

# **THE SECOND ORDER CONFIRMATORY FACTOR ANALYSIS FOR KNOWLEDGE MANAGEMENT IN SMALL AND MEDIUM ENTERPRISES IN NAKHON PATHOM PROVINCE**

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## **Abstract**

This research article aimed at investigating second order confirmatory factor analysis for knowledge management in small and medium enterprises in Nakhon Pathom Province. The samples were 376 small and medium entrepreneurs. The convenience sampling method was employed to collect the data and the data collection used questionnaires. The study result indicated that knowledge management in small and medium enterprises in Nakhon Pathom Province was comprised with knowledge exchange, knowledge storage, and knowledge utilization. In addition, knowledge management in small and medium enterprises in Nakhon Pathom Province was also statistically significant. The research result can contribute the guideline for the enterprise to develop their knowledge management. Also, the future research was also suggested.

**Keywords:** Second Order Confirmatory Factor Analysis, Knowledge Management, Small and Medium Enterprises

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## Introduction

The era of globalization has changed the society pattern to become more knowledgeable, emphasizing on information and knowledge. This does not only affect the society pattern, but it also has an impact on the industrial sectors, which is necessary to adapt themselves to be more dependent on knowledge and to build economic based knowledge (Chareonwongsak, 2008). However, this is a good point because the knowledge can contribute to the nation's development and innovation.

Indeed, knowledge can create national competitiveness, which the knowledge based economic characteristics include four dimensions: innovation and technological change, human resource development, information technology and business environment (Wichianpanya, 2004). However, the knowledge can be sustainable and beneficial requires effective knowledge management. Viriyapinit (2011) advocated that knowledge is very important for the organization and it would be continuously utilized when it has been effectively managed. The good knowledge management can include the good usage of human resources in order to obtain the knowledge and experience and integrate it with the prompt technological systems, which can help transfer knowledge to other people and also open the access from other people. Inchan and Inchan (2018) added that the strength of financial status of small and medium enterprises are perhaps not depending on the good management of business accounting and finance, but it can be because of good knowledge management. For example, if entrepreneurs know how to utilize the provided information and data from various reliable sources such as governmental agencies, banks, or universities, they will be able to manipulate all possible risks, problems and obstacles as well as enable effective decision making.

Recently, small and medium enterprises (SMEs) have a great role in contributing national economic development of Thailand. In 2013, there were more than 2.74 SMEs spreading over Thailand and contributing the huge impact on Thai gross domestic products (GDPs). In the report in 2012, SMEs generated approximately 4,211,262 million baht, accounted for 37.0 of country's GDPs (Napao, 2013).

For Nakorn Pathom Province, it is the center of commercial activities in western areas and hub of transportation that moving various industrial and agricultural products into Bangkok. Interestingly, Nakorn Pathom Province has its potentials including social development, agricultural product development and good infrastructures such as railways, roads, and water ways, which it then creates forward investments on and from agricultural products and plants. In terms of SMEs situation in Nakorn Pathom Province in 2015, SMEs itself had about 897 new registers, and overall value of registration were 2,113 million. In addition, there were overall 6,200 SMEs, employing 202,221 employees. Regarding small enterprises with less than 20 employees, there were 4,587 registered enterprises, employing 27,918. In the meantime, there were 5,208 medium enterprises with 20-299 persons, and there were 126,908 employees. Accordingly, it can be seen that SMEs is significant for Nakorn Pathom Province as well as for Thailand.

Two main problems that SMEs always encounter are lack of human and knowledge management in the organization. This is because that SMEs have fewer working people that it creates necessary to have people with high quality in working and more ability to manage the work effectively. However, to obtain such a quality works, SMEs must have knowledgeable people which knowledge management in the organization then plays an important role. Knowledge management does not only benefit for empowering and enhance people's working quality, but it also contributes the success of the organization in terms of business operation and keeping updated with dynamic world. Therefore, it can be mentioned that the knowledge management is significant for the business. In accordance, the researchers are then interested in studying knowledge management in SMEs in Nakorn Pathom Province by using confirmatory factor analysis in to order to identify five knowledge-management dimensions: Knowledge seeking, knowledge creation, knowledge storage, knowledge exchange, and knowledge utilization. After the study, the result can be advantageous for SMEs entrepreneurs to operate their business, responding the dynamic business competition.

### **Objectives of the study**

This study aimed at analyzing second confirmatory factor analysis of five knowledge-management dimensions: knowledge seeking, knowledge creation, knowledge storage, knowledge exchange, and knowledge utilization.

### **Literature Review**

#### **Theories, Concepts and Related Research of Knowledge Management**

Wipawin (2004) defined the knowledge management as the strategy, process, and technology that has been being used for identifying, creating, managing, and exchanging knowledge to achieve the organizational goals. However, the achievement needs the collaboration of people and integration of working process. In the meantime, Bunyakit et al. (2005) proposed that knowledge management is the process that utilizes existing knowledge for the organization. The process can include creation, collection, exchange, and implementation. Runchareon (2007) defined the knowledge management as the tool to achieve three goals of the organization, which these include work development, human resource development, and organizational learning development. In studying about knowledge management, Buameeroob (2004) found that knowledge management is important and useful for making training and development programs, which it can help the organization members to identify the problems and exchange the way to solve the problems. Yodnoppaklao (2005) also studied about knowledge management in the hospital in Mueng District, Surin Province and the result indicated that medical staffs agreed that the hospital managed the knowledge in terms of finding the way to development the service for the patients; searching information for new knowledge to respond the performance of the organization in according to the organizational goal, mission and vision; filtering knowledge in the hospital in order to develop work practices; and transferring implicit knowledge into

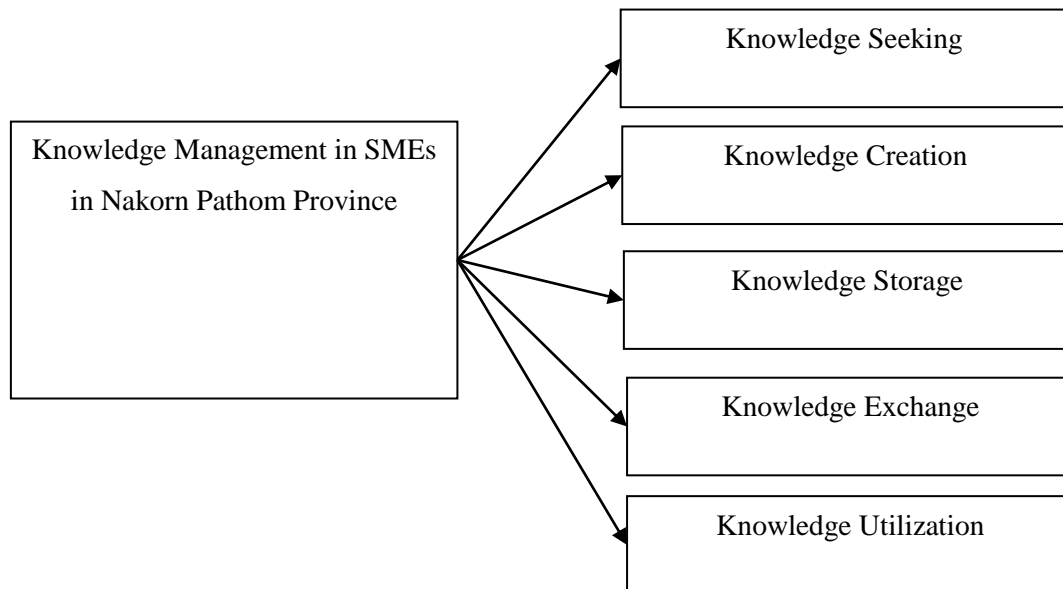
explicit knowledge. In addition to Yodnoppaklao (2005)'s study, medical staffs with different age, experience, position do not have different opinion towards knowledge management in the hospital. Lastly, Keyser (2004) researched about the relationship between knowledge management and employee's work performance by surveying 1,870 employees in Tennessee State Electric Company and the study result indicated that besides managing knowledge by middle and top management level, the operational level staff must also understand and implement it since the knowledge management by operational staff can be positively related to organizational performance significantly. Nevertheless, the perception towards knowledge management in the organization is significantly differed among the organizational members since they are in the different department and work types.

### **Theories, Concepts and Related Research of Small and Medium Enterprises (SMEs)**

Small and Medium Enterprises (SMEs) means the business that has been owned by the private persons and is not the subsidiary of any business or organization. In SMEs, there are few employees, and the investment is low. Indeed, there are three types of small and medium enterprises, which they include production, trade, and service. Normally, the size of the enterprises can be divided by using the number of employee or the amount of investment (Kanchanaburi Chamber of Commerce, 2016). Significantly, SMEs can contribute the huge impact for the country by increasing the job opportunities leading to create income for many people. In addition, SMEs can also create many large companies in the future because the large companies must start from being a small and medium enterprises. Lastly, SMEs help create new products and services since the small and medium enterprises must release innovative products and services to interest particular people and area, which the large companies do not dare to invest in.

### **Conceptual Framework**

The researchers applied the concepts of knowledge management of Turban and Aronson (2004) proposing the knowledge management processes including knowledge creation, knowledge storage and collection, knowledge selection, knowledge dissemination, knowledge utilization, and knowledge inspection. In addition, Marquardt (2011) proposed that the knowledge management consists of Knowledge seeking, knowledge creation, knowledge storage, knowledge exchange, knowledge utilization, and knowledge transfer. Similarly, Lorsuwanrat (2009) proposed that knowledge management depends on knowledge creation, knowledge analysis, and knowledge dissemination. Panich (2005) knowledge management requires processes to manage and develop continuously the knowledge, which it can be the tools to achieve individual goals, organizational goal, team support, and knowledge exchange among the organizational members. In a line with the reviews of related literature, the conceptual model can be drawn as follow.



**Figure 1** Conceptual Framework

## Research Methodology

### Population and Samples

Population were 6,200 entrepreneurs of small and medium enterprises in Nakorn Pathom Province. To obtain the samples, Yamana's formulation with 5-percent error was used and the samples were 376 ones to be selected as the study. The selection was based on convenience sampling technique.

### Study area

The researcher limited the study by focusing small and medium enterprises in Nakorn Pathom Province as the study area. The data of SMEs were derived from Information and Communication Information Group, Nakhon Pathom Provincial Office (2016). The characteristics of SMEs were referred to Revenue Department (2017), describing SMEs as the business that owned by the entrepreneurs, who can be general person; party; ordinary partnership that is not a juristic person; limited company or joint venture, which produce, service or trade products and services. In addition, the size of the SMEs can be categorized by using number of employees. Small enterprise consists of less than 20 employees meanwhile medium enterprise contains of more than 20 employees.

### Research Tool

The tool used to collect the data was questionnaire. The content validity was performed to inspect the questionnaires' validity. In the questionnaire, there are five latent variables and 58 observed variables. The name of symbols of latent and observed variables were given below.

**Table 1** Symbols of latent and observed variables

Latent Variable Name	Symbol
1. Knowledge seeking	acquisition
2. Knowledge Creation	building
3. Knowledge Storage	storage system
4. Knowledge Exchange	sharing.
5. Knowledge Utilization	Utilization
Knowledge Management	KMSME
Observed Variable Name	
1. Knowledge seeking	ACQ1-17
2. Knowledge Creation	BUL1-13
3. Knowledge Storage	SS1-8
4. Knowledge Exchange	SHA1-11
5. Knowledge Utilization	UTL1-9

### Data analysis

The researcher analyzed both descriptive and inferential statistics. The descriptive statistics included frequency and percentage. In the meantime, the inferential statistics included confirmatory factor analysis, which computed by LISREL 8.52 to indicate second order of confirmatory factor analysis. In addition, the multicollinearity was also examined. The examination result indicated that the model had no multicollinearity.

## Results

### Characteristics of small and medium enterprises

**Table 2** Characteristics of small and medium enterprises

Size	Frequency	Percentage
1. Small Enterprises (Less than 20 employees)	200	53.19
2. Medium Enterprises (Between 20-299 employees)	176	46.81
Type		
1. Production	100	26.60
2. Retail and Wholesale Business	151	40.16
3. Services	125	33.24

The above table showed that most of the respondents were in small enterprises that occupied less than 20 employees (200 persons or 53.19 percent). In addition, most of the respondents were in retail and wholesale business (151 persons or 40.16 percent).

**Table 3** Correlation between latent variables

	ACQ	BUL	SS	SHA	UTL
ACQ	1	0.76**	0.49**	0.45**	0.37**
BUL		1	0.49**	0.48**	0.35**
SS			1	0.78**	0.73**
SHA				1	0.77**
UTL					1

The above table showed that the latent variables did not produce multicollinearity because the coefficient values were not over than 0.8. Therefore, the variables were able to be performed by the second order of confirmatory factor analysis.

**Table 4** First order of knowledge management of small and medium enterprises in Nakorn Pathom Province

Latent Variables	Lamda Y	t-value	R <sup>2</sup>
1. Knowledge Seeking	0.50	9.03**	0.25
2. Knowledge Creation	0.49	8.81**	0.24
3. Knowledge Storage	0.95	15.88**	0.90
4. Knowledge Exchange	0.99	17.41**	0.99
5. Knowledge Utilization	0.92	15.87**	0.85

\*\* p-value < 0.01

The above table showed that there were three dimensions: knowledge storage, knowledge exchange and knowledge utilization, can contribute to create knowledge management of small and medium enterprises in Nakorn Pathom Province. However, all dimensions: Knowledge seeking, knowledge creation, knowledge storage, knowledge exchange, and knowledge utilization, were significantly correlated.

**Table 5** Second order of knowledge management of small and medium enterprises in Nakorn Pathom Province

Observed variables	Lamda Y	t-value	R <sup>2</sup>
<b>1. Knowledge seeking</b>			
1.1 Seeking knowledge from websites related to the work.	0.54	-	0.54
1.2 Seeking knowledge from documents, textbooks, and training manuals, to increase professional experience.	0.63	15.45**	0.61
1.3 Seeking knowledge from experts' experiences such as customers, or partners.	0.64	15.92**	0.64

**Table 5** Second order of knowledge management of small and medium enterprises in Nakorn Pathom Province (Cont.)

Observed variables	Lamda Y	t-value	R2
1.4 Seeking additional knowledge from training or seminars.	0.60	15.31**	0.60
1.5 Seeking additional knowledge from reading research.	0.63	15.39**	0.60
1.6 Seeking knowledge by accumulated experienced expertise.	0.61	14.90**	0.57
1.7 Seeking knowledge through various printed media and technologies.	0.61	15.67**	0.62
1.8 Seeking knowledge from exchanging, and sharing ideas and problem solving.	0.65	15.32**	0.60
1.9 Consistently seeking knowledge from various sources.	0.63	15.24**	0.59
1.10 Seeking needed knowledge is significant and should be corresponding to SMEs variety.	0.64	15.51**	0.61
1.11 Seeking knowledge from gathering from knowledge exchange from additional training.	0.57	14.45**	0.54
1.12 Seeking knowledge that is related to business owner.	0.62	15.13**	0.58
1.13 Seeking knowledge from modern communication channels.	0.63	15.48**	0.61
1.14 Updating new knowledge from both government and private sectors.	0.63	14.96**	0.57
1.15 Seeking knowledge from websites of relevant government agencies	0.64	14.45**	0.54
1.16 Seeking knowledge through family business inheritance.	<b><u>0.66</u></b>	<b><u>15.38**</u></b>	<b><u>0.60</u></b>
1.17 Seeking knowledge from related network professional.	0.55	13.41**	0.47
<b>2. knowledge creation</b>			
2.1 Creating knowledge by using experience in doing business.	0.63	-	0.54
2.2 Creating knowledge by gaining new knowledge from major government agencies.	0.66	14.85**	0.57



**Table 5** Second order of knowledge management of small and medium enterprises in Nakorn Pathom Province (Cont.)

Observed variables	Lamda Y	t-value	R2
2.3 Creating knowledge from collecting problem solving methods from various legal problems.	0.60	14.07**	0.51
2.4 Creating knowledge from talking and discussing problem solving within the organization.	0.63	14.25**	0.53
2.5 Creating new knowledge from learning from direct experience.	0.64	13.75**	0.49
2.6 Creating knowledge by making agreements with educational personnel when there is a university visit	0.63	15.49**	0.61
2.7 Creating new knowledge from advices provided by consultants.	0.72	16.07**	0.65
2.8 Creating knowledge from knowledge collection from studying from work experience.	0.67	15.88**	0.64
2.9 Creating knowledge and understanding about partnership for each partners.	0.67	15.53**	0.62
2.10 Creating knowledge from studying legal details.	0.70	16.26**	0.67
2.11 Creating knowledge through knowledge synthesis or integration experienced from storytelling.	0.76	15.63**	0.62
2.12 Creating knowledge from the collection of specific job characteristics.	<b><u>0.78</u></b>	<b><u>16.17**</u></b>	<b><u>0.66</u></b>
2.13 Creating important knowledge by creating a knowledge database.	0.53	11.67**	0.36
<b>3. Knowledge storage</b>			
3.1 There is a systematic storage of knowledge.	0.60	-	0.55
3.2 There is a system to store various knowledge for employees to learn.	0.65	15.88**	0.63
3.3 There is a system to store the knowledge obtained from attendance in training and seminar.	0.63	16.38**	0.66
3.4 There is a systematic storage categorizing the knowledge.	0.67	16.32**	0.66
3.5 There is knowledge gathering in order to create manual documents.	0.69	16.43**	0.67
3.6 There is an information storage related to customer registration.	0.68	16.14**	0.64

**Table 5** Second order of knowledge management of small and medium enterprises in Nakorn Pathom Province (Cont.)

Observed variables	Lamda Y	t-value	R2
3.7 There is a knowledge storage about SMEs.	0.70	16.80**	0.69
3.8 There is a safety system for storing knowledge.	<b><u>0.72</u></b>	<b><u>17.63**</u></b>	<b><u>0.75</u></b>
<b>4. Knowledge exchange</b>			
4.1 There is an establishment of related matter club or association in order to exchange knowledge among the members or build informal relationship.	0.67	-	0.59
4.2 There is a forum for discussion and exchange of experiences, both for successful and failure business operations.	<b><u>0.70</u></b>	<b><u>17.53**</u></b>	<b><u>0.67</u></b>
4.3 There is an exchange of knowledge by telling the story to the colleagues.	0.65	16.65**	0.62
4.4 There is knowledge exchange by using information technology as a tool.	0.61	16.77**	0.63
4.5 There is exchange of knowledge during work.	0.58	15.32**	0.54
4.6 There is an exchange of knowledge to create good attitudes towards work.	0.59	16.31**	0.60
4.7 Building a personnel network to occasionally exchange knowledge about solutions to problems in the work.	0.61	15.64**	0.56
4.8 There is an exchange of knowledge in a family business society.	0.63	16.51**	0.61
4.9 There is an exchange of learning from arguments about business operations.	0.63	16.68**	0.62
4.10 There is learning exchange from attending seminars.	0.61	16.44**	0.61
4.11 There is knowledge exchange through social interaction.	0.60	15.05**	0.52
<b>5. Knowledge utilization</b>			
5.1 Applying knowledge to solve work problems.	0.63	-	12.79
5.2 Applying knowledge to plan and manage SMEs' business operation.	0.65	15.31**	0.57
5.3 Applying knowledge to profit the business.	0.68	16.22**	0.63
5.4 Integrating and adapting different knowledge into work.	0.71	17.06**	0.68

**Table 5** Second order of knowledge management of small and medium enterprises in Nakorn Pathom Province (Cont.)

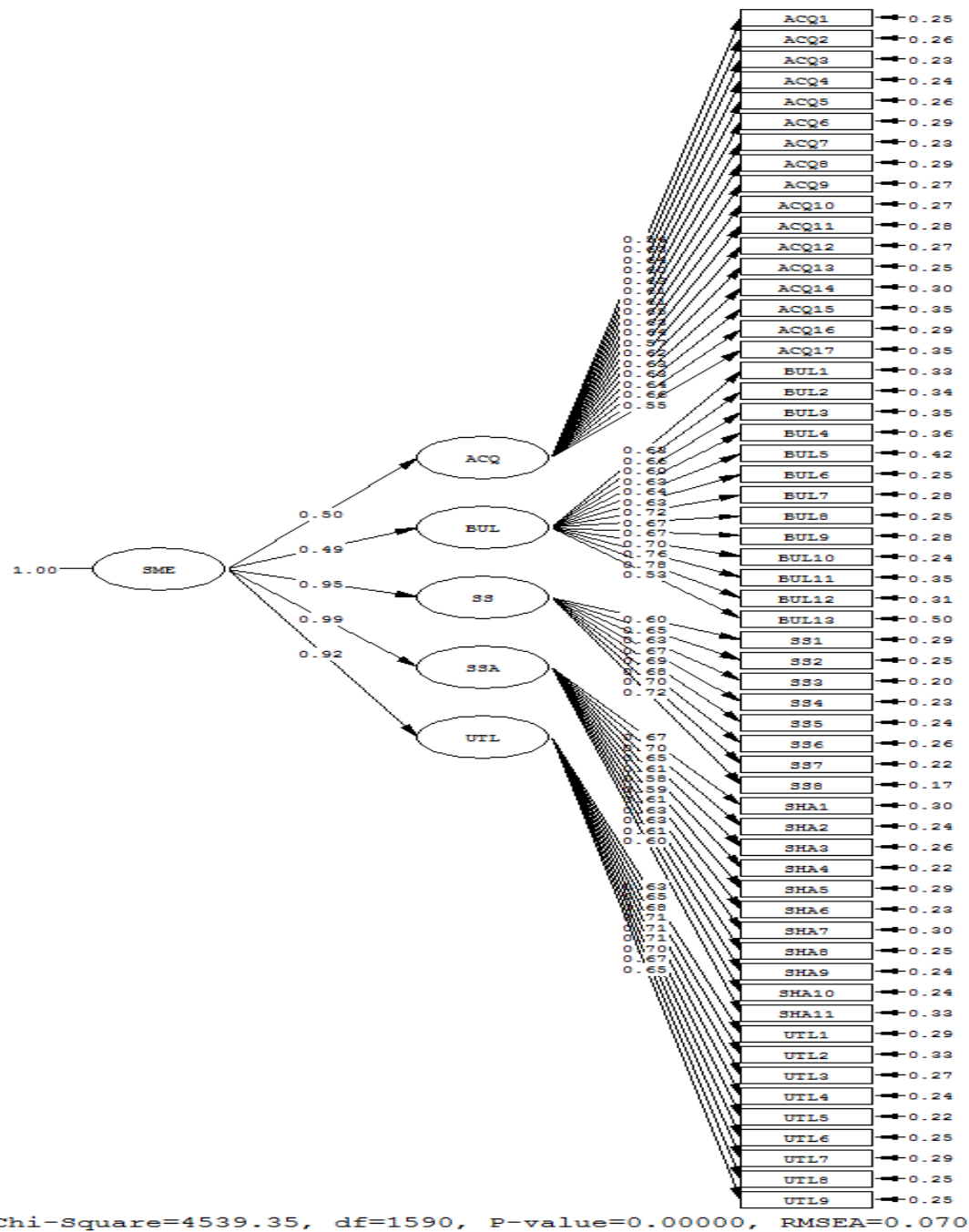
Observed variables	Lamda Y	t-value	R2
5.5 Applying knowledge to develop self-roles in accordance with good governance principles.	<b><u>0.71</u></b>	<b><u>17.36**</u></b>	<b><u>0.70</u></b>
5.6 Applying knowledge from problem analysis in each business to develop their own businesses.	0.71	16.86**	0.67
5.7 Applying knowledge to increase business performance.	0.70	16.23**	0.63
5.8 Finding new knowledge in order to be used in benefiting their SMEs.	0.67	16.49**	0.64
5.9 Standardizing knowledge management in order to gain knowledge, understanding, and expertise in business.	0.65	16.33**	0.63

\*\* p-value < 0.01

From the above table, the second order of confirmatory factor analysis of small and medium enterprises indicated as follows.

1. Regarding knowledge seeking dimension, it was found that “Seeking knowledge through family business inheritance” was the most important factor (ACQ16: Lamda Y = 0.66).
2. Regarding knowledge creation dimension, it was found that “Creating knowledge from the collection of specific job characteristics” was the most important factor (BUL12: Lamda Y = 0.78).
3. Regarding knowledge storage, it was found that “There is a safety system for storing knowledge” was the most important factor (SS8: Lamda Y = 0.72).
4. . Regarding knowledge exchange, it was found that “There is a forum for discussion and exchange of experiences, both for successful and failure business operations” was the most important factor (SHA2: Lamda Y = 0.70).
5. Regarding knowledge utilization, it was found that “Applying knowledge to develop self-roles in accordance with good governance principles” was the most important factor (UTL5 : Lamda Y = 0.71).

The analysis of second order of confirmatory factor analysis revealed the knowledge management model for small and medium enterprises in Nakorn Pathom province as follow.



**Figure 2** Second order confirmatory factor analysis of knowledge management model of small and medium enterprises in Nakorn Pathom Province.

## Discussion

From the study, it was found that it is very important for the small and medium enterprises in Nakorn Pathom Province to manage the knowledge the knowledge in the organization in order to sustain the business operation as well as human resource development. The knowledge management must be composed from different aspects: knowledge seeking, knowledge creation, knowledge storage, knowledge exchange, and knowledge utilization. In terms of knowledge seeking dimension,

the entrepreneurs emphasized on seeking knowledge through family business inheritance because it was the easiest way that the enterprise can utilize the unique knowledge to continue running the business. Meanwhile, creating knowledge from the collection of specific job characteristics can provide the sources of working knowledge because it can reflect and present the direct experiences related to the work. Additionally, safety system in storing knowledge was also significant for the safety system for storing knowledge because certain information and data was especially confidential. Next, the knowledge management also relied on knowledge exchange, which focus on sharing knowledge related to successful and failure business operations through creating knowledge exchange stage because the discussion stage can provide a great opportunity for the members in the enterprises can raise their problems, solution and related matters. Lastly, regarding knowledge utilization, it was found that “applying knowledge to develop self-roles in accordance with good governance principles” was the most important factor because it was the best way that the members in the enterprises can apply the useful knowledge from the management into their daily working life and role. When all of them apply related knowledge, the enterprises which were reflected as a collective concept can then have better performance. The study presented herewith was correspondent with Lorsuwanrat (2009), who proposed that knowledge management must depend on combination from various aspects. In addition, the study also matched with the study done by Panich (2005), who proposed that managing knowledge should focus on 2-3 tools, which are not complicated, as well as the value of each knowledge must be able to be assessed.

## **Recommendations**

### **Recommendations for policy**

The entrepreneurs of small and medium enterprises emphasize on knowledge exchange, knowledge storage, and knowledge utilization, which they lack of important focus on knowledge seeing and knowledge creation implying that they need to be more on seeking new knowledge and creating new knowledge. This can help the entrepreneurs to have their own knowledge that can be utilized into their own business. In order to do that, the entrepreneurs should develop enterprise's members to have more skills, knowledge and opportunity to learn new things, experience and knowledge from various existing sources such as books, posts, article journal, researches, news, and so on from library websites, or governmental sources provisions. In addition, the entrepreneurs should provide training and development programs in order to train the employees in the enterprises to have skills related knowledge collection, analysis, and synthesis so that they can make use of the knowledge that they found.

### **Recommendations for future research**

From the study, there are various limitations that can contribute the opportunity for numbers of future research. Firstly, there should be an implementation of mixed method of research

methodology in order to obtain the in-depth information and data since this study relied on only questionnaire survey. The methods can be, for instance, focus group, in-depth interview, and others. Secondly, there should be an extension of the study area where Nakorn Pathom Province was only single area in this study. It is believed that the entrepreneurs in different geographical area perhaps behave about knowledge management due to the technology provision and knowledge opportunity. Thirdly, there should be a separation of the product and service types of small and medium enterprises, which the way to manage the knowledge in the enterprises perhaps different. In line with this, the related organizations being responsible for SMEs development can directly and particularly enhance enterprises' knowledge management.

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### **References**

- Buameeroob, S. (2004). *Knowledge management in organizations: a case study of the Metropolitan Waterworks Authority*. (Master's thesis, National Institute of Development Administration).
- Bunyakit, et al. (2005). *Knowledge management from theory to practice*. Bangkok: Se-Education.
- Chareonwongsak, K. (2008). *Learning: Use information like winners*. Bangkok: Success Media Publisher.
- Information and Communication Information Group Nakhon Pathom Provincial Office (2016). *Briefings of Nakhon Pathom Province*. Retrieved From [http://www.nakhonpathom.go.th/files/com\\_news\\_describe/2016-06\\_abd0f2a5f6240e7.pdf](http://www.nakhonpathom.go.th/files/com_news_describe/2016-06_abd0f2a5f6240e7.pdf).
- Inchan, S. & Inchan, R. (2018). Accounting hiring and weakness of financial strength of small and medium enterprises: a case study of Nakhon Pathom Province. *Journal of Management Science, Nakhon Pathom Rajabhat University*. 5(1), 143-151.
- Kanchanaburi Chamber of Commerce. (2016). *Information of SMEs*. Retrieved From [http://kanchamber.com/wizContent.asp?wizConID=384&txtmMenu\\_ID=7](http://kanchamber.com/wizContent.asp?wizConID=384&txtmMenu_ID=7).
- Keyser, R. L. (2004). *Assessing the relationship between knowledge management and plant performance at the Tennessee Valley Authority*. (Doctoral dissertation, The University of Alabama in Huntsville).
- Lorsuwanrat, T. (2009). *Knowledge Organization: From Concept to Practice*. (4th edition). Bangkok: Zat Printing Printing.
- Marquardt, M.J. (2011). *Building the learning organization: Achieving strategic advantage through a commitment to learning* (3rd ed.). Boston: Nicholas Brealey.

- Napao, B. (2013). Competency in accordance with international education standards for accounting professionals and work efficiency: a case study of SMEs business accountants in Nonthaburi province. *Journal of Business Administration Association of Higher Education Institutions of Thailand*, 2(2), 1-9.
- Panich, W. (2005). *Knowledge management and Thai public administration*. Bangkok: Institute for Knowledge Management for Society.
- Revenue Department (2017). *Characteristics of SMEs*. Retrieved From <http://www.rd.go.th/publish/38056.0.html>.
- Runcharoen, T. (2007). *Professionalism in Educational Management and Management of Educational Reformation Era*. Bangkok: Sorghum.
- Turban, E., & Aronson, J. E. (2004). *Information technology for management*. Hoboken, NJ: John Wiley and Son.
- Viriyapinit, M. (2011). *Learning organization and knowledge management*. Bangkok: Song Siam Publishing.
- Wichianpanya, P. (2004). *Knowledge management: fundamentals and applications*. Bangkok: Export Publisher.
- Wipawin, N. (2004). *Knowledge Management and Knowledge Base*. Bangkok: SR Printing.
- Yodnoppaklao, N. (2005). *Knowledge management, Khon Kaen University, Ruam Phaet Hospital, Mueang District, Maha Sarakham Province*. (Master's thesis, Mahasarakham University).