ผลกระทบของการสร้างนวัตกรรมและการมุ่งการเรียนรู้ที่มีต่อผลการดำเนินการขององค์กร

THE EFFECT OF INNOVATIVENESS AND LEARNING ORIENTATION ON FIRMS PERFORMANCE

นรรัฐ รื่นกวี*
Norarat Runkawee*
ชนงกรณ์ กุณฑลบุตร**
Chanongkorn Kuntonbutr**

* นักศึกษาปริญญาเอก สาขาวิชาการจัดการ คณะบริหารธุรกิจ มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี
* Ph.D. Candidate, Doctor of Philosophy Program in Management, Faculty of Business Administration, Rajamangala University of Technology Thanyaburi
* Email: norrarat_r@mail.rmutt.ac.th, noraratkim@hotmail.com
** อาจารย์ คณะบริหารธุรกิจ มหาวิทยาลัยเทคโนโลยีราชมงคลธัญบุรี
** Lecturer, Faculty of Business Administration, Rajamangala University of Technology Thanyaburi
** Email: Chanongkorn_k@rmutt.ac.th, ck9595@gmail.com

บทคัดย่อ

การศึกษานี้มีวัตถุประสงค์ เพื่อศึกษาผลกระทบของการมุ่งการเรียนรู้ต่อการสร้างนวัตกรรม ผลกระทบของการมุ่งการเรียนรู้ต่อผลการดำเนินงานขององค์กร ผลกระทบของการสร้างนวัตกรรมต่อผลการดำเนินงานขององค์กร และผลกระทบขององค์ประกอบของการมุ่งการเรียนรู้ ว่ามีความสัมพันธ์ต่อการสร้างนวัตกรรมและผลการดำเนินงานขององค์กร โดยใช้กลุ่มตัวอย่าง อุตสาหกรรมอิเล็กทรอนิกส์หรืออุตสาหกรรมไฟฟ้า การมุ่งการเรียนรู้ประกอบด้วย 4ปัจจัยคือ ความมุ่งมั่นที่จะเรียนรู้ วิสัยทัศน์ที่ใช้ร่วมกัน การเปิดใจกว้างและการแลกเปลี่ยนความรู้ภายในองค์กร ส่วนการสร้างนวัตกรรมประกอบด้วย 2 ปัจจัยคือ นวัตกรรมผลิตภัณฑ์และนวัตกรรมกระบวนการ ในการศึกษานี้ใช้ ผลตอบแทนต่อสินทรัพย์ (ROA) ที่ได้จากงบการเงินขององค์กร มาวัดผลการดำเนินงานและใช้สองรูปแบบในการวัดผล

การศึกษาครั้งนี้ เป็นการศึกษาระดับองค์กร โดยให้ผู้จัดการโรงงานหรือผู้จัดการฝ่ายการผลิต ในอุตสาหกรรมอิเล็กทรอนิกส์หรืออุตสาหกรรมไฟฟ้าในประเทศไทย จำนวน 180 คนเป็นผู้ตอบแบบสอบถาม ซึ่งใช้วิธีการสุ่มอย่างง่ายในการเลือก โดยใช้กลุ่มประชากรจากฐานข้อมูลของกรมส่งเสริมการส่งออก กระทรวงพาณิชย์ โดยใช้สถิติเชิงพรรณนาและวิเคราะห์ด้วยสมการเชิงโครงสร้าง (Structural Equation Model: SEM)

ผลการศึกษาจากทั้งสองรูปแบบ พบว่าในรูปแบบที่หนึ่ง (The global model) ผลการดำเนินงานจากงบการเงิน แสดงให้เห็นว่าการมุ่งการเรียนรู้ ส่งผลต่อการสร้างนวัตกรรม แต่การมุ่งการเรียนรู้และการสร้างนวัตกรรม ไม่ส่งผลต่อผลการดำเนินงาน การที่ผลตอบแทนต่อสินทรัพย์ (ROA) ยังไม่ส่งผลต่อการดำเนินธุรกิจนั้น ทั้งการมุ่งการเรียนรู้และการสร้างนวัตกรรม อาจจะต้องใช้ระยะเวลาในการส่งผลและจะต้องใช้การศึกษาแบบการติดตาม ติดต่อกันหลายปี ส่วนรูปแบบที่สอง (The specific model) โดยใช้ผลการดำเนินงานจากงบการเงินเดียวกัน เพื่อศึกษาถึงผลกระทบขององค์ประกอบของการมุ่งการเรียนรู้ซึ่งประกอบด้วย ความมุ่งมั่นที่จะเรียนรู้ วิสัยทัศน์ที่ใช้ร่วมกัน การเปิดใจกว้าง และการแลกเปลี่ยนความรู้ภายในองค์กร จะส่งต่อการสร้างนวัตกรรมและผลการดำเนินงานขององค์กร พบว่าความมุ่งมั่น ที่จะเรียนรู้ วิสัยทัศน์ที่ใช้ร่วมกัน และการแลกเปลี่ยนความรู้ภายในองค์กร จะส่งผลต่อการสร้างนวัตกรรม แต่การเปิดใจกว้างไม่ส่งผลต่อการสร้างนวัตกรรม ส่วนความมุ่งมั่นที่จะเรียนรู้ วิสัยทัศน์ที่ใช้ร่วมกัน และการเปิดใจกว้าง ไม่ส่งผลต่อผลการดำเนินงาน มีเพียงการแลกเปลี่ยนความรู้ภายในองค์กรเท่านั้นที่ส่งผลต่อผลการดำเนินงาน ฉะนั้นองค์กร ควรให้ความสำคัญกับแลกเปลี่ยนความรู้ภายในองค์กร ในการมุ่งการเรียนรู้ เพราะถ้าการแลกเปลี่ยนความรู้ภายในองค์กรอยู่ในระดับที่ดี มีประสิทธิภาพ ย่อมจะนำไปสู่ผลการดำเนินงานที่สูงขึ้น

คำสำคัญ: การมุ่งการเรียนรู้ การสร้างนวัตกรรม ผลการดำเนินงาน, ROA

Abstract

The purpose of this study was to investigate the effects of learning orientation on innovativeness, and on a firm performance, the effects of innovativeness on a firm performance, and the effects of the elements of learning orientation relationships on innovativeness and a firm performance in 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 electronic/electrical product and parts industry in Thailand. Later, one hundred and eighty samples were obtained and 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 and then the simple random sampling was applied. Data was analyzed based on descriptive statistics, and Structure Equation Modeling.

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 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 whereas 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 the elements of learning orientation necessary for ROA which means that a good level of the intra organizational knowledge sharing should be considered as a priority because it will increase the performance on ROA as well.

Keywords: Learning Orientation, Innovativeness, Firm Performance, ROA

1. Introduction

Recently the national research has found that Thailand has increasingly had an innovation capability and the investment activities beneficial to the market expansion. Some of the research and development do not have any relation to any income in the exporting business because in some industrial groups were mainly competitors, not exporters. The ratio of goods sold in the country is greater than good for exporting purposes, therefore the creation of an innovation will have significant impacts on market expansion in the country as well as to the other countries (National Innovation Agency, 2007). The science and the technology is including the research and development which will help an innovation also the change of entrepreneurial formed (Chairat, 2004). An entrepreneur should be understood 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 understand about the competitive advantages more than the competitors. There are important factors in building competitive advantage, a firm performance, innovativeness, and learning orientation.

Innovativeness is defined as a willingness and a tendency to engage in business to support creativity, experimentation, the introduction of new products/services, novelty, technological leadership, and R & D in developing new processes (Lumpkin & Dess, 2001). The innovation means an important modification in terms of technology and knowledge derived from increasingly discovered innovation (Garcia, 2010). All of the innovation begin with and created by a person and the staffs from the starting point of the innovation process to invent something new (Amabile & Pillemer, 2012). Therefore, innovativeness will help to compete with the competitors both domestically and internationally.

To create a learning organization and transfer information and skills, it is a must to control such resources which are conducive to innovation (Paladino, 2007). Moreover, the research and development can help to achieve the company's goals to enhance the innovation which includes the links between the knowledge and the ability to learn in the organization. It is found that the learning orientation had influences on innovativeness and firm performance.

The researcher is interested in the factors of learning orientation after the literature review of previous studies which showed that learning is very crucial to innovation (Tang & Chi, 2011). There are many factors that can affect innovation and firm performance. However, the direct effects of each element of learning orientation on firm performance (ROA) have not been directly studied yet. Hence, the true effects of these factors have not been captured in the previous studies. This could mislead the interpretation and the implication of the results.

With an interest to the importance of problems, the researcher's purposes of investigating the effects of learning orientation on innovativeness, the effects of learning orientation on ROA, the effects of innovativeness on ROA, and the direct effects of elements of learning orientation relationships on innovativeness and a ROA in electronic/electrical industry.

2. Literature Review and Hypothesis

The review of relevant literature of this study and the hypotheses development are as follows.

2.1 Learning Orientation and Innovativeness

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 (Stata, 1989; Nonaka & Takeuchi, 1995), management (Senge, 1990; Levitt & March, 1998).

Learning orientation refers to organization-wide activities of creating and using knowledge to enhance competitive advantage. This includes obtaining and sharing information about customer's needs, market changes, and competitor actions, as well as developing new technologies to create new products that are superior to those of competitors (Hurley & Hult, 1998; Mone, Mckinley, & Barker, 1998; Nybakk, 2012). Slater and Narver (1995) suggested that learning orientation is directly related to the success of new products. Calantone, Cavusgil, and Zhao (2002) also demonstrated a linkage among learning orientation, innovation, and performance in the firm.

Review of the literature on organizational learning and innovation (Montoya-weiss & Calantone, 1994; Hurley & Hult, 1998; Mone et al., 1998; McNally, Cavusgil, & Calantone, 2010; Nybakk, 2012) concluded that learning is necessary to its ability to innovate and results of operations of the organization (Hurley & Hult, 1998). Organizations with a commitment to learning can lead to innovativeness of better products and processes (Gatignon & Xuereb, 1997; Adis & Jublee, 2010). The positive correlation with the performance of the organization (Mone et al., 1998) can create an innovation demonstrated and accepted in the thinking process concerning goods or services of the organization. The focus on learning is strongly correlated with organizational innovation so many scholars can focus on learning or on the ability to innovate more (Damanpour & Aravind, 2011; Jang, 2013). Calantone et al. (2002) conducted the research on the use of the commitment to learning, shared vision, open-mindedness and intra organizational knowledge sharing. Based on the concepts above, the below hypotheses were conducted.

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

2.2 Learning Orientation and Firm Performance

According to the research on learning organization, learning orientation can influence the performance 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. Learning orientation underpins firms' internal self-renewal, and is an important aspect of firms' strategizing activities (Covin, Green, & Slevin, 2006; Hakala, 2011). Calantone et al. (2002) defined a firm's learning orientation as the organizational activities of creating and using knowledge to enhance competitive advantage.

The concept of learning in an organization is the source of competitive advantage (Stata, 1989). Also, 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 building capacity or giving emphasis on learning. A critical aspect lies in the evolution of the ability to generate economic benefits (Stata, 1989) and the learning orientation will lead to firm performance. In the research by Calantone et al. (2002), there was the use of the commitment to learning, shared vision, open-mindedness and intra organizational knowledge sharing. Based on the concepts above, the below hypotheses were conducted.

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)

2.3 Innovativeness and Firm Performance

Innovation ability is the most important factor affecting the firm performance (Li & Calantone, 1998; Mone et al., 1998; Panayides, 2006). Nonaka (1994) suggested that innovation occur 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 and new key capabilities enhance innovation in the firm. Damanpour and Gopalakrishnan (2001) explained that organizations with a high performance product and process innovation. According to Ittner and Larcker (1997), there is a significant relationship between innovation and performance measurement for example return on assets and the rate of growth in the computer industry caused by the level of innovation to a gradual pace. Calantone et al. (2002) demonstrated a linkage among learning orientation, innovation, and performance in the firm. Therefore, the conclusion that the innovation ability is the key factor to the performance of the organization (Mone et al., 1998) is proved by a number of results (Cooper, 2000). According to Li and Calantone (1998), it was suggested that organizations need to innovate to create a competitive advantage for the survival of the organization. Based on the concepts above, the below hypotheses were conducted.

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

3. Research methods

3.1 Sample and data collection

This study was conducted to collect data from questionnaire via regular mail. The research used quantitative approach and questionnaires were employed for collecting data of factory managers or manufacturing managers in electronic/electrical industry in 2013. 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 population samples were Thai exporters based on the list of Department of Export Promotion which enlisted a total membership of 824 companies. Simple random sampling techniques were applied to select the samples. The totals of 520 questionnaires were distributed while 205 questionnaires were returned, which was 39.42 percent of response rate. Schreiber, Nora, Stage, Barlow and 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 so the 180 completed questionnaires were used in this research.

3.2 The measurement characteristics of the variable

3.2.1 Learning orientation

Learning orientation (LO) framework included commitment to learning (CL), shared vision (SV), open-mindedness (OM) and intra organizational knowledge sharing (IOK) to determine the weight of the composition of the list of questions including to confirmation that indicated or observed variables (Calantone et al., 2002). Four questions relating to the commitment to learning refers that organizational employees are motivated to cooperate in the development of the ideas of innovativeness (Dundon, 2002). Four questions concerning shared vision refers that the purpose of innovation is in line with the mission of the organization (Greenberg & Baron, 2010) and organizational development strategy and vision by establishing clear plans and activities (Dundon, 2002). Four questions concerning open-mindedness refers that the embrace of employees' diverse opinions on the policies of the organization (Denton, 1999) in the working atmosphere that welcomes everyone to openly make comments (Denton, 1999; Tidd, Bessant, & Pavitt, 2001; Dundon, 2002). Four questions concerning intra organizational knowledge sharing refers that organizations contribute to the working atmosphere to attempt and embrace the risk of failure (Denton, 1999) by providing a job rotation to achieve a wide range of knowledge (Denton, 1999) and a communication system both formally and informally (Denton, 1999; Tidd et al., 2001).

3.2.2 Innovativeness

Innovativeness (IN) concept was measured in two dimensions; product innovation (PDI) and process innovation (PCI) to determine the weight of the composition of the list of questions which included indicators or observed variables (Lukas & Ferrell, 2000; Quesada, Syamil, & Doll, 2006). In summary, four questions concerning product innovation refers that products are developed and commercialized to customers in acquiring and using them (Sandvik & Sandvik, 2003). Eight questions concerning process innovation refer that some important modifications are introduced to the production process such as new machines or new methods of organization (Nieto & Santamartia, 2010).

3.2.3 Firm performance

Firm performance measurement was based on return on assets (ROA) in 2010-2012 and each year the average of the ROA was calculated so it was detected as a very significant performance measurement in marketing and management (Jacobson, 1992). 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 is a business's ROA because the principles of ROA were to serve market segments and can be related to ROA of all other competitors and electronic/electrical industry had capital intensive that can be measured by assets.

3.3 Reliability and Validity

Reliability analyzed for each dimension use to measure with a Cronbach's Alpha coefficient. According to the criteria the results showed that the confidence level of the questions was greater than 0.70 (Nunnally, 1978; Fornell & Larcker, 1981). The learning orientation instrument of this study presented the alpha was 0.846. The alpha of the Innovativeness was 0.868. Content validity was examined the quality of the research instrument by experts. The content validity ranged from 0.6 and up.

The study included composite reliability (CR), average variance extracted (AVE), convergent validity, and discriminant validity. According to Fornell and Larker (1981), it was recommended that composite reliability be greater than 0.60 and average variance extracted be greater than 0.50.

3.4 Statistical Analysis

1. Descriptive analysis represented that the respondents were male (56.1 percent), the majority of respondents were aged between 41 and 50 (40.6 percent), most of them were married (72.2 percent), the majority of them earned bachelor's degrees (51.7 percent) and some have worked for this company for 5 to 10 years (26.7 percent).

The majority of the samples selected were from limited companies (83.9 percent) and the companies were run by Thai owners (53.3 percent). Most of them had fewer than 250 employees (45 percent). Most of business capital was between 1,000,000 and 50,000,000 Bath (47.8 percent) and 81.1 percent of operation ranging more than 15 years.

Data indicated that the mean scores of the commitment to learning fell between 3.87 and 4.03. The mean scores of shared vision fell between 3.72 and 3.98. The mean score of open-mindedness fell between 3.88 and 4.07. The mean scores of intra-organizational knowledge sharing fell between 3.73 and 4.10, and the standard deviation fell between 0.98 and 0.70. The mean scores of product innovation fell between 3.53 and 3.86, and the mean score of process innovation fell between 3.53 and 4.09. Concerning the firm performance, the average return on assets (ROA) was 4.52 in 2010, 3.18 in 2011 and, 3.12 in 2012

2. Based on Structural Equation Modeling (SEM), the research used test model no. 2 and it was divided into two parts. The first part is the global effected factors of learning orientation on innovativeness and ROA. The second part is the specific effected factor of elements of learning orientation relationships on innovativeness and ROA.

1. The global structure equation model (SEM) was used to confirm the hypothesis in this study.

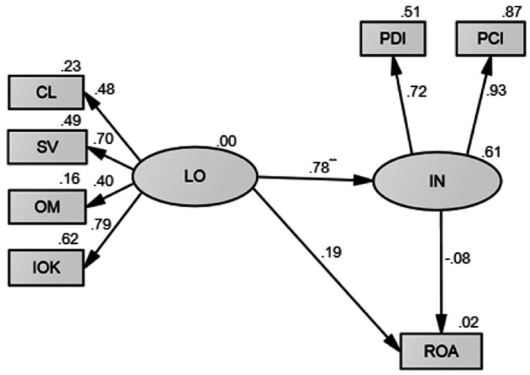

Figure 1 The global effected factors of learning orientation on innovativeness and ROA for hypothesis testing

Table 1 Parameter estimation and the significant test of learning orientation on innovativeness and 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

Figure 1 shows the global structural model the effected factor of learning orientation on innovativeness and ROA. This study found that the models were combined with empirical data because the CMIN/df was 1.838, GFI was 0.970, AGFI was 0.915, NFI was 0.945, CFI was 0.973, and RMSEA was 0.068.

2. The specific structure equation modeling (SEM) was used to confirm the hypothesis in this study.

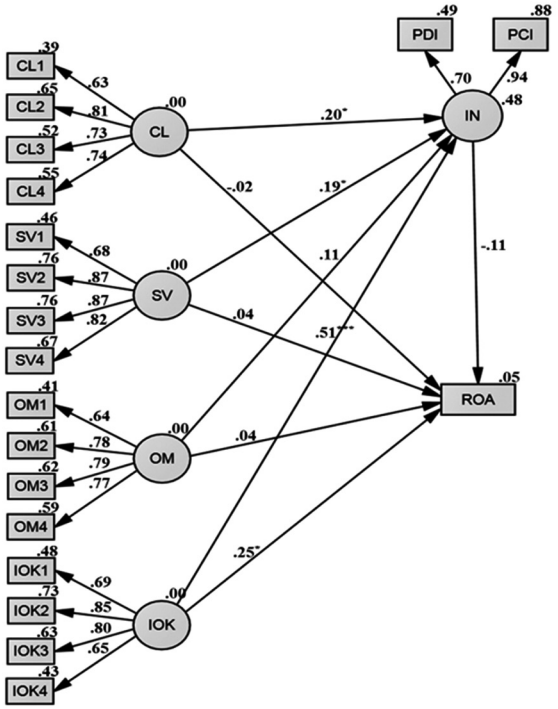

Figure 2 The specific effected factor of is elements of learning orientation relationships on innovativeness and ROA for hypothesis testing

Table 2 Parameter estimation and the significant test the elements of learning orientation relationships on innovativeness and 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	←	IN	-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

Figure 2 shows the specific structural model of the elements of learning orientation relationships on innovativeness and ROA. This study found that the models were combined with empirical data because the CMIN/df was 1.792, GFI was 0.870, AGFI was 0.826, NFI was 0.854, CFI was 0.928, and RMSEA was 0.067.

4. Results and Discussion

In the study, hypothesis testing was conducted by using SEM test between relationships, constructs and statistical significance. The research mode by using the path analysis and the global

model (figure 1) examined the direct relationship between LO and IN. The results showed that were positive effects between the LO and IN, supporting the results of the previous studies by, for example, Slater and Narver (1995) and Calantone et al. (2002). Thus, H1 was supported.

According to the examination of the relationship between LO and ROA, it was revealed that there were not positive effects between LO and ROA which contradicted the results of the previous studies by Covin et al. (2006). Thus, H2 was not supported. According to the examination of the relationship between IN and ROA, it was found that there were not positive effects between IN and ROA which contradicted the results of the previous studies by Ittner and Larcker (1997). Thus, H3 was not supported. And H2 and H3 showed no positive results on the performance. Also, an innovation is a relatively new concept in Thailand due to its being a newly industrialized country. Thus, there was a few innovation compared to the other industrialized countries that have been invented on the long term or worked on a longitudinal study. As a result, Thailand might take longer time to achieve mastering process of creating innovation. According to this research, in the future if we continue to learn about innovation seriously and extend the period of time to comprehend, that may make a difference upon the effects of the relationship between LO and IN. The first test results of the global affected factors of LO on IN and ROA revealed that LO affected IN but did not affect the ROA and IN did not affect the ROA. Therefore, the next model used the second test so the results showed the specific effected factors of its elements of LO on IN and ROA.

The specific model (figure 2) was the examination of elements of LO relationships on IN and ROA. The results showed that there were positive effects among the commitment to learning (CL), shared vision (SV), intra organizational knowledge sharing (IOK) and IN which supported the results of the previous studies by, for example, Slater and Narver (1995), Gatignon and Xuereb (1997), Hurley and Hult (1998), Salim and Sulaiman (2011). Thus, H4, H5, and H7 were supported, but open-mindedness (OM) did not have positive effects on IN. From the researcher's viewpoint, there are not any organizations in Thailand fully open to innovation because it is hard to look for innovation and display open-mindedness neither on the job nor on personal issues in Thailand. As a result, H6 was not supported.

Also, the examination of the elements of the relationship between LO and ROA showed that there were positive effects between the IOK with ROA which supported the results of the previous studies by, for example, Calantone et al. (2002) and Lukas, Hult and Ferrell (1996). Thus, H11 was supported. The three elements including CL, SV, and OM test results did not have positive effects on ROA so it was not supported, which contradicted the study by Stata (1989). It was because these three elements needed time for ongoing learning in order to promote mutual understanding among personnel in an organization which may affect performance in the near future and in turn affect ROA. Therefore, CL, SV, and OM do not have effects on ROA and thus this did not support H8, H9, and H10. The concept concerns learning orientation's ability to innovate among intense competitions. Thus, the executives should pay special attention to the basic values of their organization including learning as a key to improvement.

5. Academic contribution and Implications for future

5.1 Academic contribution

This study developed a conceptual model to examine the global effects of learning orientation and innovativeness on firm performance (ROA) and the specific effects of the elements of learning orientation relationships on innovativeness and firm performance (ROA). The theory used in this research and related studies acted as a guideline for the recognition of the power of the elements of learning orientation and innovativeness. The learning orientation included commitment to learning, shared vision, open-mindedness, and intra organizational knowledge sharing. The innovativeness included product innovation, and process innovation.

In addition, concerning the contribution to the industry, review literature can clarify the learning orientation. Additionally, this study contributed to the integration of the elements of learning orientation and innovativeness. Previous studies on learning orientation (Nonaka & Takeuchi, 1995; Levitt & March, 1998) emphasized that learning orientation of an organization is critical for the success of business. Previous studies on innovativeness (Porter, 1990; Nonaka, 1994; Lumpkim & Dess, 2001; Smith, 2006; Ambad & Wahab, 2013) suggested that innovationis important in strategic management and leads to superior performance.

This research confirmed that there was a relationship between learning orientation and innovativeness according to the results which indicated positive affects between the learning orientation and innovativeness. In fact, Thailand has not yet studied the specific elements of learning orientation's effects on innovativeness and ROA.

Specifically, this study highlighted the intra organizational knowledge sharing (IOK) as the only element that was important in the research in electronic/electrical industry in Thailand. It showed the relationship between innovativeness and ROA because the exchange of knowledge and information was a lively gathering of different sources and there was a reference for future practice (Lukas et al., 1996). Also, it proved that ROA was used to measure firm performance and intra-organizational knowledge sharing (IOK). This study implied that the executives should focus on intra organizational knowledge sharing (IOK) to enhance the organization's operational ability by realizing the use of resources concerning learning orientation which, in turn, affects innovativeness and more importantly an intra organizational knowledge sharing (IOK) showed a significant contribution to future business operation.

5.2 Implications for future research

1. Future researchers should conduct their studies under normal circumstances or the long term or work on a longitudinal study by using the same model as this research in order to confirm that the model is consistent with empirical data.

2. Future research might consider longitudinal studies to investigate the relationship of any factors being applied by this study, since some researchers indicated that the period of time may affect a firm's performance on both learning orientations and innovativeness and may differ in a period of time to yield a firm's performance.

3. To study other additional variables related to several factors that influence firm performance, future researchers can conduct the study on other factors that may be related to additional market orientation, entrepreneurial orientation, customer orientation, competitor orientation, and inter-functional coordination.

6. Conclusions

The summary of this study showed that learning orientation and innovativeness had effects on firm performance (ROA) and showed the effects of learning orientation relationships on innovativeness and firm performance (ROA). Our study highlighted intra organizational knowledge sharing (IOK) as an important element in the research, because the IOK had a relationship with innovativeness and ROA. If an executive recognizes the importance of the factors mentioned above and applies them appropriately in business operation, the ability to compete will be enhanced. This concept is not only applicable to the electronic/electrical industry but also to the other types of business which will effectively raise the firm performance.

Resources and the competency to reinforce resources are important factors that management should establish. The viewpoints proposed that the IOK can support organizations to achieve competitive advantages, leading to superior results on the performance. As the samples of electronic/electrical industry in this study experienced, they gained superior performance.

Bibliography

Adis, A. A., & Jublee, E. (2010). Market Orientation and New Product Performance: The Mediating Role of Product Advantage. *African Journal of Marketing Management, 2*(5), 91-100.

Amabile, T. M., & Pillemer, J. (2012). Perspectives on the Social Psychology of Creativity. *Journal of Creative Behavior, 46*(1), 3-15.

Ambad,S. N. A., & Wahab, K. A. (2013). Entrepreneurial Orientation among Large Firms in Malaysia: Contingent Effects of Hostile Environments. *International Journal of Business and Social Science, 4*(16), 96-107.

Calantone, R. J., Cavusgil, S. T., & Zhao, Y. (2002). Learning Orientation, Firm Innovation Capability, and Firm Performance. *Industrial Marketing Management, 31*(6), 515-524.

Chairat, P. (2004). *Innovation Management Executive*. Bangkok: National Innovation Agency, Ministry of Science and Technology.

Cooper, R. G. (2000). New Product performance: What distinguishes the star products. *Australian Journal of Management, 25*, 17-45.

Covin, L. G., Green, K. M., & Slevin, D. P. (2006). Strategic Process Effects on the Entrepreneurial Orientation-sales Growth Rate Relationship. *Entrepreneurship Theory and Practice, 30*(1), 57-81.

Damanpour, F., & Aravind, D. (2011). Managerial Innovation: Conceptions, Processes, and Antecedents. *Management and Organization Review, 8*(2), 423–454.

Damanpour, F., & Gopalakrishnan, S. (2001). The Dynamics of the Adoption of Product and Process Innovations in Organizations. *Journal of Management Studies, 38*(1), 65-84.

Denton, D. K. (1999). *The Toolbox for the Mind: Finding and Implementing Creative Solution in the Workplace.* Milwaukee: Quality Press.

Dundon, E. (2002). *The Seed of Innovation: Cultivating the Synergy that Fosters New Ideas. New York:* AMACOM.

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research, 18*, 39-50.

Garcia, R. (2010). Types of Innovation. *In Encyclopedia of Technology and Innovation Management*. John Wiley and Sons, 89–95.

Gatignon, H., & Xuereb, J. M. (1997). Strategic Orientation of the Firm and New Product Performance. *Journal of Marketing Research, 34*(1), 77-90.

Greenberg, J., & Baron, R. A. (2010). *Behavior in Organizations: Understanding and Managing the Human Side of Work* (10th ed.). Upper Saddle River, New Jersey: Prentice Hall.

Hakala, H. (2011). Strategic Orientations in Management Literature: Three Approaches to Understanding the Interaction between Market, Technology, Entrepreneurial and Learning Orientations. *International Journal of Management Reviews, 13*(2), 199–217.

Hamel, G., & Prahalad, C. K. (1990). The Core Competence of the Corporation. Harvard Business Review, *68*(3), 79-91.

Hurley, R. F., & Hult, G. T. (1998). Innovation, Market Orientation, and Organizational Learning: An Integration An Empirical Examination. *Journal of Marketing, 62*(3), 42-54.

Ittner, C. D., & Larcker, D. F. (1997). Product Development Cycle Time and Organizational Performance. *Journal of Marketing Research, 34*(1), 13-23.

Jacobson, R. (1992). The Validity of ROI as a Measure of Business Performance. *American Economic Review, 77,* 470-478.

Jang, S. H. (2013). The Offensive Framework of Resource Based View (RBV): Inhibiting Others from Pursuing Their Own Values. *Journal of Management and Strategy, 4*(1), 62-69.

Levitt, B., & March, J. G. (1998). Organizational Learning. *Annual Review of Sociology, 14,* 319-340.

Li, T., & Calantone, R. J. (1998). The Impact of Market Knowledge Competence on New Product Advantage: Conceptualization and Empirical Examination. *Journal of Marketing, 62*(4), 13-29.

Lukas, B. A., & Ferrell, O. C. (2000). The Effect of Market Orientation on Product Innovation. *Academy of Marketing Science Journal, 28*(2), 239-247.

Lukas, B. A., Hult, G. T. M., & Ferrell, O. C. (1996). A Theoretical Perspective of the Antecedents and Consequences of Organizational Learning in Marketing Channels. *Journal of Business Research, 36*(3), 233-244.

Lumpkin, G. T., & Dess, G. G. (2001). Linking Two Dimensions of Entrepreneurial Orientation to Firm Performance: The Moderating Role of Environment and Industry Life Cycle. *Journal of Business Venturing, 16*(5), 429-451.

McNally, R. C., Cavusgil, E., & Calantone, R. J. (2010). Product Innovativeness Dimensions and Their Relationships with Product Advantage, Product Financial Performance, and Project Protocol. *Journal of Product Innovation Management, 27*(7), 991-1006.

Mone, M. A., Mckinley, W., & Barker, V. L. (1998). Organizational Decline and Innovation: A Contingency Framework. *Academy of Management Review, 23*(1), 115-132.

Montoya-Weiss, M. M., & Calantone, R. J. (1994). Determinants of New Firm Performance: a Review and Meta-analysis. *Journal of Product Innovation Management, 11*(5), 397-418.

Narver, C. J., & Slater, F. S. (1990). The Effect of A Market Orientation on Business Philosophy. *Journal of Marketing, 54,* 20-35.

National Innovation Agency, (2007). *Report the Exploration of Innovation Capabilities of Thailand.* Bangkok: National Innovation Agency, Ministry of Science and Technology.

Nieto, M. J., & Santamaŏra, L. (2010). Technological Collaboration: Bridging the Innovation Gap between Small and Large Firms. *Journal of Small Business Management, 48*(1), 44-69.

Nonaka, I. (1994). Dynamic Theory of Organizational Knowledge Creation. *Organization Science, 5*(1), 14-37.

Nonaka, I., & Takeuchi, H. (1995). *The Knowledge-creating Company.* New York: Oxford University Press.

Nunnally, J. (1978). *Psychometric Theory*. New York: McGraw-Hill.

Nybakk, E. (2012). Learning Orientation, Innovativeness and Financial Performance in Traditional Manufacturing Firms: A Higher-order Structural Equation Model. *International Journal of Innovation Management, 16*(5), 1-28.

Paladino, A. (2007). Investigating the Drivers of Innovation and New Product Success: a Comparison of Strategic Orientations. Journal of Product Innovation Management, 24, 534-553.

Panayides, P. (2006). Enhancing Innovation Capability through Relationship Management and Implications for Performance. *European Journal of Innovation Management, 9*(4), 466-483.

Porter, M. E. (1990). The Competitive Advantage of Nations. *Harvard Business Review, 68,* 73-93.

Quesada, G., Syamil, A., & Doll, W. (2006). OEM New Product Development Practices: The Case of the Automotive Industry. *Journal of Supply Chain Management, 42,* 30-40.

Salim, I. M., & Sulaiman, M. (2011). Organizational Learning, Innovation and Performance: A Study of Malaysian Small and Medium Sized Enterprises. International Journal of Business and Management, 6(12), 118-125.

Sandvik, L. I., & Sandvik, K. (2003). The Impact of Market Orientation on Product Innovativeness and Business Performance. *International Journal of Research in Marketing, 20*(4), 355-376.

Schreiber, J. B., Nora, A., Stage, F. K., Barlow, E. A., & King, J. (2006). Reporting Structural Equation Modeling and Confirmatory Factor Analysis Results: A Review. *The Journal of Educational Research, 99*(6), 323-337.

Senge, P. M. (1990). *The Fifth Discipline: The Art and Practice of the Learning Organization.* New York: Doubleday/Currency.

Slater, S., & Narver, J. (1995). Market Orientation and the Learning Organization. *Journal of Marketing, 59*(3), 63-74.

Smith, D. (2006). *Exploring Innovation.* Berkshire: McGraw-Hill Education.

Stata, R. (1989). Organizational Learning: The Key to Management Innovation. *Sloan Management Review, 30*(3), 63-74.

Tang, L., & Chi, R. (2011). The Evaluation Criteria on ICT Enterprises Innovation Capability-Evidence from Zhejiang Province. *Journal of Convergence Information Technology, 6*(1), 69-78.

Tidd, J., Bessant, J., & Pavitt, K. (2001). *Managing Innovation: Integrating Technological, Market and Organizational Change.* Chichester: Wiley.