmed factor analysis of learning orientation included commitment to learn, shared visions, open-mindedness, and intra-organizational knowledge sharing was not fitting with the empirical data. Based on p-value of Chi-square was 0.000, CMIN/df=1.855, RMR=0.046, GFI=0.888, AGFI= 0.844, NFI=0.876, CFI=0.938, and RMSEA=0.069, certain values were inappropriate.

So the researcher adjusted the model (Model modification) based on the parameters of model modification indices (MI) to fit with the empirical data and the results were shown in Figure 4.2

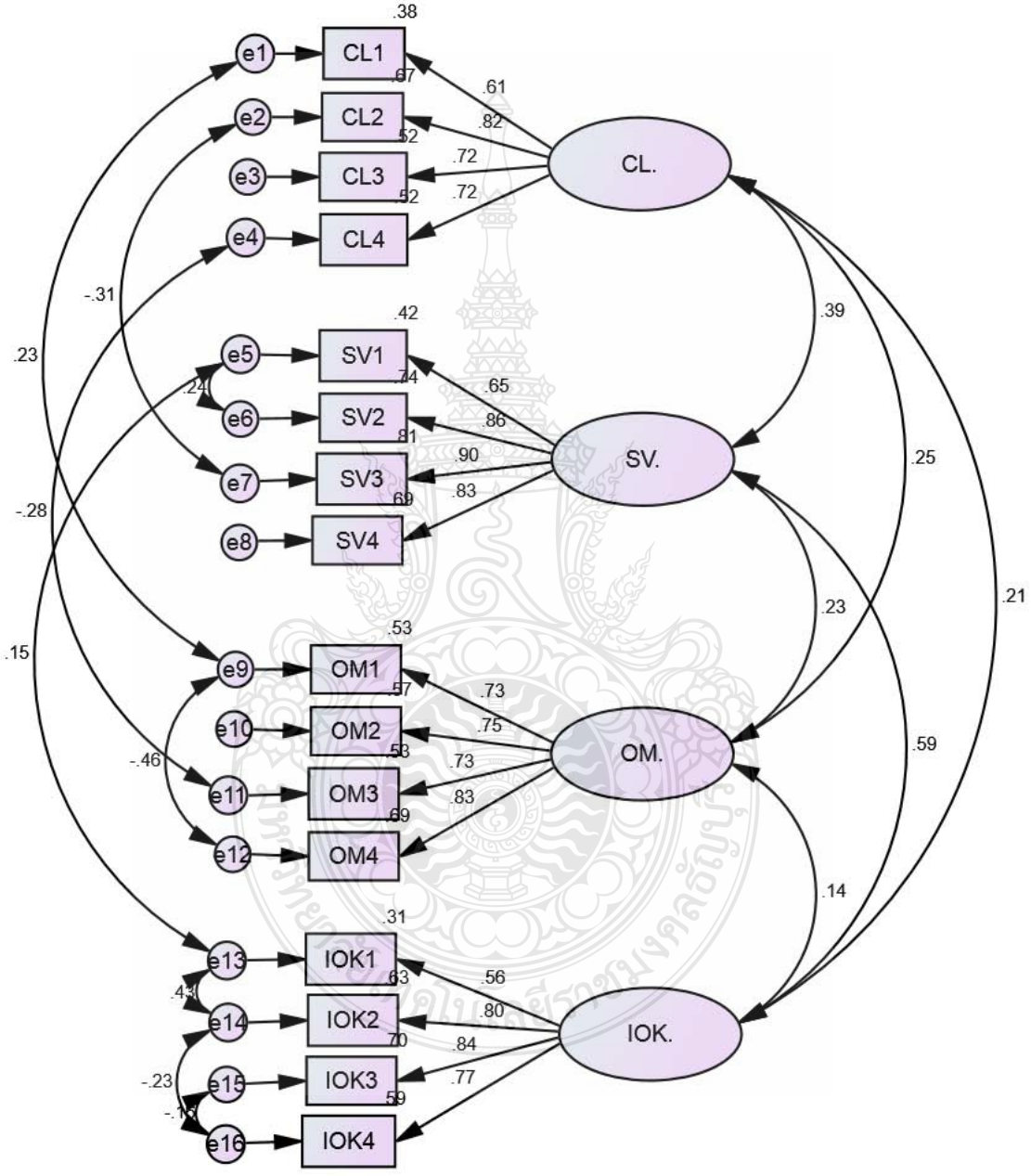

Figure 4.2 The Modified Measurement Model of Learning Orientation

Table 4.7 The Factor Loading of Learning Orientation

			Factor Loading				Standardized
			Estimate	S.E.	C.R.	P	Factor Loading
CL1	←	CL	1.000				0.615
CL2	←	CL	1.050	0.132	7.984	***	0.821
CL3	←	CL	1.050	0.141	7.464	***	0.718
CL4	←	CL	1.091	0.146	7.492	***	0.721
SV1	←	SV	1.000				0.650
SV2	←	SV	1.294	0.122	10.641	***	0.859
SV3	←	SV	1.371	0.142	9.647	***	0.900
SV4	←	SV	1.319	0.143	9.218	***	0.829
OM1	←	OM	1.000				0.727
OM2	←	OM	1.023	0.123	8.435	***	0.753
OM3	←	OM	0.999	0.122	8.203	***	0.729
OM4	←	OM	1.058	0.128	8.268	***	0.829
IOK1	←	IOK	1.000				0.550
IOK2	←	IOK	1.385	0.161	8.591	***	0.799
IOK3	←	IOK	1.546	0.260	5.955	***	0.833
IOK4	←	IOK	1.762	0.336	5.245	***	0.777

***p < 0.001 , S.E. = standard error, C.R. = critical ratio

Figure 4.2 which presented the verification of concordant detail or the consistency of the model showed that p-value of Chi-square was 0.023, CMIN/df= 1.276, RMR=0.037, GFI=0.930, AGFI=0.893, NFI=0.923, CFI=0.982, and RMSEA= 0.039. The factors loading verification found that a critical ratio (C.R.) value was greater than 1.96 and p-value was less than 0.001, so the factor loading was not a zero (Vanichbuncha, 2013).

Validity analysis of learning orientation, the results of IOC score of all sixteen items were greater than 0.5, it can be concluded that there was only one valid construct being measured by each item. Moreover, the researcher examined test of composite

reliability (CR), and average variance extracted (AVE). Fornell and Larcker (1981) recommended that composite reliability (CR) should be greater than 0.60 and average variance extracted (AVE) should be greater than 0.50.

Table 4.8 Composite Reliability and Average Variance Extracted of Learning Orientation

	Composite Reliability (CR)	Average Variance Extracted (AVE)
Commitment to Learn	0.81	0.52
Shared Visions	0.89	0.66
Open-mindedness	0.84	0.58
Intra-organizational Knowledge Sharing	0.83	0.56

$CR = (\Sigma \text{ of standardized loading})^2/[(\Sigma \text{ of standardized loading})^2 + \Sigma \text{ of } \varepsilon j]$
$AVE = \Sigma \text{ of (standardized loading)}^2/[\Sigma \text{ of (standardized loading)}^2 + \Sigma \text{ of } \varepsilon j]$

Table 4.9 Convergent Validity and Discriminant Validity of Learning Orientation

	CL	SV	OM	IOK
CL	0.520			
SV	0.151	0.660		
OM	0.064	0.054	0.580	
IOK	0.044	0.350	0.020	0.560

The value in the diagonal = AVE

The value in the – diagonal = squared correlation (r^2)

Table 4.8 showed that all composite reliability (CR) values for the four observed variables were above 0.6 which indicated that they had good construct reliability. Therefore, all of the factors could be accepted. Table 4.9 showed the convergent validity and discriminant validity of learning orientation. The AVE values were higher than the squared correlation indicating that there are convergent validity and discriminant validity among the variables.

4.5.2 Innovativeness

The researcher analyzed the confirmatory factor analysis for variables on the innovativeness concept such as product innovation, and process innovation factor loading of the composition of the list of questions which included indicators or observed variables based on the literature review.

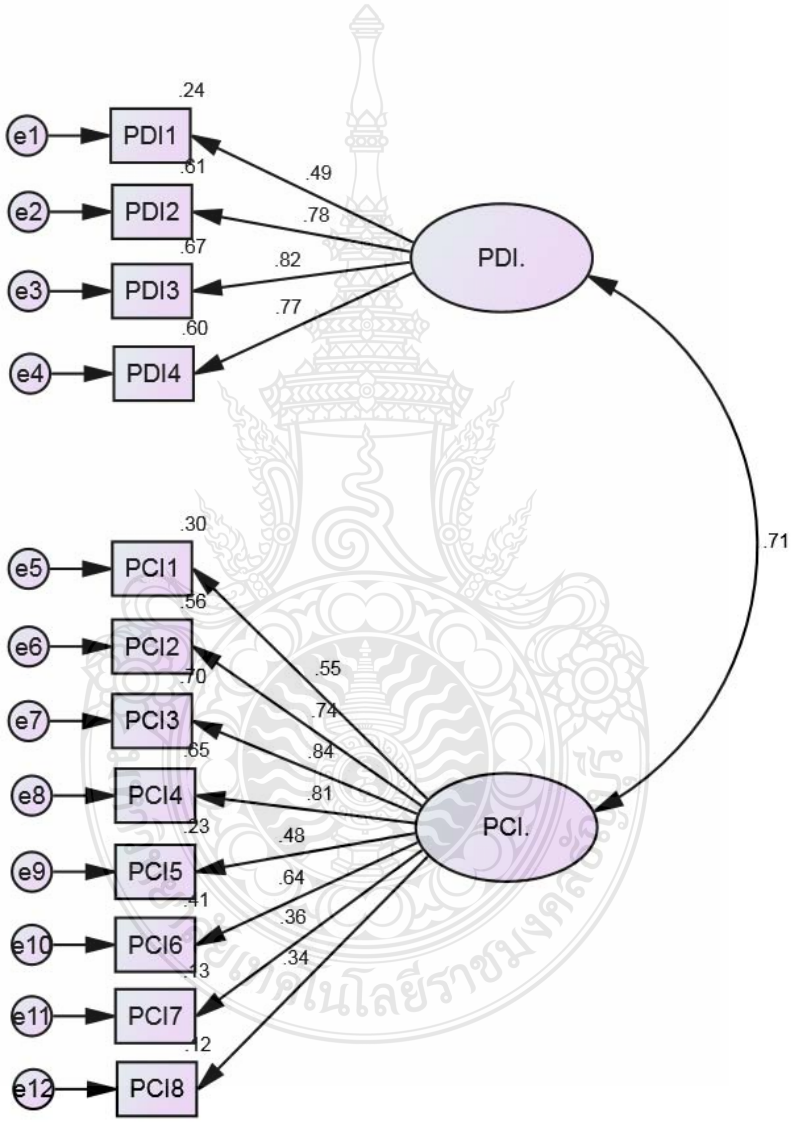

Figure 4.3 The Initial Measurement Model of Innovativeness

Figure 4.3 showed that confirmed factor analysis of innovativeness which included product innovation, and process innovation was not fitting with the empirical

data. Based on p-value of Chi-square of 0.000 CMIN/df=3.881, RMR=0.100, GFI= 0.831, AGFI=0.751, CFI=0.89, NFI=0.787, RMSEA=0.127, certain values were inappropriate. So the researcher adjusted the model (model modification) based on the parameters of model modification indices (MI) to fit with the empirical data. The results were shown in Figure 4.4.

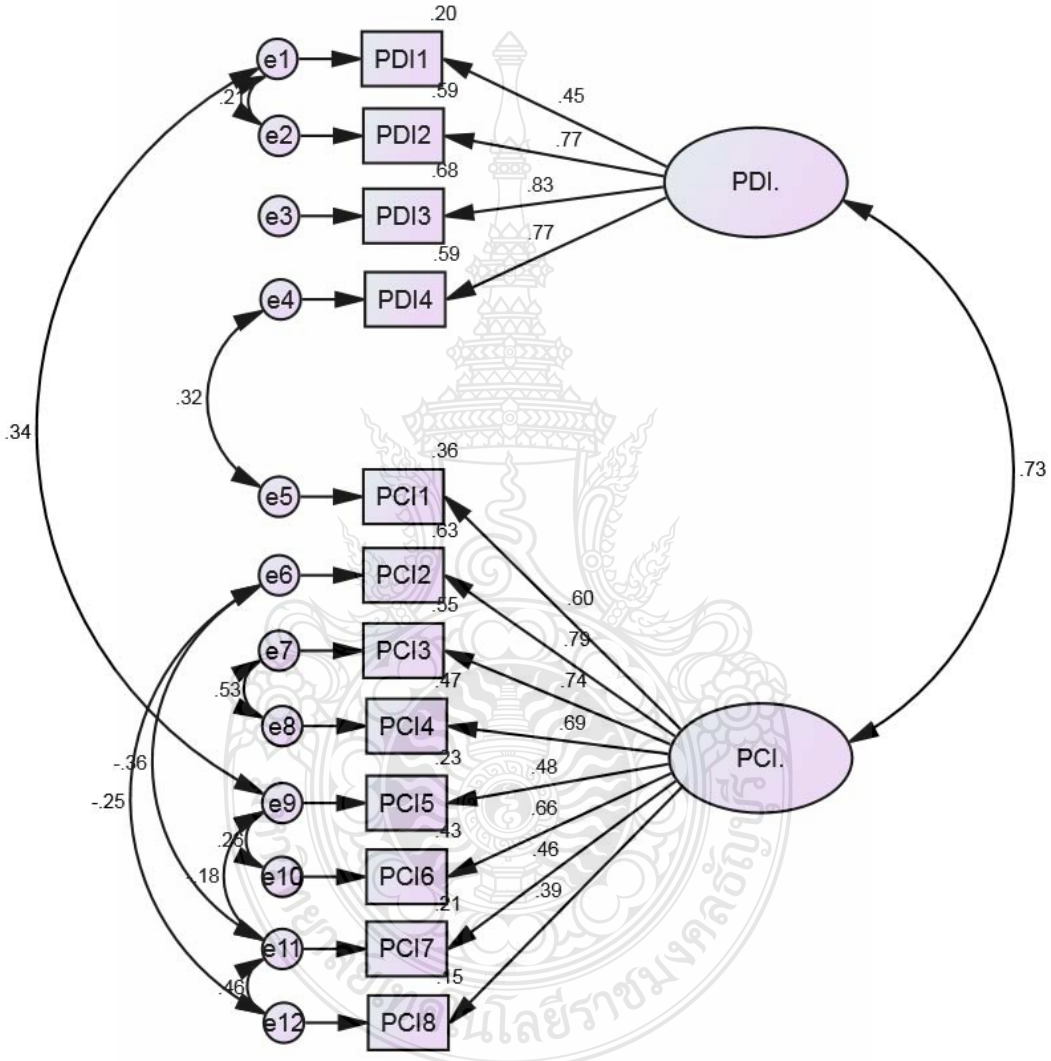

Figure 4.4 The Modified Measurement Model of Innovativeness

Table 4.10 The Factor Loading of Innovativeness

			Factor Loading				Standardized
			Estimate	S.E.	C.R.	P	Factor Loading
PDI1	←	PDI	1.000				0.448
PDI2	←	PDI	1.596	0.258	6.183	***	0.771
PDI3	←	PDI	1.776	0.311	5.716	***	0.827
PDI4	←	PDI	1.537	0.273	5.623	***	0.766
PCI1	←	PCI	1.000				0.596
PCI2	←	PCI	1.212	0.157	7.724	***	0.739
PCI3	←	PCI	1.180	0.156	7.574	***	0.741
PCI4	←	PCI	1.002	0.139	7.193	***	0.689
PCI5	←	PCI	0.904	0.166	5.444	***	0.477
PCI6	←	PCI	1.029	0.147	6.986	***	0.659
PCI7	←	PCI	0.960	0.190	5.037	***	0.460
PCI8	←	PCI	0.783	0.178	4.397	***	0.393

***p < 0.001 , S.E. = standard error, C.R. = critical ratio

Figure 4.4, which verified concordant detail or the model consistency, showed that p-value of Chi-square was 0.495, CMIN/df=0.987, RMR=0.047, GFI=0.960, AGFI =0.930, NFI=0.955, CFI=1.000, and RMSEA=0.000. After the verification of the factors loading , the finding showed that the critical ratio (C.R.) value was greater than 1.96 and p-value was less than 0.001, so the factor loading was not zero (Vanichbuncha, 2013). The verification of the sample size criteria showed that the HOELTER statistic value was 0.05. If the value is greater than 200, it will be considered a sufficient sample size (Hoelter, 1983). In this model, the HOELTER value was 250 so it was greater than 200 which suggested that the sample size of 180 was appropriate.

Concerning the validity analysis of Innovativeness, the IOC scores of all 12 items were greater than 0.5. It could be concluded that only one valid construct was measured by each item. Fornell and Larcker (1981) recommended that composite

reliability (CR) be greater than 0.60 and that average variance extracted (AVE) be greater than 0.50.

Table 4.11 Composite Reliability and Average Variance Extracted of Innovativeness

	Composite Reliability (CR)	Average Variance Extracted (AVE)
Product Innovation	0.80	0.52
Process Innovation	0.82	0.38

$CR = (\Sigma \text{ of standardized loading})^2/[(\Sigma \text{ of standardized loading})^2 + \Sigma \text{ of } \varepsilon j]$

$AVE = \Sigma \text{ of (standardized loading)}^2/[\Sigma \text{ of (standardized loading)}^2 + \Sigma \text{ of } \varepsilon j]$

Table 4.12 Convergent Validity and Discriminant Validity of Innovativeness

	PDI	PCI
PDI	0.520	
PCI	0.537	0.38

The value in the diagonal = AVE
The value in the - diagonal = squared correlation (r^2)

Table 4.11 showed that all composite reliability (CR) values for the two observed variables were above 0.6 which indicated that they had good construct reliability, but averagely variance extracted of process innovation was less than 0.5. Concerning the convergent validity and discriminant validity, Table 4.11 showed that the AVE values of the process innovation were greater than the squared correlation of product innovation. Therefore, all factors could not be accepted as the structure of innovativeness. Table 4.12 showed the convergent validity and discriminant validity of innovativeness. The AVE value of product innovation lower than the squared correlation because of the relationship between product innovation and process innovation

4.6 Correlation Matrix

Table 4.13 Correlation Matrix

	CL	SV	OM	IOK	PDI	PCI	ROA	Mean	S.D.
CL	1.000							3.91	.656
SV	.369**	1.000						3.88	.705
OM	.259**	.262**	1.000					3.93	.682
IOK	.185*	.539**	.166*	1.000				3.93	.671
PDI	.183*	.362**	.139	.525**	1.000			3.71	.764
PCI	.332**	.530**	.308**	.596**	.668**	1.000		3.85	.617
ROA	-.052	.089	-.004	.174*	.128	.051	1.000	2.93	1.90

* $p < 0.05$, ** $p < 0.01$

Table 4.13 showed the analysis of the relationship between observed variables of all the observed variables from the questionnaire presented the relationship and indicated reciprocity relationship.

4.7 Empirical Assessment of Proposed Models

This section presented the assessment of the model in this study. The concepts in this study included learning orientation, innovativeness, and firm performance (ROA). The aim of this thesis was to find out the effects of learning orientation on innovativeness, the effects of learning orientation on firm performance (ROA), the effects of innovativeness on firm performance (ROA), and the effects of learning orientation relationship on innovativeness and a firm performance (ROA). Learning orientation was an independent variable that consisted of commitment to learning, shared vision, open-mindedness, and intra- organizational knowledge sharing. The innovativeness was the mediator which included two components: product innovation and process innovation.

The global model examined the effects of learning orientation and innovativeness on firm performance (ROA).

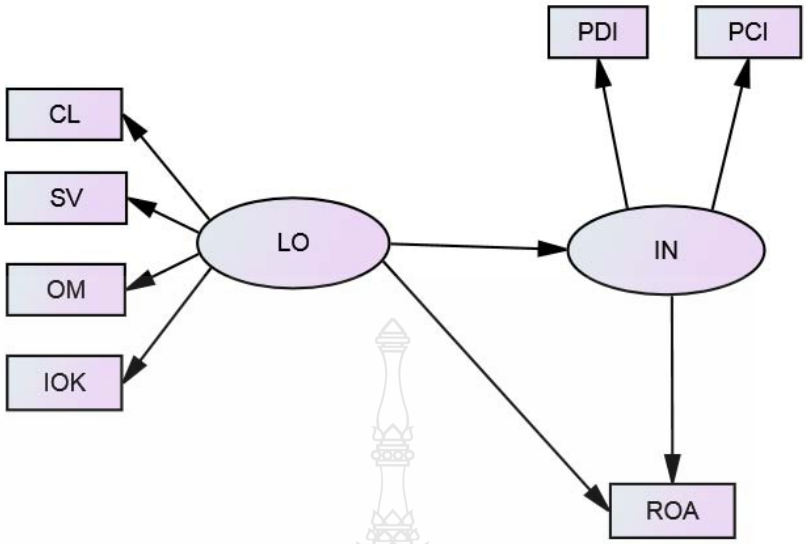

Figure 4.5 Structural Model of Examine: the Global Model Examined the Effects of Learning Orientation and Innovativeness on Firm Performance (ROA)

And the specific model examined the effects of learning orientation relationship on innovativeness and firm performance (ROA).

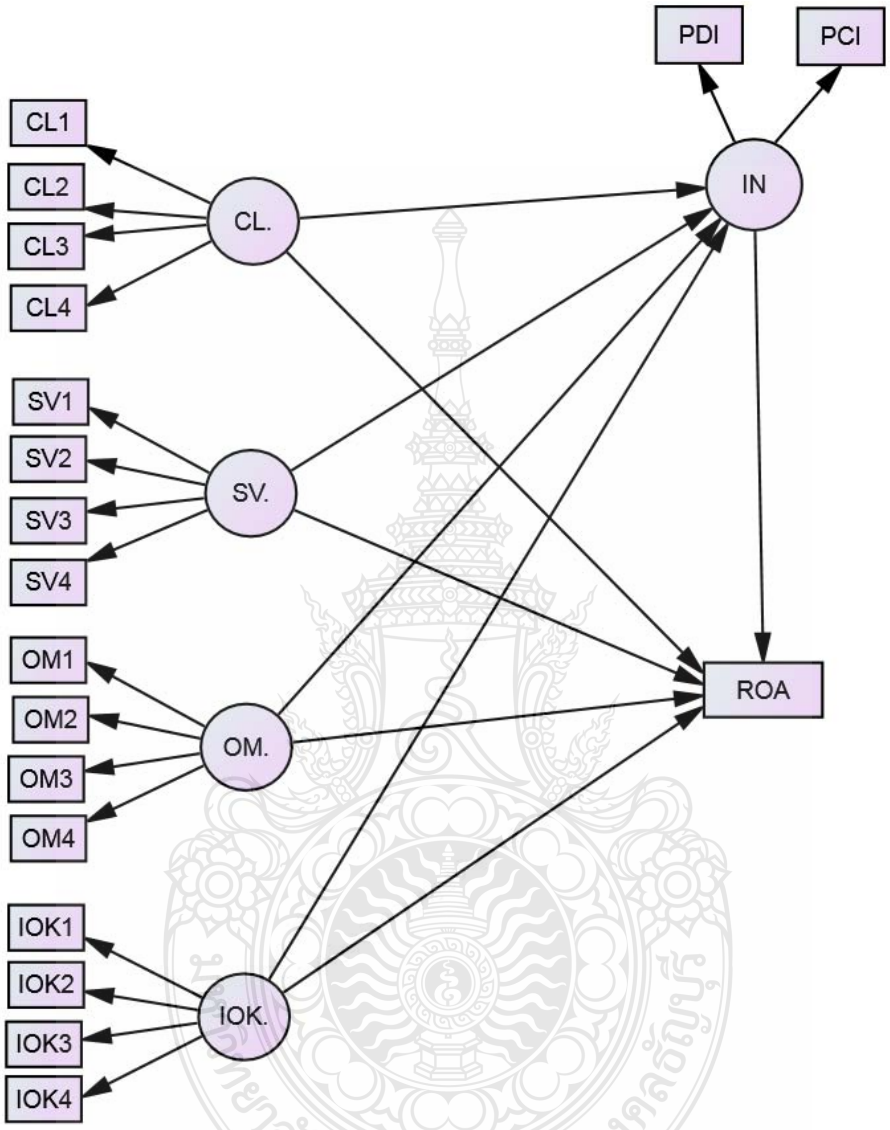

Figure 4.6 Structural Model of Examine: the Specific Model Examined the Effects Elements of Learning Orientation Relationship on Innovativeness and Firm Performance (ROA)

4.8 Model Assessment (Fitting)

The monitor of the merging of models from the data could help analyze and determine the consistency of the empirical data. This study used the index key to evaluate the suitability of the model as p-value of Chi-square, CMIN/df, RMR, GFI, AGFI, NFI, CFI, and RMSEA; analyzed by the structural equation modeling framework, this models was as follows:

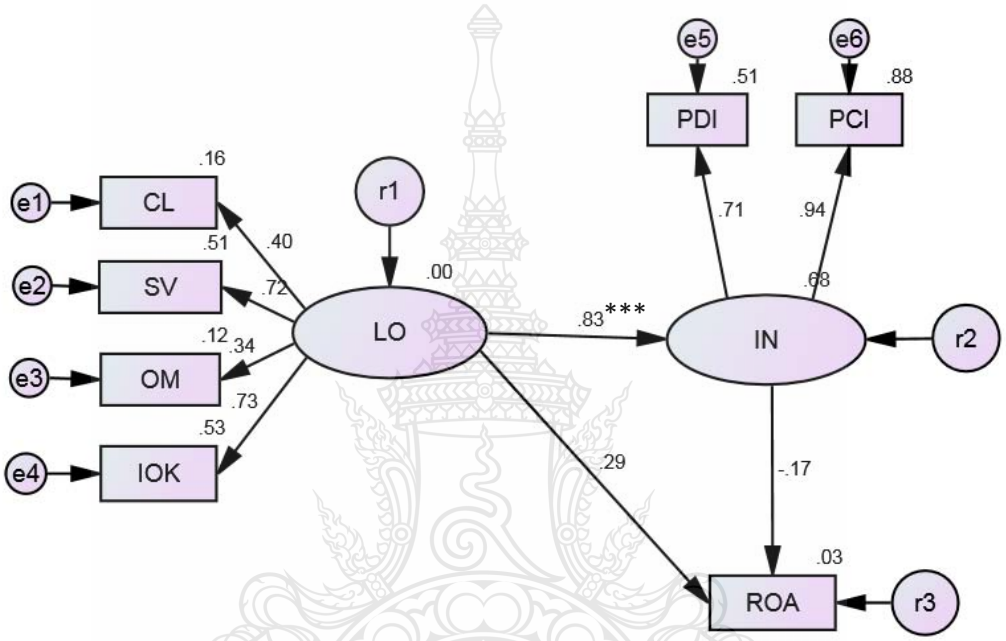

Figure 4.7 The Global Model, Concerned the Effects of Learning Orientation and Innovativeness on Firm Performance (ROA) for Hypotheses Testing before Modification Indices

Table 4.14 Parameter Estimation and the Significant Test of Learning Orientation and Innovativeness on Firm Performance (ROA) before Modification Indices

			Standardized Coefficients	S.E.	C.R.	*p-value*
EI	⟵	LO	0.827	0.398	4.328	***
CL	⟵	LO	0.399			
SV	⟵	LO	0.717	0.410	4.706	***
OM	⟵	LO	0.341	0.268	3.317	***
IOK	⟵	LO	0.729	0.395	4.724	***
PDI	⟵	IN	0.714			
PCI	⟵	IN	0.935	0.119	8.916	***
ROA	⟵	IN	-0.166	0.717	-0.811	0.418
ROA	⟵	LO	0.287	1.631	1.282	0.200

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, S.E. = standard error, C.R. = critical ratio

Figure 4.7 showed the structural model of the effects of learning orientation and innovativeness on firm performance (ROA) was not fitting with the empirical data. When the p-value of Chi-square was 0.001, CMIN/df=2.688, RMR=0.046, GFI=0.945, AGFI=0.871, NFI=0.904, CFI=0.936, and RMSEA=0.097, certain values were inappropriate. So the researcher adjusted the model (model modification) based on the parameters of model modification indices (MI) to fit with the empirical data and the results were shown in Figure 4.8.

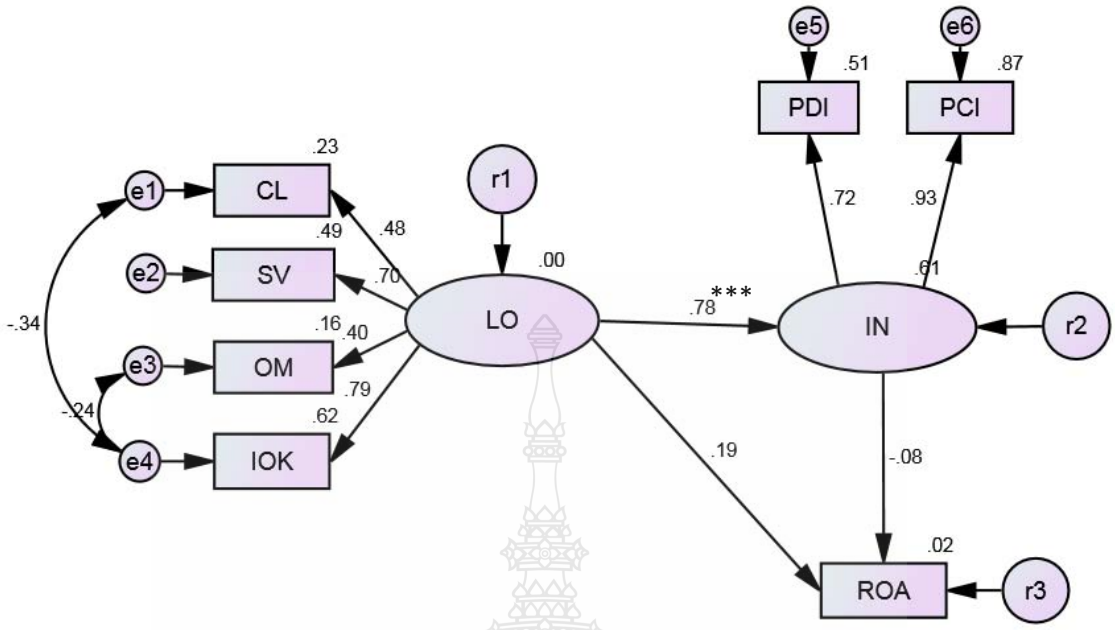

Figure 4.8 The Global Model, Concerning the Effects of Learning Orientation and Innovativeness on Firm Performance (ROA) for Hypotheses Testing

Table 4.15 Parameter Estimation and the Significant Test of Learning Orientation and Innovativeness on Firm Performance (ROA)

			Standardized Coefficients	S.E.	C.R.	*p-value*
IN	←	LO	0.784	0.288	4.720	***
CL	←	LO	0.482			
SV	←	LO	0.701	0.299	5.225	***
OM	←	LO	0.401	0.228	3.802	***
IOK	←	LO	0.788	0.329	5.075	***
PDI	←	IN	0.718			
PCI	←	IN	0.931	0.116	9.054	***
ROA	←	IN	-0.080	0.550	-0.506	0.613
ROA	←	LO	0.195	1.003	1.170	0.242

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, S.E. = standard error, C.R. = critical ratio

Figure 4.8 showed the model of the effects of learning orientation and innovativeness on firm performance (ROA). This study revealed that the models were combined with empirical data because when the p-value of Chi-square was 0.049, CMIN/df=1.838, RMR=0.044, GFI=0.970, AGFI=0.915, NFI=0.945, CFI=0.973, and RMSEA=0.068, certain values were appropriate.

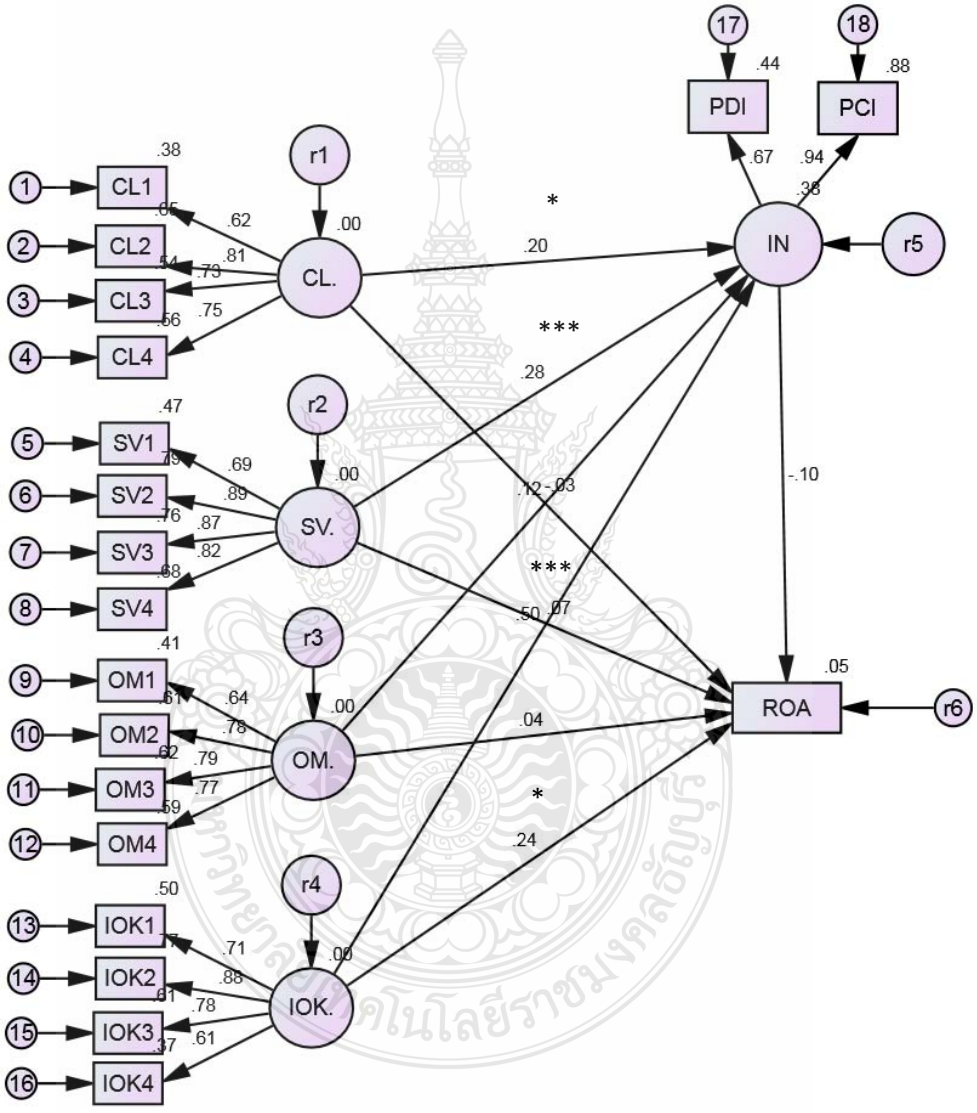

Figure 4.9 The Specific Model, Concerned the Effects Elements of Learning Orientation Relationship on Innovativeness and Firm Performance (ROA) for Hypotheses Testing before Modification Indices

Table 4.16 Parameter Estimation and the Significant Test of the Elements of Learning Orientation Relationship on Innovativeness and Firm Performance (ROA) before Modification Indices

			Standardized Coefficients	S.E.	C.R.	*p-value*
IN	←	CL	0.202	0.070	2.518	0.012
IN	←	SV	0.285	0.073	3.437	***
IN	←	OM	0.117	0.067	1.563	0.118
IN	←	IOK	0.499	0.093	4.718	***
X11	←	CL	0.617			
X12	←	CL	0.807	0.130	7.792	***
X13	←	CL	0.732	0.142	7.422	***
X14	←	CL	0.750	0.151	7.530	***
X21	←	SV	0.689			
X22	←	SV	0.887	0.119	10.573	***
X23	←	SV	0.873	0.119	10.463	***
X24	←	SV	0.822	0.124	9.961	***
X31	←	OM	0.643			
X32	←	OM	0.779	0.146	8.127	***
X33	←	OM	0.785	0.149	8.163	***
X34	←	OM	0.767	0.136	8.050	***
X41	←	IOK	0.707			
X42	←	IOK	0.880	0.118	10.121	***
X43	←	IOK	0.781	0.120	9.437	***
X44	←	IOK	0.612	0.144	7.520	***
ROA	←	EI	-0.101	0.418	-0.944	0.345
ROA	←	CL	-0.030	0.288	-0.352	0.725
ROA	←	SV	0.069	0.288	0.824	0.410
ROA	←	OM	0.042	0.285	0.516	0.606
ROA	←	IOK	0.236	0.345	2.347	0.019
PDI	←	IN	0.667			
PCI	←	IN	0.940	0.165	6.623	***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, S.E. = standard error, C.R. = critical ratio

Figure 4.9 showed the structural model concerning the effects of learning orientation relationship on innovativeness and firm performance (ROA) was not fitting with the empirical data. When the CMIN/df was 2.218, GFI=0.843, AGFI=0.793, NFI

=0.816, CFI=0.888, and RMSEA=0.082, certain values were inappropriate. So the researcher adjusted the model (model modification) based on the parameters of model modification indices (MI) to fit with the empirical data and the results were shown in Figure 4.10.

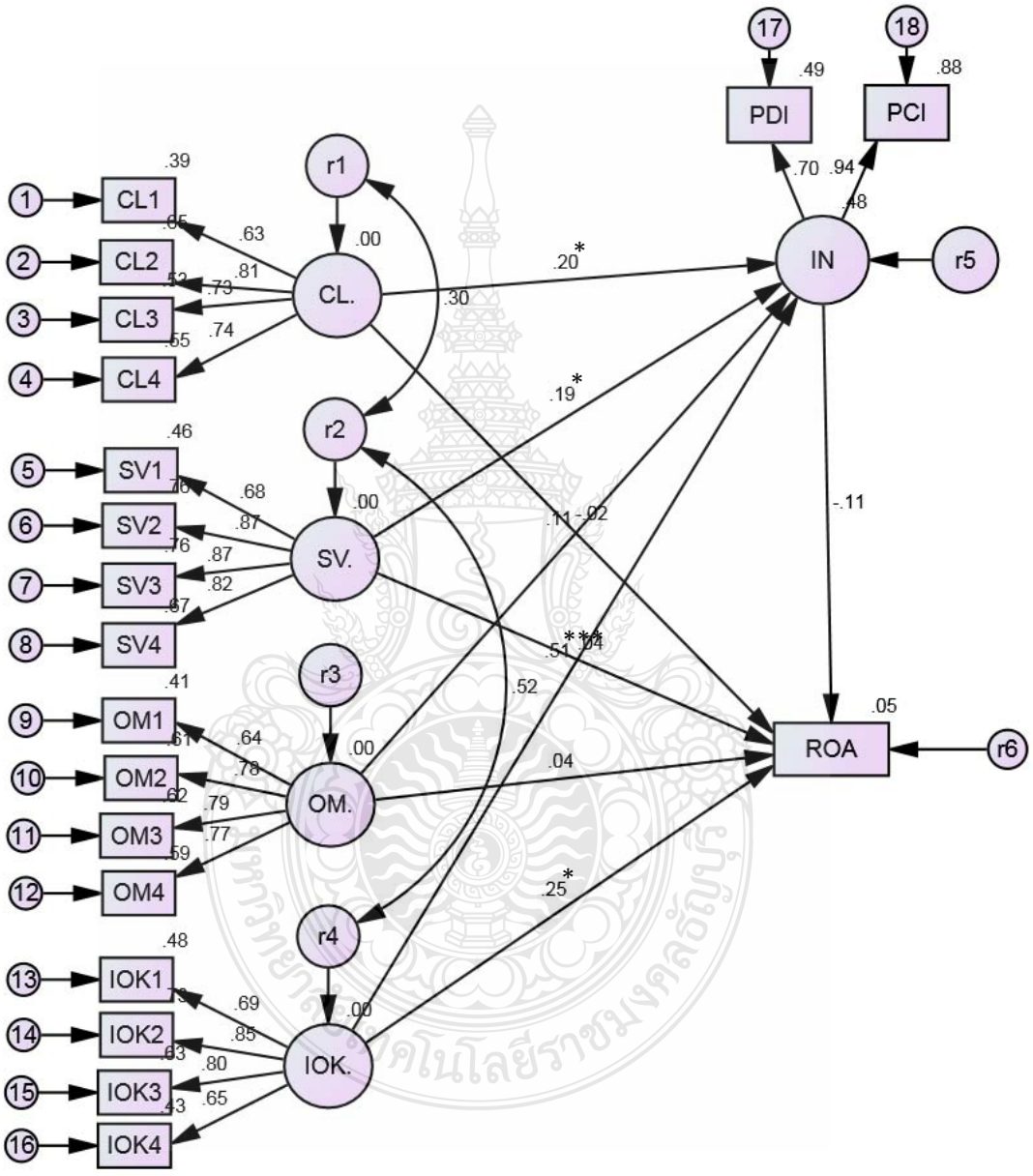

Figure 4.10 The Specific Model, Concerning the Effects Elements of Learning Orientation Relationship on Innovativeness and Firm Performance (ROA) for Hypotheses Testing

Table 4.17 Parameter Estimation and the Significant Test of the Elements of Learning Orientation Relationship on Innovativeness and Firm Performance (ROA)

			Standardized Coefficients	S.E.	C.R.	*p-value*
IN	←	CL	0.205	0.075	2.525	0.012
IN	←	SV	0.193	0.090	2.077	0.038
IN	←	OM	0.110	0.068	1.576	0.115
IN	←	IOK	0.508	0.106	4.611	***
X11	←	CL	0.628			
X12	←	CL	0.809	0.125	7.987	***
X13	←	CL	0.730	0.136	7.566	***
X14	←	CL	0.741	0.145	7.639	***
X21	←	SV	0.682			
X22	←	SV	0.874	0.121	10.310	***
X23	←	SV	0.872	0.121	10.288	***
X24	←	SV	0.820	0.126	9.801	***
X31	←	OM	0.643			
X32	←	OM	0.779	0.146	8.129	***
X33	←	OM	0.785	0.149	8.163	***
X34	←	OM	0.767	0.136	8.052	***
X41	←	IOK	0.692			
X42	←	IOK	0.852	0.121	9.769	***
X43	←	IOK	0.796	0.126	9.330	***
X44	←	IOK	0.653	0.150	7.851	***
ROA	←	EI	-0.109	0.431	-0.925	0.355
ROA	←	CL	-0.022	0.312	-0.234	0.815
ROA	←	SV	0.043	0.369	0.412	0.680
ROA	←	OM	0.043	0.286	0.533	0.594
ROA	←	IOK	0.246	0.434	1.995	0.046
PDI	←	IN	0.698			
PCI	←	IN	0.936	0.133	8.007	***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, S.E. = standard error, C.R. = critical ratio

Figure 4.10 showed the model of the effects of learning orientation relationship on innovativeness and firm performance (ROA). This study found that the models were combined with empirical data because the CMIN/df was 1.792, GFI=0.870, AGFI =0.826, NFI=0.854, CFI=0.928, and RMSEA=0.067.

Hypotheses testing and results were presented in the next topic. The structural equation modeling analysis for all of the models showed that the findings were consistent with theoretical models and were in agreement.

4.9 Hypotheses Testing and Results

This section presented the results of the four research questions: 1. Do learning orientation and innovativeness affect firm performance (ROA)? 2. Does innovativeness affect firm performance (ROA)? 3. Do elements of learning orientation affect innovativeness? and 4. Do elements of learning orientation affect firm performance (ROA)? Tables 4.15 and 4.17 summarized the relationship between the structural model, the results of parameter estimation, and the test significance.

4.9.1 Results from This Study for H1: Learning Orientation Has Positive Effects on Innovativeness.

According to Table 4.15 (Page 116), the value of t-test revealed that the estimated value was 0.715, standard error (S.E.) 0.269, critical ratio (C.R.) 4.106, and p-value 0.00 which indicated that there was a significant positive relationship between learning orientation and innovativeness at a significance level of 0.05. It could be concluded that H1 was supported. The results showed that the standardized regression factor loading for commitment to learning, shared vision, open-mindedness, and intra-organizational knowledge sharing were 0.489, 0.705, 0.412, and 0.767 respectively. Consequently, intra- organizational knowledge sharing was the most important aspect, followed by shared vision, commitment to learning, and open-mindedness.

However, the results showed that the standardized regression factor loading for product innovation, and process innovation were 0.648, and 1.031 respectively. It could be concluded that process innovation was the most important aspect, followed by product innovation.

4.9.2 Results from This Study for H2: Learning Orientation Has Positive Effects on Firm Performance (ROA).

Table 4.15 (Page 116) showed the direct relation between the learning orientation and return on assets (ROA). According to the results, the value of t-test revealed the estimated value of 0.172, standard error (S.E.) of 0.786, critical ratio (C.R.)

of 1.301, and p-value of 0.193 which indicated that there was not a significant relationship between learning orientation and return on assets (ROA) at the level of 0.05. It could be concluded that H2 was not supported. The results showed that the standardized regression factor loading for commitment to learning, shared vision, open-mindedness, and intra- organizational knowledge sharing were 0.489, 0.705, 0.412 and 0.767 respectively. Consequently, intra- organizational knowledge sharing was the most important aspect, followed by shared vision commitment to learning, and open-mindedness.

The results showed that the standardized regression factor loading for product innovation, and process innovation were 0.648, and 1.031 respectively. It could be concluded that process innovation was the most important aspect, followed by product innovation.

After the consideration of the performance by using ROA information that came from Business Online Public Company Limited (BOL), the finding showed that learning orientation had no effect on the return on assets (ROA).

4.9.3 Results from This Study for H3: Innovativeness Had Positive Effects on Firm Performance (ROA).

Table 4.15 (Page 116) showed the direct relation between the innovativeness and return on assets (ROA). According to the results, the value of t-test revealed the estimated value of -0.079, standard error (S.E.) of 0.442, critical ratio (C.R.) of -0.687, and p-value of 0.492. Therefore, the findings indicated that there was not a significant relationship between innovativeness and return on assets (ROA) at a significance level of 0.05. It could be concluded that H3 was not supported. Thus, innovativeness did not affect the return on assets (ROA).

Also, concerning the standardized regression factor loading for product innovation, and process innovation, H1 and H2 were 0.648, and 1.031 respectively. It could be concluded that process innovation was the most important aspect, followed by product innovation.

After the consideration of the performance by using ROA information that came from Business Online Public Company Limited (BOL), the finding showed that learning orientation had no effect on the return on assets (ROA).

4.9.4 Results from This Study for H4: Commitment to Learning Has Positive Effects on Innovativeness.

According to Table 4.17 (Page 122), the value of t-test revealed that the estimated value was 0.205, standard error (S.E.) 0.075, critical ratio (C.R.) 2.525, and p-value 0.012 which indicated that there was a significant positive relationship between commitment to learning and innovativeness at a significance level of 0.05. It could be concluded that H4 was supported. The results showed that the standardized regression factor loading of questions on commitment to learning for "1. My organization's ability to learn is a key to our competitive advantage.", "2. The basic values of this organization include learning as a key to improvement.", "3. The sense around here is that employee learning is an investment, not an expense.", and "4. Learning in my organization is seen as a key commodity necessary to guarantee organizational survival." were 0.628, 0.809, 0.730, and 0.741 respectively. Consequently, "2. The basic values of this organization include learning as key to improvement." was the most important aspect, followed by "4. Learning in my organization is seen as a key commodity necessary to guarantee organizational survival.", "3. The sense around here is that employee learning is an investment, not an expense.", and "1. My organization's ability to learn is the key to our competitive advantage."

4.9.5 Results from This Study for H5: Shared Vision Has Positive Effects on Innovativeness.

According to Table 4.17 (Page 122), the value of t-test revealed that the estimated value was 0.193, standard error (S.E.) 0.090, critical ratio (C.R.) 2.077, and p-value 0.038 which indicated that there was a significant positive relationship between shared vision and innovativeness at a significance level of 0.05. It could be concluded that H5 was supported. The results showed that the standardized regression factor loading of questions on shared vision for "1. There is a commonality of purpose in my organization.", "2. There is a total agreement on our organizational vision across all levels, functions, and divisions.", "3. All employees are committed to the goals of this organization.", and "4. Employees view themselves as partners in charting the direction of the organization." were 0.682, 0.874, 0.872, and 0.820 respectively. Consequently, "2. There is a total agreement on our organizational vision across all levels, functions,

and divisions." was the most important aspect, followed by "3. All employees are committed to the goals of this organization.", "4. Employees view themselves as partners in charting the direction of the organization", and "1. There is a commonality of purpose in my organization."

4.9.6 Results from This Study for H6: Open-mindedness Has Positive Effects on Innovativeness.

Table 4.17 (Page 122) showed the direct relation between the open-mindedness and innovativeness. According to the results, the value of t-test revealed that the estimated value of 0.110, standard error (S.E.) of 0.068, critical ratio (C.R.) of 1.576, and p-value of 0.115 which indicated that there was not a significant relationship between open-mindedness and innovativeness at the level of 0.05. It could be concluded that H6 was not supported. The results showed that the standardized regression factor loading of questions on open-mindedness for "1. Our organization not afraid to reflect critically on the shared assumptions we have made about our customers.", "2. Personnel in this enterprise realize that the very way they perceive the marketplace must be continually questioned.", "3. We rarely collectively question our own bias about the way we interpret customer information.", and "4. We continually judge the quality of our decisions and activities taken over time." were 0.643, 0.779, 0.785 and 0.767 respectively. Consequently, "3. We rarely collectively question our own bias about the way we interpret customer information." was the most important aspect, followed by "2. Personnel in this enterprise realize that the very way they perceive the marketplace must be continually questioned.", "4. We continually judge the quality of our decisions and activities taken over time.", and "1. Our organization is not afraid to reflect critically on the shared assumptions we have made about our customers."

4.9.7 Results from This Study for H7: Intra-organizational Knowledge Sharing Has Positive Effects on Innovativeness.

According to Table 4.17 (Page 122), the value of t-test revealed that the estimated value was 0.508, standard error (S.E.) 0.106, critical ratio (C.R.) 4.611, and p-value 0.000 which indicated that there was a significant positive relationship between intra organizational knowledge sharing and innovativeness at a significance level of

0.05. It could be concluded that H7 was supported. The results showed that the standardized regression factor loading of questions on intra-organizational knowledge sharing for "1. There is a good deal of organization conversation that keeps alive the lessons learned from history.", "2. We always analyze unsuccessful organizational endeavors and communicate the lessons learned widely.", "3. We have specific mechanisms for sharing lessons learned in organizational activities from department to department.(unit to unit, team to team).", and "4. We put little effort in sharing lessons and experiences." were 0.692, 0.852, 0.796, and 0.653 respectively. Consequently, "2. We always analyze unsuccessful organizational endeavors and communicate the lessons learned widely." was the most important aspect, followed by "3. We have specific mechanisms for sharing lessons learned in organizational activities from department to department (unit to unit, team to team.)", "1. There is a good deal of organizational conversation that keeps alive the lessons learned from history.", and "4. We put little effort in sharing lessons and experiences."

4.9.8 Results from This Study for H8: Commitment to Learning Has Positive Effects on Firm Performance (ROA).

Table 4.17 (Page 122) showed the direct relation between the commitment to learning and firm performance (ROA). According to the results, the value of t-test revealed that the estimated value of -0.022, standard error (S.E.) of 0.312, critical ratio (C.R.) of -0.234, and p-value of 0.815 which indicated that there was not a significant relationship between commitment to learning and firm performance (ROA) at the level of 0.05. It could be concluded that H8 was not supported. The results showed that the standardized regression factor loading of questions on commitment to learning for "1. My organization's ability to learn is the key to our competitive advantage.", "2. The basic values of this organization include learning as key to improvement.", "3. The sense around here is that employee learning is an investment, not an expense.", and "4. Learning in my organization is seen as a key commodity necessary to guarantee organizational survival." were 0.628, 0.809, 0.730, and 0.741 respectively. Consequently, "2. The basic values of this organization include learning as a key to improvement." was the most important aspect, followed by "4. Learning in my organization is seen as a key commodity necessary to guarantee organizational

survival.", "3. The sense around here is that employee learning is an investment, not an expense.", and "1. My organization's ability to learn is a key to our competitive advantage."

4.9.9 Results from This Study for H9: Shared Vision Has Positive Effects on Firm Performance (ROA).

Table 4.17 (Page 122) showed the direct relation between the shared vision and firm performance (ROA). According to the results, the value of t-test revealed the estimated value of 0.043, standard error (S.E.) of 0.359, critical ratio (C.R.) of 0.412, and p-value of 0.680 which indicated that there was not a significant relationship between shared vision and firm performance (ROA) at the level of 0.05. It could be concluded that H9 was not supported. The results showed that the standardized regression factor loading of questions on shared vision for "1. There is a commonality of purpose in my organization.", "2. There is a total agreement on our organizational vision across all levels, functions, and divisions.", "3. All employees are committed to the goals of this organization.", and "4. Employees view themselves as partners in charting the direction of the organization." were 0.682, 0.874, 0.872, and 0.820 respectively. Consequently, "2. There is a total agreement on our organizational vision across all levels, functions, and divisions." was the most important aspect, followed by "3. All employees are committed to the goals of this organization.", "4. Employees view themselves as partners in charting the direction of the organization", and "1. There is a commonality of purpose in my organization."

4.9.10 Results from This Study for H10: Open-mindedness Has Positive Effects on Firm Performance (ROA).

Table 4.17 (Page 122) showed the direct relation between the open-mindedness and firm performance (ROA). According to the results, the value of t-test revealed the estimated value of 0.043, standard error (S.E.) of 0.286, critical ratio (C.R.) of 0.533, and p-value of 0.594 which indicated that there was not a significant relationship between open-mindedness and firm performance (ROA) at the level of 0.05. It could be concluded that H10 was not supported. The results showed that the standardized regression factor loading of questions on open-mindedness for "1. Our organization is not afraid to reflect critically on the shared assumptions we have made about our

customers.", "2. Personnel in this enterprise realize that the very way they perceive the marketplace must be continually questioned.", "3. We rarely collectively question our own bias about the way we interpret customer information.", and "4. We continually judge the quality of our decisions and activities taken over time." were 0.643, 0.779, 0.785 and 0.767 respectively. Consequently, "3. We rarely collectively question our own bias about the way we interpret customer information." was the most important aspect, followed by "2. Personnel in this enterprise realize that the very way they perceive the marketplace must be continually questioned.", "4. We continually judge the quality of our decisions and activities taken over time.", and "1. Our organization not afraid to reflect critically on the shared assumptions we have made about our customers."

4.9.11 Results from This Study for H11: Intra-organizational Knowledge Sharing Has Positive Effects on Firm Performance (ROA).

According to Table 4.17 (Page 122), the value of t-test revealed that the estimated value was 0.246, standard error (S.E.) 0.434, critical ratio (C.R.) 1.995, and p-value 0.046 which indicated that there was a significant positive relationship between intra organizational knowledge sharing and a firm performance (ROA) at the level of 0.05. It could be concluded that H11 was supported. The results showed that the standardized regression factor loading of questions on intra organizational knowledge sharing for "1. There is a good deal of organization conversation that keeps alive the lessons learned from history.", "2. We always analyze unsuccessful organizational endeavors and communicate the lessons learned widely.", "3. We have specific mechanisms for sharing lessons learned in organizational activities from department to department (unit to unit, team to team).", and "4. We put little effort in sharing lessons and experiences." were 0.692, 0.852, 0.796, and 0.653 respectively. Consequently, "2. We always analyze unsuccessful organizational endeavors and communicate the lessons learned widely." was the most important aspect, followed by "3. We have specific mechanisms for sharing lessons learned in organizational activities from department to department (unit to unit, team to team).", "1. There is a good deal of organizational conversation that keeps alive the lessons learned from history.", and "4. We put little effort in sharing lessons and experiences."

The global model studied the effects of learning orientation and innovativeness on firm performance (ROA).

The researcher examined the direct relationship between learning orientation and innovativeness and the results showed that learning orientation had significant positive relationship with innovativeness as shown in Figure 4.8, page 116.

The researcher examined the relationship between learning orientation and firm performance (ROA) and the results showed that learning orientation had a not significant positive relationship with firm performance (ROA) as shown in Figure 4.8, page 116.

The researcher examined the relationship between innovativeness and firm performance (ROA) and the results showed that innovativeness had a not significant positive relationship with firm performance (ROA) as shown in Figure 4.8, page 116.

The researcher added innovativeness variable into the path analysis model between learning orientation and firm performance (ROA). The results indicated that learning orientation did not have a significant positive relationship with firm performance (ROA), and innovativeness did not have a significant positive relationship with firm performance (ROA). However, the impact between learning orientation and innovativeness had a significant positive relationship as shown in Table 4.15, page 116.

However, the specific model studied the effects elements of learning orientation relationships on innovativeness and firm performance (ROA).

The researcher examined the direct relationship between commitment to learning and innovativeness and the results showed that commitment to learning had significant positive relationship with innovativeness as shown in Figure 4.10, page 121.

The researcher examined the direct relationship between shared vision and innovativeness and the results showed that shared vision had a significant positive relationship with innovativeness as shown in Figure 4.10, page 121.

The researcher examined the direct relationship between open-mindedness and innovativeness and the results showed that open-mindedness had a not significant positive relationship with innovativeness as shown in Figure 4.10, page 121.

The researcher examined the direct relationship between intra-organizational knowledge sharing and innovativeness and the results showed that intra-organizational

knowledge sharing had a significant positive relationship with innovativeness as shown in Figure 4.10, page 121.

The researcher examined the direct relationship between commitment to learning and firm performance (ROA) and the results showed that commitment to learning had a not significant positive relationship with firm performance (ROA) as shown in Figure 4.10, page 121.

The researcher examined the direct relationship between shared vision and firm performance (ROA) and the results showed that shared vision had a not significant positive relationship with firm performance (ROA) as shown in Figure 4.10, page 121.

The researcher examined the direct relationship between open-mindedness and firm performance (ROA) and the results showed that open-mindedness had a not significant positive relationship with firm performance (ROA) as shown in Figure 4.10, page 121.

And the researcher examined the direct relationship between intra-organizational knowledge sharing and firm performance (ROA) and the results showed that intra-organizational knowledge sharing had a significant positive relationship with firm performance (ROA) as shown in Table 4.17, Page 122.

Table 4.18 Summary of Hypothesis Results

Hypothesis	Results
H1: Learning Orientation Has Positive Effects on Innovativeness.	Supported
H2: Learning Orientation Has Positive Effects on Firm Performance (ROA).	Not supported
H3: Innovativeness Has Positive Effects on Firm Performance (ROA).	Not supported
H4: Commitment to Learning Has Positive Effects on Innovativeness.	Supported
H5: Shared Vision Has Positive Effects on Innovativeness.	Supported
H6: Open-mindedness Has Positive Effects on Innovativeness.	Not supported
H7: Intra-organizational Knowledge Sharing Has Positive Effects on Innovativeness.	Supported

Table 4.18 Summary of Hypothesis Results (Cont.)

Hypothesis	Results
H8: Commitment to Learning Has Positive Effects on Firm Performance (ROA).	Not supported
H9: Shared Vision Has Positive Effects on Firm Performance (ROA).	Not supported
H10: Open-mindedness Has Positive Effects on Firm Performance (ROA).	Not supported
H11: Intra-organizational Knowledge Sharing Has Positive Effects on Firm Performance (ROA).	Supported

In summary, this chapter showed the effected factor and relationship between learning orientation (LO), innovativeness (IN), commitment to learning (CL) , shared vision (SV) , open-mindedness (OM), intra organizational knowledge sharing (IOK) , and firm performance (ROA) through conceptual frameworks. The next chapter summarized and discussed the results of the study's findings.

CHAPTER 5
CONCLUSIONS AND RECOMMENDATIONS

The aim of this study was to investigate the effects of learning orientation on innovativeness and on firm performance, the effects of innovativeness on firm performance, and the effects of learning orientation on innovativeness and firm performance in the electronic/electrical industry. The study results were provided in term of the conclusions and recommendations in this chapter. To discuss and evaluate the findings of the study, this chapter started with the summary of the study, followed by discussions and conclusions, the implication for future research and ended with the limitations of the study.

5.1 Summary of Study

The majority of respondents were male (56.1 percent), aged between 41 and 50 (40.6 percent), married (72.2 percent), earned bachelor's degrees (51.7 percent), had more than 15 years of work experience (27.5 percent), and had been working for the company for 5 to 10 years (26.7 percent). The samples were limited companies (83.9 percent), which were Thai business (53.3 percent) and joint venture and foreign firms (46.7 percent). Most of the samples had a number of employees were fewer than 250 (45 percent). Most of the companies had operated more than 15 years (81.1 percent) and held business capital between 1,000,000 and 50,000,000 baht (47.8 percent).

Generally, the electronic/electrical company managers voiced their positive opinions about learning orientation in the electronic/electrical industry. Data indicated that the mean scores of commitment for learning ranged between 3.87 and 4.03, the mean scores of shared visions ranged between 3.72 and 3.98, the mean scores of open-mindedness ranged between 3.88 and 4.07, and the mean scores of intra organizational knowledge sharing ranged between 3.73 and 4.10.

Concerning innovativeness, the electronic/electrical company managers generally showed distinctive innovativeness in the electronic or electrical industry. The mean scores of product innovation ranged between 3.53 and 3.86, and the mean scores of process innovation ranged between 3.53 and 4.09.

Generally, the electronic/electrical company managers voiced their negative perception about firm performance according to the secondary data from Business Online Public Company Limited (BOL) in the electronic/electrical industry. The mean scores of firm performance during 2010-2012 ranged between -17.43 and 19.82.

5.2 Discussions and Conclusions

5.2.1 Research Question 1: Do learning orientation and innovativeness have effects on firm performance?

To respond to this question, the hypothesis testing was performed for hypotheses 1 and 2.

H1: attempt to investigate whether learning orientation has positive effects on innovativeness.

H2: attempt to investigate whether learning orientation has positive effects on firm performance.

This study proposed two models in order to investigate the relationship among learning orientation, innovativeness and firm performance that provided return on assets (ROA) based on the information derived from financial statements, and to measure the relationship among learning orientation, innovativeness and firm performance.

The results of the global model indicated that there was a significant relationship between learning orientation and innovativeness, but the relationship between learning orientation and ROA was not significant as shown in Table 4.15. Additionally, the results showed that learning orientation had positive effects on innovativeness which supported H1. This was consistent with Slater and Narver (1995) who suggested that the learning orientation was directly related to a new product's success. Calantone et al. (2002) also demonstrated a linkage among learning orientation, innovation, and firm performance.

Also, the consideration of each element revealed that all those elements were important factors for the innovation. Calantone et al. (2002) conducted the research focusing on the commitment to learning, shared vision, open-mindedness and intra organizational knowledge sharing.

According to H2, based on the secondary data from BOL, it can be concluded that learning orientation did not affect ROA which was not in line with the research results of Covin et al. (2006) which indicated that learning orientation underpins firms' internal self-renewal, and it was one of the significant aspects of firms' strategy activities. Nanda (1996) and Hamel and Prahalad (1990) stated that the organizational learning could occur due to the organization's new performance, which could be create much more complete through the determination to build capacity or to emphasize the learning**.** Normally, it might take time for an organization in a new industry to learn; in addition, it was necessary that an organization learn constantly which would affect its performance in the following years as shown in the collected data. Afterwards, it could affect ROA. Therefore, H2 was not supported in this study.

5.2.2 Research Question 2: Does innovativeness have effects on firm performance?

To respond to the question, the hypothesis testing was performed for hypothesis 3.

H3: attempt to investigate whether innovativeness has positive effects on firm performance.

This study proposed to investigate the relationship between innovativeness and firm performance that provided ROA based on the information derived from financial statements. The results indicated that there was not a significant relationship between innovativeness and ROA. Based on the secondary data from BOL, innovativeness did not affect ROA, which was not in line with the study of Ittner and Larcker (1997), which found a significant relationship between innovation and performance measurement. Return on assets (ROA) and the rate of growth in the computer industry, for instance, were caused by the level of innovation which took a gradual pace. In addition, Damanpour and Evan (1984) and Han et al. (1998) reported that the innovation process and innovation management were positively correlated with the performance of the organization. However, innovation was a relatively new concept in Thailand which was considered a newly industrialized country. Also, there were only a few innovations compared with other industrialized countries that had been familiar with innovation for a long period of time. Therefore, the innovation in Thailand might take time to learn and need more processes to reach innovativeness. Accordingly, this

might result in an insignificant relationship between innovativeness and ROA. In the future research, if learning to attain innovativeness was taken seriously; it might affect the learning orientation and innovativeness, performance, in term of ROA. Thus, in this research, H3 was not supported.

5.2.3 Research Question 3: Do elements of learning orientation have effects on innovativeness?

To respond to this question, the hypothesis testing was performed for hypotheses 4, 5, 6 and 7.

H4: attempt to investigate whether commitment to learning has positive effects on innovativeness.

H5: attempt to investigate whether shared vision has positive effects on innovativeness.

H6: attempt to investigate whether open-mindedness has positive effects on innovativeness.

H7: attempt to investigate whether intra-organizational knowledge sharing has positive effects on innovativeness.

The specific model showed that there were positive effects of the relationship among the commitment to learning, shared vision and intra- organizational knowledge sharing on innovativeness as shown in Table 4.17, which supported the results of the previous studies. However, open-mindedness did not have positive effects on innovativeness; therefore, it did not support the results of the previous studies. According to the study by Norman (1985) and Sinkula et al. (1997) which concerned about commitment to learning, the levels of employees in organizations that supported learning and an atmosphere that encouraged learning to attain innovation played an important role. Besides, Damanpour (1991) reported that commitment to learning enabled the ability to innovate among the more intense competitions. Accordingly, Worren et al. (2002) supported the mission of the organization to build an atmosphere of innovation and creation. Hurley and Hult (1998) believed that organizations needed to create a culture of exposure for new ideas and to focus on a new invention. Slater and Narver (1995) suggested that learning orientation was directly related to a new product's success. Organizations with commitment to learn could lead to innovativeness

of better products and processes (Gatignon & Xuereb, 1997). In addition, it could be concluded that learning was necessary for the innovation ability and the better results of operations of the organization (Hurley & Hult, 1998). Commitment to learning concerned employees at various levels of organizations that support learning and an atmosphere that encourages learning which was important for innovation (Norman, 1985; Sinkula et al., 1997). The results showed that the relationship among commitment to learning, shared vision and intra-organizational knowledge sharing on ROA, which supported H4, H5, and H7. Open-mindedness did not yield positive results on innovativeness. Therefore, open-mindedness did not have effects on innovativeness. However, there were not any organizations in Thailand that innovation was fully integrated into their operation because it was hard to look for innovation and display open-mindedness neither on the job nor on personal issues; as a result, H6 was not supported.

5.2.4 Research Question 4: Do elements of learning orientation have effects on firm performance?

To respond to this question, the hypothesis testing was performed for hypotheses 8, 9, 10 and 11.

H8: attempt to investigate whether commitment to learning has positive effects on firm performance.

H9: attempt to investigate whether shared vision has positive effects on firm performance.

H10: attempt to investigate whether open-mindedness has positive effects on firm performance.

H11: attempt to investigate whether intra-organizational knowledge sharing has positive effects on firm performance.

The last question was tested on four hypotheses by using the specific model. It showed that intra-organizational knowledge (IOK) had positive effects on ROA as shown in Table 4.17 which supported the results of the previous studies. Concerning the three elements including commitment to learning, shared vision, and open-mindedness, the test results showed that they did not have positive effects on ROA which did not support the results of the previous studies. Alternatively, Stata (1989) suggested that a

critical aspect in the evolution of the ability to generate economic benefits and great firm performance was learning orientation. Regarding commitment to learning, shared vision, and open-mindedness, the testing results did not show positive effects on ROA. Therefore, the research results could imply that the organization might require a period of time for ongoing learning to raise an awareness of personnel in the organization which might affect firm performance in term of ROA in the next several years.

Therefore, commitment to learning, shared vision, and open-mindedness did not have effects on ROA. As a result, H8, H9, and H10 were not supported.

Regarding intra-organizational knowledge sharing, the results are consistent with Calantone et al. (2002) who defined a firm's learning orientation as the organizational activities of creating and using knowledge to enhance competitive advantage. The exchange of knowledge and information to knowledge were a lively gathering of different sources and references for future practice (Lukas et al., 1996).

The results showed that intra-organizational knowledge sharing had positive effects on ROA which supported H11. Intra-organizational knowledge sharing was a significant factor that affects performance in this research.

5.3 Implication and Future Research

5.3.1 Theoretical Implication

This study developed a conceptual model to examine the effects of learning orientation on innovativeness, the effects of learning orientation on firm performance, effects of innovativeness on firm performance, and the effects of learning orientation on innovativeness and firm performance. The theories used in this study as well as in the related studies were utilized as a guideline to recognize the fundamental power of learning orientation and innovativeness. Learning orientation embraced commitment to learning, shared vision, open-mindedness, and intra- organizational knowledge sharing. The innovativeness included product innovation, and process innovation. The contribution of this study's major findings to the theoretical concept was the connection between learning orientation, innovativeness and firm performance.

The measurement of firm performance for this study was done through the use of two models. The global model showed relation between learning orientation and

innovativeness but showed neither the relation between learning orientation and firm performance nor the relation between innovativeness and firm performance. The relation between learning orientation and innovativeness is consistent with the literature review so it confirmed that learning had effects on innovation. Learning orientation and innovativeness did not affect performance, it may be because innovation was a new concept in Thailand. Thailand is a newly industrialized country so there are a few innovations compared with other industrialized countries that have long been familiar with innovativeness. Therefore, the country might take time to master the process of creating innovativeness and the results showed the significant relationship between innovativeness and ROA.

There was no relation between learning orientation, innovativeness and firm performance. However, in the future, if innovation is thoroughly explored and comprehended within an extended time scope, it is possible to find effects of learning orientation on innovativeness.

The specific model showed relation among the elements of learning orientation, innovativeness and firm performance. This model showed relation among commitment to learning, shared vision, intra-organizational knowledge sharing and innovativeness except open-mindedness which did not have any relation. The only element which showed the relationship with firm performance was intra- organizational knowledge sharing whereas the other elements including commitment to learning, shared vision, and open-mindedness showed no relationship with firm performance.

In addition, the contribution to the industry's literature review was the clarification of the learning orientation. Additionally, this study contributed to the integration of the elements of learning orientation and innovativeness. The literature review on organizational learning and innovation (Rogers, 1983, 1995; Montoya-weiss & Calantone, 1994; Brown & Eisenhardt, 1995; Hurley & Hult, 1998; Mone et al., 1998; McNally et al., 2010; Nybakk, 2012) concluded that learning was necessary for its ability to innovate and to yield desirable results of an organization's operations (Hurley & Hult, 1998). There was a positive correlation with the performance of the organization (Mone et al., 1998). The research of Calantone et al. (2002) involved the

utilization of commitment to learning, shared vision, open-mindedness and intra-organizational knowledge sharing.

Specifically, this study highlighted the effects of the elements of learning orientation including commitment to learning, shared vision, and intra- organizational knowledge (IOK) sharing on innovativeness. The results showed that only intra-organizational knowledge sharing showed the relationship with ROA. In conclusion, intra-organizational knowledge sharing can be used to estimate an innovation and ROA which were related to an organization's need to create knowledge sharing within the organization (Damanpour, 1991; Day, 1991; Cahill, 1996; Verona, 1999; Damanpour & Aravind, 2011; Jang, 2013).

5.3.2 Practical Implication

This study implied that the executives should focus on IOK to enhance an organization's operational ability by realizing the use of resources concerning on learning orientation which, in turn, effects innovativeness. The concept learning orientation's ability was to innovate among intense competitions. The executives should pay special attention to the basic values of their organization including learning as a key factor to improvement. There should be a total agreement on their organizational vision across all levels, functions, and divisions and all employees needed to commit to the goals of the organization. In addition, the executives should regularly analyze unsuccessful organizational endeavors and communicate the lessons learned widely and put little effort in sharing lessons and experiences to be useful in developing on learning in the electronics/electrical industry.

Also, the executives should focus on commitment to learning, shared vision and intra-organizational knowledge sharing and their relationship with innovativeness. Commitment to learning was the key to competitive advantage and establishing on innovation. Shared vision was a commonality of purpose in an organization and as partners in charting the direction of the organization. However, there were a few organizations in Thailand which were willing to open up for an innovation because it seems to be rather difficult to be open-minded on every subject such as job or personal matters so that it may not yield any influences on innovation.

The result revealed that firm performance could not be measured compared with commitment to learning, shared vision, and open-mindedness because these three elements needed more learning periods and on-going learning process continue in order to promote mutual understanding between personnel in the organization which may affect firm performance in the near future. In order to measure firm performance, there were also other factors such as return on equity (ROE), return on investment (ROI), market share, growth rate, and profitability all of which could be used in combination. Finally, intra-organizational knowledge sharing (IOK) was one important element in the research. It can be used for measuring both innovativeness (IN) and ROA because the sharing of knowledge and information was a lively gathering of different sources and references for future practice (Lukas, et al., 1996) and it proved that when the ROA was used for measuring firm performance, the element that could be measured was IOK sharing. In this study, IOK showed a significant contribution to future business operation.

5.3.3 Future Research

First, the future research should be conducted under normal circumstances for the long time period or on a longitudinal study with the use of the same model as in this research in order to confirm that the model was consistent with empirical data.

Second, the future research might include longitudinal studies to investigate the relationship of any factors being applied by this study, since some researchers determine the period of time that may affect firm performance. Both learning orientation and innovativeness may differ in terms of time period needed for firm performance to flourish. In addition, period of time needed for the success in firm performance may vary based upon particular industries and countries. Long-term data may present different results. However, long-term data may be difficult to collect due to firms' lack of efficient record-keeping systems and data systems.

Third, future researchers who are interested in this area of study should consider using multi-methods of data gathering to fit various firms in this industry.

Finally, future research should embrace the study on other additional variables related to several factors that influence firm performance such as market orientation, entrepreneurial orientation, customer orientation, competitor orientation, and inter-functional coordination.

5.4 Limitation of the Study

Some noteworthy limitations of the study were addressed. The first concern was the limitation of the returned questionnaires from the subjects who had been working for those target firms. In this study, in order to ensure the returned answered questionnaires from the first distribution of questionnaires, follow-up letters and telephone calls had been managed until the appropriate number of questionnaires was achieved. The second concern was that measuring performance of a specific industry in a particular country was complicated and may yield various outcomes. Moreover, the data of firms in the electronic/electrical product and parts industry, though from the database of the Department of Export Promotion, might not be fully completed because there should be the consideration of the longitudinal period to study and verify the results. Other researchers should consider the subjects in the group that can present completed financial data such as firms listed on the Thai Exporter List. Additionally, the results in this study came from the Business Online Public Company Limited (BOL)'s average three-year data during 2010-2011 and the data in 2012 when Thailand faced great flooding and political crisis that affected the overall industry's business performance.

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APPENDICES

APPENDIX A
Letter of Introduction for
The Delivery Questionnaire

ที่ ศธ 0578.06/ 5218

คณะบริหารธุรกิจ
มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี
ตำบลคลองหก อำเภอธัญบุรี
จังหวัดปทุมธานี 12110

10 ตุลาคม 2556

เรื่อง ขอความอนุเคราะห์ให้นักศึกษาเก็บข้อมูลในเขตนิคมอุตสาหกรรมจังหวัดพระนครศรีอยุธยา

เรียน อุตสาหกรรมจังหวัดพระนครศรีอยุธยา

ด้วยคณะบริหารธุรกิจ มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี ได้เปิดสอนระดับ ปริญญาเอก หลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาบริหารธุรกิจ ตั้งแต่ปีการศึกษา 2551 แล้วนั้น ขอรับรองว่า นายนรรัฐ รื่นกวี รหัสนักศึกษา 115390503003-3 เป็นนักศึกษาหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาบริหารธุรกิจ วิชาเอกการจัดการ เป็นผู้จัดทำวิทยานิพนธ์ THE EFFECT OF ENHANCING INNOVATIVENESS AND LEARNING ORIENTATION ON FIRMS PERFORMANCE คณะบริหารธุรกิจฯ ใคร่ขอความอนุเคราะห์ให้นักศึกษาเข้าเก็บข้อมูลสำหรับการทำวิจัย ให้งานวิจัยเกิดความสำเร็จเพื่อเผยแพร่ผลงานวิจัยที่เป็นคุณูปการแก่องค์กรและผู้สนใจต่อไป

จึงเรียนมาเพื่อโปรดให้ความอนุเคราะห์ให้นักศึกษาเก็บข้อมูลในเขตนิคมอุตสาหกรรมจังหวัดพระนครศรีอยุธยา จักขอบคุณยิ่ง

ขอแสดงความนับถือ

(รองศาสตราจารย์ ดร.ชนงกรณ์ กุณฑลบุตร)
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คณะบริหารธุรกิจ
มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี
ตำบลคลองหก อำเภอธัญบุรี
จังหวัดปทุมธานี 12110

10 ตุลาคม 2556

เรื่อง ขอความอนุเคราะห์ตอบแบบสอบถาม เพื่อประกอบการทำวิจัย

เรียน ผู้บริหารองค์กร

สิ่งที่ส่งมาด้วย แบบสอบถามเพื่อการวิจัย

ด้วยคณะบริหารธุรกิจ มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี ได้เปิดสอนระดับ ปริญญาเอก หลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาบริหารธุรกิจ ตั้งแต่ปีการศึกษา 2551 แล้วนั้น ขอรับรองว่า นายนรรัฐ รื่นกวี รหัสนักศึกษา 115390503003-3 เป็นนักศึกษาหลักสูตรปรัชญาดุษฎีบัณฑิต สาขาวิชาบริหารธุรกิจ วิชาเอกการจัดการ เป็นผู้จัดทำวิทยานิพนธ์ THE EFFECT OF ENHANCING INNOVATIVENESS AND LEARNING ORIENTATION ON FIRMS PERFORMANCE

อนึ่ง คณะบริหารธุรกิจฯ ใคร่ขอความอนุเคราะห์ท่านในการสนับสนุนให้ข้อมูลสำหรับการทำวิจัย ให้งานวิจัยเกิดความสำเร็จเพื่อเผยแพร่ผลงานวิจัยที่เป็นคุณูปการแก่องค์กรและผู้สนใจต่อไป

จึงเรียนมาเพื่อโปรดให้ความอนุเคราะห์ ตอบแบบสอบถาม เพื่อประกอบการทำวิจัย จักขอบคุณยิ่ง

ขอแสดงความนับถือ

(รองศาสตราจารย์ ดร.ชนงกรณ์ กุณฑลบุตร)
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INFORMED CONSENT

Dear Factory Manager / Manufacturing Manager

You are being asked to complete a questionnaire that will ask you about your opinion in your workplace. This questionnaire is the data-collection tool for a Doctoral Dissertation project overseen by Rajamangala University of Technology Thanyaburi. The topic that I wish to researchisThe Effect of Enhancing Innovativeness and Learning Orientation on Firm Performance.

Data collected from individual questionnaires will be kept confidentially and will not be identify to any particular participant. The themes and trends in the data collection are of interest to the researcher. These themes and trends will be shared with the participating organization, and it will be done so that an opportunity is created for the organization to direct attention to important matters that mentioned from the questionnaire. The purpose of sharing general results with the participating organization is to encourage action, if any is needed, toward improvement.

Thank you for considering participation in this project.

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แบบสอบถามสำหรับการศึกษา

รายละเอียดการศึกษาและแบบฟอร์มการยินยอม

เรียน ผู้จัดการโรงงาน / ผู้จัดการฝ่ายผลิต

กรุณากรอกแบบสอบถามเกี่ยวกับความคิดเห็นของท่านเกี่ยวกับการทำงานของท่าน แบบสอบถามนี้เป็นส่วนหนึ่งของเครื่องมือที่ใช้ในการเก็บข้อมูล ในการทำดุษฎีนิพนธ์ของนักศึกษาระดับปริญญาเอกของมหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรีในหัวข้อวิจัยเรื่องผลกระทบของความสำเร็จในด้านความสามารถเชิงนวัตกรรมและการมุ่งเน้นการเรียนรู้ ที่มีต่อผลการดำเนินงาน

ข้อมูลที่เก็บรวบรวมจากแบบสอบถามจะถูกเก็บไว้เป็นความลับ ข้อมูลที่เก็บรวบรวมได้จะถูกนำไปศึกษาแนวโน้มที่เกี่ยวข้องกับหัวข้องานวิจัยของผู้วิจัยผลที่ได้เมื่อทำ การวิจัยเสร็จ ผู้วิจัยจะส่งผลให้กับบริษัทเพื่อเป็นประโยชน์ต่อไป ถ้าท่านใดมีคำถามหรือข้อสงสัยในแบบฟอร์มนี้ทางผู้วิจัยจะตรวจสอบและอธิบายรายละเอียดให้ท่านทราบ

ขอบคุณสำหรับความร่วมมือและการมีส่วนร่วมในหัวข้อวิจัยนี้

นรรัฐ รื่นกวี

นักศึกษาปริญญาเอก, คณะบริหารธุรกิจ, มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี

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APPENDIX B

Questionnaire (English Version)

Part 1: Demographic information

1. Gender

☐Male ☐Female

2. Age

☐Less than 30 years ☐30-40 years

☐41-50 years ☐Above 50 years

3. Marital Status

☐Single ☐Married

☐Divorce/Widow ☐Other……

4. Education Background

☐Below Bachelor's degree ☐Bachelor's degree

☐Master's degree ☐Doctoral degree

5. How long have you work in this company?

☐Less than 5 years ☐5-10 years

☐11-15 years ☐16-20 years

☐21-25 years ☐Above 25 years

Part 2: General information of your organization

1. Types of your business organization

☐Public Limited Company

☐LimitedCompany

☐Partnership

☐Other/Please specify ……

2. Form of business

☐Thai Firms

☐Joint Venture with Foreign/Please specifies the country……

☐Foreign Firms/Please specifies the country……

3.Number of employees

☐Less than or 50 employees

☐50 -150 employees

☐151-250 employees

☐More than 250 employees

4.Capital

☐Less than 1,000,000 Baht

☐1,000,000-50,000,000 Baht

☐50,000,001-100,000,000 Baht

☐More than 100,000,000 Baht

5. Number of years in operating

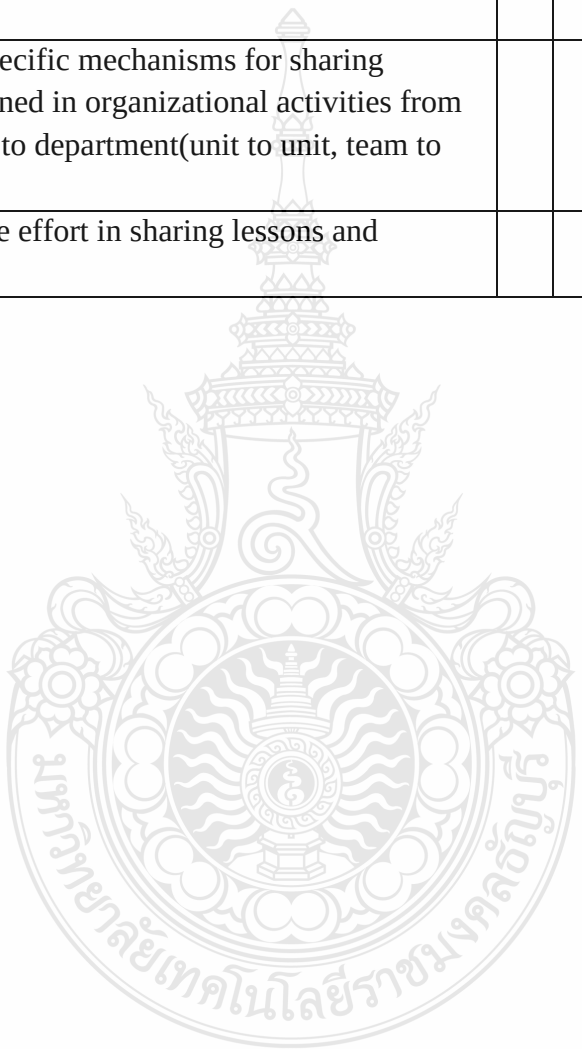
☐Less than 5 years ☐5-10 years

☐11-15 years ☐More than 15 years

Part 3: Please evaluate the current learning orientationin your organization with the following scale
(1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree and 5= strongly agree)

Item	Description	1	2	3	4	5
Commitment to learning						
1	My organization's ability to learn is the key to our competitive advantage					
2	The basic values of this organization include learning as key to improvement					
3	The sense around here is that employee learning is an investment, not an expense					
4	Learning in my organization is seen as a key commodity necessary to guarantee organizational survival					
Shared vision						
5	There is a commonality of purpose in my organization					
6	There is a total agreement on our organizational vision across all levels, functions, and divisions					
7	All employees are committed to the goals of this organization					
8	Employees view themselves as partners in charting the direction of the organization					
Open-mindedness						
9	Our organization not afraid to reflect critically on the shared assumptions we have made about our customers					
10	Personnel in this enterprise realize that the very way they perceive the market place must be continually questioned					
11	We rarely collectively question our own bias about the way we interpret customer information					
12	We continually judge the quality of our decisions and activities taken over time.					

Intra- organizational knowledge sharing						
13	There is a good deal of organization conversation that keeps alive the lessons learned from history					
Item	Description	1	2	3	4	5
14	We always analyze unsuccessful organizational endeavors and communicate the lessons learned widely					
15	We have specific mechanisms for sharing lessons learned in organizational activities from department to department(unit to unit, team to team)					
16	We put little effort in sharing lessons and experiences					



Part 4:Please evaluate the current innovativeness in your organization with the following scale
(1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree, and 5 = strongly agree)

Item	Description	1	2	3	4	5
	Product Innovation					
1	Our organization have the products that have been very new to your organization but not new to your market					
2	Our organization have the products that are new to our organization and new to the market					
3	Our organization have research and development institution that responsible for products development					
4	Our organization provides support within a sufficient time for the institution to develop products					
	Process Innovation					
5	Our organization continuously improved processes in our plant					
6	Customers are actively involved in our new product development process					
7	For all our processes, reducing cycle time is a priority item					
8	Our company is concerned with reducing cycle time for all processes					
9	Process design is done at the same time with product design					
10	Product development group members came from various disciplines					
11	Process innovation provided high-quality products					
12	Process innovation supported our product development schedules on time					

Part 5: Additional Opinions

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APPENDIX C

Questionnaire (Thai Version)

ส่วนที่1: ข้อมูลทั่วไปของผู้ตอบ

1. เพศ

☐ชาย ☐หญิง

2. อายุ (ปี)

☐น้อยกว่า 30ปี ☐30-40 ปี

☐41-50 ปี ☐มากกว่า 50ปี

3. สถานะ

☐ โสด ☐แต่งงาน

☐หย่า/หม้าย ☐อื่นๆ……

4. การศึกษา

☐ต่ำกว่าปริญญาตรี ☐ปริญญาตรี

☐ปริญญาโท ☐ปริญญาเอก

5. ประสบการณ์การทำงานกับบริษัทปัจจุบัน (ปี)

☐ น้อยกว่า 5 ปี ☐5-10 ปี

☐ 11-15 ปี ☐16-20 ปี

☐21-25 ปี ☐มากกว่า25ปี

ส่วนที่2: ข้อมูลทั่วไปขององค์กร

1. รูปแบบของธุรกิจ

☐บริษัทมหาชน ☐บริษัทจำกัด

☐ห้างหุ้นส่วน ☐อื่นๆ โปรดระบุ.....

2. ลักษณะการดำเนินธุรกิจ

☐กิจการเจ้าของคนไทย

☐กิจการร่วมทุนกับต่างประเทศโปรดระบุประเทศ.....

☐กิจการต่างประเทศโปรดระบุประเทศ.....

3. จำนวนพนักงานของธุรกิจ

☐น้อยกว่า50 คน ☐50-150คน

☐151-250คน ☐มากกว่า 250 คน

4. ทุนจดทะเบียน

☐น้อยกว่า 1,000,000 บาท

☐1,000,000-50,000,000 ล้านบาท

☐50,000,001-100,000,000 ล้านบาท

☐มากกว่า 100,000,000 ล้านบาท

5. ระยะเวลาของการดำเนินงานขององค์กร

☐น้อยกว่า 5 ปี ☐5-10 ปี

☐11-15 ปี ☐มากกว่า 15ปี

ส่วนที่3: กรุณาประเมินความคิดเห็นเกี่ยวกับแนวทางการเรียนรู้ขององค์กรมีคุณลักษณะต่อไปนี้มากน้อยเพียงใด โดยใช้เกณฑ์ต่อไปนี้

(1 =ไม่เห็นด้วยอย่างมาก, 2 =ไม่เห็นด้วย, 3 =เฉยๆ, 4 =เห็นด้วย, และ5 =เห็นด้วยอย่างมาก)

ข้อ	รายละเอียด	1	2	3	4	5
ความมุ่งมั่นที่จะเรียนรู้						
1	ความสามารถที่จะเรียนรู้ขององค์กรเป็นปัจจัยสำคัญในการสร้างความได้เปรียบทางการแข่งขันของธุรกิจ					
2	ค่านิยมพื้นฐานขององค์กร มีการรวมถึงการเรียนรู้ของพนักงาน เพื่อปรับปรุงงานให้ดีขึ้น					
3	การเรียนรู้ของพนักงานถือเป็นการลงทุนไม่ถือว่าเป็นค่าใช้จ่าย					
4	การเรียนรู้ในองค์กรเป็นปัจจัยสำคัญที่จำเป็นเพื่อรับประกันการอยู่รอดขององค์กร					
วิสัยทัศน์ที่ใช้ร่วมกัน						
5	องค์กรมีวัตถุประสงค์ที่พนักงานในองค์กรยึดถือร่วมกัน					
6	ในองค์กร มีวิสัยทัศน์ขององค์กร ที่ให้แก่พนักงานทุกระดับ ทุกหน้าที่และทุกหน่วยงาน					
7	พนักงานทุกคนในองค์กรมีความมุ่งมั่นต่อเป้าหมายขององค์กรร่วมกัน					
8	พนักงานตระหนักว่าเป็นส่วนหนึ่งในการกำหนดแผนและทิศทางการดำเนินงานขององค์กร					
การเปิดใจกว้าง						
9	องค์กรยอมรับผลสะท้อนจากคำวิจารณ์ถึงสิ่งที่ได้รับจากลูกค้า					
10	องค์กรสามารถนำเสนอแนวทางหลายอย่าง ที่พวกเขาได้รับจากในตลาดได้					
11	องค์กรไม่มีอคติเกี่ยวกับวิธีการวิเคราะห์ข้อมูลของลูกค้า					
12	ในช่วงเวลาที่ผ่านมาองค์กรมีการประเมินอย่างต่อเนื่องเกี่ยวกับคุณภาพของการตัดสินใจและกิจกรรมต่างๆ					

ข้อ	รายละเอียด	1	2	3	4	5
การแลกเปลี่ยนความรู้ภายในองค์กร						
13	องค์กรมีการจัดการ การสื่อสารที่ดี เพื่อเรียนรู้ จากข้อผิดพลาดในอดีต					
14	องค์กรมีการวิเคราะห์ ความผิดพลาดที่เกิดขึ้นในอดีตและสื่อสารให้หน่วยงานในองค์กร เรียนรู้ร่วมกัน					
15	องค์กรมีกลไกที่เฉพาะเจาะจงสำหรับการแบ่งปันบทเรียนที่ได้รับในด้านกิจกรรมขององค์กรจากแผนกหนึ่งไปยังแผนกอื่นๆต่อไป (หน่วยไปยังหน่วยทีมให้กับทีมงาน)					
16	องค์กรมีการแลกเปลี่ยนสิ่งที่ได้เรียนรู้ และประสบการณ์ภายในองค์กรเสมอ					

ส่วนที่4: กรุณาประเมินความคิดเห็นเกี่ยวกับนวัตกรรมขององค์กรมีคุณลักษณะต่อไปนี้มากน้อยเพียงใด โดยใช้เกณฑ์ต่อไปนี้

(1 =ไม่เห็นด้วยอย่างมาก, 2 =ไม่เห็นด้วย, 3 =เฉยๆ, 4 =เห็นด้วย, และ5 =เห็นด้วยอย่างมาก)

ข้อ	รายละเอียด	1	2	3	4	5
นวัตกรรมสินค้า						
1	องค์กรมีผลิตภัณฑ์ใหม่ แต่ไม่ได้เป็นผลิตภัณฑ์ใหม่ในตลาด					
2	องค์กรมีผลิตภัณฑ์ใหม่ และเป็นผลิตภัณฑ์ใหม่ในตลาด					
3	องค์กรมีหน่วยงานที่รับผิดชอบการพัฒนาผลิตภัณฑ์ที่ชัดเจน					
4	องค์กรมีการส่งเสริมและสนับสนุน เพื่อการพัฒนาผลิตภัณฑ์อยู่เสมอ					
นวัตกรรมกระบวนการ						
5	องค์กรมีการปรับปรุงกระบวนการทำงานใหม่ๆอย่างต่อเนื่อง					
6	ลูกค้ามีส่วนร่วมในกระบวนการพัฒนาผลิตภัณฑ์ใหม่					
7	องค์กรให้ความสำคัญกับการลดเวลาในการทำงาน					
8	บริษัทตระหนักถึงการลดรอบเวลาการผลิตในกระบวนการทั้งหมด					
9	กระบวนการออกแบบการผลิตจะทำเสร็จในเวลาเดียวกันกับการออกแบบผลิตภัณฑ์					
10	การพัฒนาสินค้าได้เกิดจากหลายหน่วยงาน ร่วมเสนอความคิดเห็น					
11	นวัตกรรมในกระบวนการได้สร้างผลิตภัณฑ์ที่มีคุณภาพสูง					
12	นวัตกรรมในกระบวนการได้สนับสนุนตารางการพัฒนาผลิตภัณฑ์ของเราให้ตรงเวลา					

ส่วนที่5: ข้อเสนอแนะ

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Biography

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Declaration

This work contains no material which has been accepted for the award of any other or diploma in any university or other tertiary institution and, to the best of my knowledge and beliefs, contains on material previously published or written by another person, except where due reference has been made in the text.

I give consent to this copy of my thesis, when deposited in the university library, being available for loan and photocopying.

Norarat Runkawee