A Development Model of Knowledge Management for The Readiness of Small and Medium Enterprises in Thailand to Enter the ASEAN Economic Community

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Abstract

The objectives of this study were 1) to examine the level of knowledge management and readiness for the ASEAN Economic Community of small and medium enterprises in Thailand; 2) to study the causal relationship of knowledge management regarding the readiness to enter the ASEAN Economic Community of small and medium enterprises in Thailand; and 3) to develop a knowledge management model for the readiness to enter the ASEAN Economic Community of small and medium enterprises in Thailand. This present survey research applied questionnaires to collect the data. The descriptive statistics used were frequency, percentage, mean, and standard deviation. A hypothesis-testing procedure and structural equation model were also implemented.

The results showed that small and medium enterprises in Thailand had a low level of knowledge management and readiness to enter the ASEAN Economic Community. The subjects of this research were found to have low scores on knowledge assessment and improvement, knowledge utilization, and knowledge sharing and obtained the lowest scores on knowledge codification

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and knowledge creation. With every knowledge management process, a low level of readiness in terms of entering the ASEAN Economic Community was shown. Considering the readiness for the ASEAN Economic Community of small and medium enterprises in Thailand in terms of knowledge management, it was found that all knowledge management processes, including knowledge creation, knowledge codification, knowledge sharing, knowledge utilization, and knowledge assessment and improvement, had a causal relationship with this readiness at a statistical significance level of 0.05. The developed knowledge management model however fit the empirical data and was able to predict readiness to enter the ASEAN Economic Community of small and medium enterprises in Thailand at an acceptable level of 75.2%.

Keywords: *Knowledge Management Model, ASEAN Economic Community (AEC), Small and Medium Enterprises (SMEs)*

การพัฒนารูปแบบการจัดการความรู้ เพื่อเตรียมความพร้อมรับการเป็นประชาคมเศรษฐกิจอาเซียนของวิสาหกิจขนาดกลางและย่อมในประเทศไทย

*ธิตินันธุ์ ชาญโกศล**

บทคัดย่อ

การวิจัยครั้งนี้ มีวัตถุประสงค์ 1) ศึกษาระดับการจัดการความรู้และการเตรียมความพร้อมรับการเป็นประชาคมเศรษฐกิจอาเซียนของวิสาหกิจขนาดกลางและย่อมในประเทศไทย 2) ศึกษาความสัมพันธ์เชิงสาเหตุของรูปแบบการจัดการความรู้ เพื่อเตรียมความพร้อมรับการเป็นประชาคมเศรษฐกิจอาเซียนของวิสาหกิจขนาดกลางและย่อมในประเทศไทย 3) พัฒนารูปแบบการจัดการความรู้ เพื่อเตรียมความพร้อมรับการเป็นประชาคมเศรษฐกิจอาเซียนของวิสาหกิจขนาดกลางและย่อมในประเทศไทย โดยเป็นการวิจัยเชิงสำรวจและพัฒนาด้วยการใช้แบบสอบถาม สถิติวิเคราะห์ข้อมูล ได้แก่ การแจกแจงความถี่ ค่าร้อยละ ค่าเฉลี่ยและค่าส่วนเบี่ยงเบนมาตรฐาน การทดสอบสมมติฐานและการวิเคราะห์โมเดลสมการโครงสร้าง

ผลการศึกษา พบว่า กลุ่มตัวอย่างวิสาหกิจขนาดกลางและย่อมมีระดับการจัดการความรู้ เพื่อเตรียมความพร้อมรับการเป็นประชาคมเศรษฐกิจอาเซียนที่ระดับน้อย โดยการจัดการความรู้ระดับน้อยอยู่ในขั้นการประเมินและปรับปรุงความรู้ การนำความรู้ไปใช้ และการแบ่งปันแลกเปลี่ยนความรู้ ส่วนการจัดการความรู้ในระดับน้อยที่สุดอยู่ในขั้นการประมวลความรู้และการสร้างความรู้ โดยที่ทุกขั้นตอนการจัดการความรู้ต่างมีการเตรียมความพร้อมรับการเป็นประชาคมเศรษฐกิจอาเซียนที่ระดับน้อย สำหรับความสัมพันธ์เชิงสาเหตุของรูปแบบการจัดการความรู้ เพื่อเตรียมความพร้อมรับการเป็นประชาคมเศรษฐกิจอาเซียนของวิสาหกิจ

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ขนาดกลางและย่อมในประเทศไทย พบว่า การจัดการความรู้ในทุกขั้นตอน เริ่มตั้งแต่ การสร้างความรู้ การประมวลความรู้ การแบ่งปันแลกเปลี่ยนความรู้ การนำความรู้ไปใช้ จนถึงการประเมินและปรับปรุงความรู้นั้น ต่างมีความสัมพันธ์เชิงสาเหตุต่อการเตรียมความพร้อมรับการเป็นประชาคมเศรษฐกิจอาเซียนที่ระดับนัยสำคัญทางสถิติ 0.05 ทั้งนี้ รูปแบบการจัดการความรู้ที่ได้พัฒนาขึ้น มีความสอดคล้องกับข้อมูลเชิงประจักษ์ และมีความสามารถในการพยากรณ์การเตรียมความพร้อมรับการเป็นประชาคมเศรษฐกิจอาเซียนของวิสาหกิจขนาดกลางและย่อมในประเทศไทยได้ในระดับดีและยอมรับได้ คิดเป็นร้อยละ 75.2 ซึ่งผ่านเกณฑ์พิจารณาตั้งแต่ร้อยละ 40 ขึ้นไป

คำสำคัญ: *รูปแบบการจัดการความรู้ ประชาคมเศรษฐกิจอาเซียน วิสาหกิจขนาดกลางและย่อม*

Introduction

Under the context of economic and social changes and high competition in today's world, knowledge management is considered a key business driver, enhancing accurate and precise decision making and playing an important role as an indicator of excellent performance. The assessment criteria of the Malcolm Baldrige National Quality Award (MBNQA) and the 2006 Criteria for Performance Excellence (National Institute of Standards and Technology, 2006) strongly emphasize the significance of organizational knowledge management in an organization and identify measurement procedures, knowledge management, and analysis for database creation, data collection, data application, system maintenance, and service system development. Establishing an internal knowledge center that can continually collect, transfer, and distribute essential knowledge to practitioners and acquiring the best practices to be a database prototype that can systematically store and process accurate and updated data in an organization are also given importance in the knowledge management system.

Using knowledge as a factor to determine competitive strategies for intellectual wealth is a major operational component in the public and private sectors. It has been found that organizational knowledge tends to be transformed into differentiation and value creation in terms of products and services. Additionally, knowledge is indicative of organizational survival in an age of a knowledge-based economy and a society that focuses on tacit knowledge. Technological and scientific knowledge is a key factor of economic and social development, so there is a great need to develop new knowledge and innovative technology as a driving force for productivity enhancement and long-term employment. The United Nations Economic and Social Council (ECOSOC, 2000 cited in Hanphanich, 2003) has suggested that an economic system can be considered as a knowledge-based economy and society, depending on its knowledge-based operation and management, network structure, and knowledge accessibility, which are fundamental conditions and sources of significant changes. In addition, the United Nations Commission on Science and Technology for Development (UNCSTD, 1998 cited in Saichuea, 2000) concluded that the development factors of a knowledge-based economy and society are technological and social capabilities and a knowledge-based economy and social development

approach. Therefore, it can be said that knowledge management is vital to learning organization development consistent with a knowledge-based economy and society since it can reduce knowledge gaps, enhance the capabilities of personnel, increase knowledge dissemination, and develop an up to date and stable knowledge base, which will lead to operational efficiency. As for Thailand, which is one of the ASEAN member countries heading to a major development period of complete regional integration and an ASEAN Community member in 2015 (Department of Trade Negotiations, 2013), business sectors need to accelerate their adaptation efforts, especially small and medium enterprises, which are the basic business groups in the country. According to a case study of SMEs, it was found that the SMEs in Thailand have already implemented knowledge management processes across their organizations, which included utilizing information technology to store data, applying computer and communication technology to office work, and creating organizational cultures for knowledge sharing in the workplace. However, those processes were only implemented in the form of routine work; the employees still did not realize that there was knowledge management in their organizations. Most knowledge and learning procedures were not systematically organized or well developed. Moreover, overall organizational knowledge management requires knowledgeable and creative personnel that can effectively interpret and utilize information technology. An organization needs to retain, develop, and acquire knowledgeable employees to be a part of knowledge management because this can promote and enhance organizational effectiveness. Providing everyone in an organization with easily accessible knowledge resources that encourage appropriate knowledge sharing will eventually contribute to operational benefits, organizational competitiveness, and business survival after entering the ASEAN Economic Community in the near future (AEC Information Center, 2013).

According to the information mentioned above, the researcher was interested in developing a knowledge management model in order to assist with the readiness of small and medium enterprises in Thailand for the ASEAN Economic Community. The results can be used as a guideline for implementing comprehensive knowledge management practices, including knowledge creation, knowledge codification, knowledge sharing, knowledge utilization, knowledge assessment and improvement,

as well as readinesse valuation of small and medium enterprises. This could help to elevate the competitiveness and readiness of small and medium enterprises to cope with regional business competitors with in ASEAN, which will additionally affect the overall business achievements and macroeconomic system of the country.

Literature Review

The concept of knowledge management is associated with systematic management processes, focusing on operational development together with the cooperative learning of employees and dealing with knowledge-related activities: knowledge collection, knowledge creation, knowledge sharing and cooperative utilization for problem-solving, strategic planning, decision-making, and external and internal knowledge dissemination, including knowledge-based management for organizational human resources in order to enhance and create valuable knowledge (Wiig, 1997, Davenport & Prusak, 1998, O'Dell & Grayson, 1998, and Henrie & Hedgepeth, 2003).

Realizing how knowledge has been created is an important part of knowledge management. The key practices include gathering valuable knowledge from organizational resources, applying knowledge to individuals or to the organization, transferring knowledge in clear and categorized formats, utilizing supporting tools for extensive knowledge dissemination such as network systems and training, and creating awareness of the importance of knowledge dissemination/transferring from one person to another. These help to create knowledge integration among individuals, which is beneficial for problem-solving, organizational operations, and decision making. The researcher studied, analyzed, and synthesized key knowledge management principles from other research studies with similar theoretical concepts and methods in order to find the knowledge management process suitable for developing the readiness for the ASEAN Economic Community of small and medium enterprises. It can be concluded that knowledge management consists of 5 processes: knowledge creation, knowledge codification, knowledge sharing, knowledge utilization, and knowledge assessment and improvement (Wiig, 1993, Meyer & Zack, 1996, McElroy, 1999 and Bukowitz & Williams, 2000).

Knowledge creation is the process of acquiring, providing, seeking, gathering, as well as developing knowledge obtained from internal or external resources such as research and development, practice-based learning, systematic problem-solving, experiential learning, brainstorming, and group discussion (Marquardt, 1996, Meyer & Zack, 1996, and Bloom, 2007).

Knowledge codification is one of the important processes in enhancing the value of organizational structure. The specific character of knowledge must not be dismissed at this stage. Activities relevant to knowledge codification should be flexible and possess possibilities of both artistic and scientific cohesion, including knowledge classification, knowledge mapping, knowledge modeling, knowledge profiling, and knowledge standardization (Davenport & Prusak, 1998 and Riansaowaphak, et al., 2005).

Knowledge sharing is the method of transferring knowledge among personnel and using organizational communications. It is the process associated with the exchange of knowledge between individuals or between groups such as brainstorming, face-to-face communication, team working, meetings, general discussion, seminars, training, information sharing via documents, intranet and Internet, including cross-functional teams and quality control circles (Senge, 1990, Davenport & Prusak, 1998, and Hansen, Nohria, & Tierney, 1999).

Knowledge utilization is the process of knowledge service that applies knowledge to strategic planning or corporate management control of organizational operations and administration. It can be implemented in the form of situational or international application through knowledge-service activities, knowledge exchanging, counselling, and providing seminars and skill training. Knowledge utilization can be divided into 2 categories: 1) intentional utilization such as written communication, training, internal meetings, internal communication, job rotation and mentoring systems; 2) unintentional utilization such as job rotation, storytelling, team-work, and informal networks (Marquardt, 1996, Groelick et al., 2004, and Riansaowaphak et al., 2005).

Knowledge assessment and improvement are the crucial processes of organizational knowledge management. Knowledge synthesis, analysis, comparison,

and summarization are very important at this stage. Assessment processes should be conducted both before, during, and after operational implementation in order to measure the progress of knowledge activities and knowledge output in terms of quality and quantity (Bloom, 2007, and Boonyakij et al., 2004).

Regarding the readiness of small and medium enterprises in Thailand for the ASEAN Economic Community, the Office of Small and Medium Enterprise Promotion (OSMEP) realized the positive and negative effects which may occur when Thailand fully becomes a part of the ASEAN Economic Community on January 1st 2016. SMEs are business organizations that are vital to the overall economic system of the country. In other words, they are a major fundamental driving force behind national economic development. The report of ASEAN Watch (2011) by Dr. Wimonkarn Kosumas, the Deputy General-Director of the Office of Small and Medium Enterprise Promotion also indicated that SMEs are the backbone of Thailand's economy. The number of SMEs comprises 99.8% of the Thai economic system, accounting for 83% of all employment in Thailand. They are widely dispersed across industrial manufacturing, commercial, and service sectors and make up a significant proportion of the employment and production volume. Apart from an inadequate amount of investment funds and personnel, another disadvantage of SMEs is poor knowledge management, especially in terms of language (Office of Small and Medium Enterprises Promotion, 2013). However, the ASEAN Free Trade Agreement on services and investments can be a major turning point which will positively affect Thai trade. The market for Thai products will be expanded both at the regional and international level. This will be conducted under the ASEAN cooperation framework and free trade agreements with non-ASEAN countries, such as the +3 countries (China, South Korea, and Japan), the +6 countries (China, South Korea, Japan, India, Australia, and New Zealand) as well as cooperation with the European Union. Therefore, the SME sector needs to develop its knowledge in terms of foreign language and other relevant aspects of management in order to increase its competitive advantage and effectively adapt to international standards.

The research framework, which includes a knowledge management model for the readiness of small and medium enterprises in Thailand to enter the ASEAN Economic Community, is shown in Figure 1.

Figure1: Research Framework

Source: Adapted from Wiig (1993), Meyer & Zack (1996), McElroy (1999) and Bukowitz & Williams (2000)

Methodology

The population of this study was 2,739,142 small and medium enterprises in Thailand (Office of Small and Medium Enterprises Promotion, 2013). The sample size of at least 526 participants, which was the appropriate number for analyzing a structural equation model using the maximum likelihood estimation method, was calculated with statistical software (Soper, 2014). The universally-accepted value was adopted and the statistical probability level was set at 0.05. After dividing the small and medium enterprises into 3 main sectors, manufacturing, trading (retail, wholesale, maintenance), and service, a total of 530 samples, which matched the predetermined criterion of at least 526 samples, were selected by multi-stage sampling (106 enterprises x 5 sectors = 530 samples) as shown in Table 1. Then, 2,000 questionnaires were distributed to the listed enterprises' owners and authorized persons by self-delivery, postal mail, fax, and e-mail. The samples were asked to return the completed questionnaires by mail within the specified period. If the questionnaires were not returned within the required date and time, they needed to be followed up or picked up by the researcher. Consequently, a total of 713 completed questionnaires were returned, which accounted for 35.65%.

Table 1: Population and Sample of the Study

Sector of Enterprises	Population	Quota	Sample Size
Manufacturing sector	511,015	4,821:1	106
Trading sector			
- retail	813,823	7,678:1	106
- wholesale	224,621	2,119:1	106
- maintenance	154,594	1,458:1	106
Service sector	1,035,089	9,765:1	106
Total	**2,739,142**	**5,168:1**	**530**

Considering the research tool of this study, relevant concepts and theories were applied to develop the questionnaire focusing on the present research objectives. Then, the questionnaire was examined by 5 experts to ascertain its validity and accuracy with the content validity index (CVI) values, which should

be higher than 0.80 (Prakayrat, 2012). It was found that the questions concerning the general characteristics of the enterprises and knowledge management in terms of readiness to enter the AEC had a content validity index value of 0.833, 0.905 and 0.857 respectively. Regarding the reliability test, it was found that the split-half reliability values of the questions measuring knowledge management ranged from 0.7089 to 0.8623, and the total score was 0.9293, whereas the split-half reliability values of vquestions measuring readiness ranged from 0.7330 to 0.8181, and the total score was 0.9264. The combined reliability coefficients ranged from 0.8051 to 0.9268, with a total score of 0.8814. As its reliability values were above 0.6, the questionnaire was considered highly acceptable for the data collection (Spearman, 1910, and Brown, 1910).

As for the quantitative data analysis, the Statistical Package for the Social Sciences (SPSS) was applied in this study. The descriptive statistics used to analyze the basic data were frequency, percentage, mean, and standard deviation. Overall Model Fit Measure and Component Fit Measure were examined using the structural equation model (SEM), (Wiratchai, 1999, and Vanichbuncha, 2013).

Results of the Study

The results of the present research concerning a knowledge management model for the readiness to enter the ASEAN Economic Community of small and medium enterprises in Thailand can be described as follows.

General data and descriptive statistics on the small and medium enterprises in Thailand can be seen in Table 2.

Table 2: Frequencies, Percentages, Means, and Standard Deviations Categorized by General Characteristics of Enterprises

General Characteristics of Enterprises (n = 713)	Frequency	Percentage
1. Form of business		
Ordinary person or sole proprietorship	472	66.2
Registered ordinary partnership	24	3.4
Limited company	140	19.6
Others (non-juristic groups of person, limited partnerships, unregistered ordinary partnerships, joint ventures, etc.)	77	10.8

Table 2: Frequencies, Percentages, Means, and Standard Deviations Categorized by General Characteristics of Enterprises (continued)

General Characteristics of Enterprises (n = 713)		Frequency	Percentage
2. Type of business sector			
Industrial manufacturing		237	33.24
Wholesale, retail, maintenance (maintenance of motor vehicles, motorcycles, personal/ household goods)		348	48.81
Service (hotels and restaurants, real estate rental and business activities, transportation, community, social, and personal service, etc.		128	17.95
3. Fixed asset value ($\overline{X}$= 19.99, SD. = 3.71)			
Not more than 30 million baht		455	63.8
31-50 million baht		203	28.5
51-100 million baht		45	6.3
More than 100 million baht		10	1.4
4. Number of employees in the organization ($\overline{X}$ = 24.98, SD. = 7.07)			
Not more than 15 people		382	53.6
16-25 people		51	7.2
26-50 people		28	3.9
More than 50 people		252	35.3
5. Length of business operation ($\overline{X}$ = 8.85, SD. = 3.35)			
Not more than 5 years		303	42.5
6-10 years		254	35.6
11-15 years		78	10.9
More than 15 years		78	10.9
6. Current operational performance compared to prior year			
Loss	Less than 10%	22	3.1
	11-20%	35	4.9
	More than 20%	28	3.9
Profit	Less than 10%	284	39.8
	11-20%	102	14.3
	More than 20%	242	33.9

Table 2 illustrates that the majority of small and medium enterprises were sole proprietors (66.2%) in the wholesale, retail, and maintenance sector (48.81%). Their fixed asset value was mostly less than 30 million baht (63.8%) with an average fixed asset value of 19.99 million baht ($\overline{X}$ = 19.99, SD = 3.71). In terms of employees, most of the small and medium enterprises had less than 15 employees (53.6%) with an average number of 25 employees ($\overline{X}$ = 24.98, SD = 7.07). Nearly half of them had run their business less than 5 years (42.5%). Their average length of business operation was 9 years ($\overline{X}$ = 8.85, SD = 3.35). As for operational performance compared to the prior year, their current profit was less than 10% (39.8%) with an average profit of 9.58% ($\overline{X}$ = 9.58, SD = 2.36).

Objective 1: To investigate the level of knowledge management and readiness for the ASEAN Economic Community of small and medium enterprises in Thailand. The results are shown in Table 3.

Table 3: Frequencies, Percentages, Means, and Standard Deviations Categorized by Knowledge Management for Readiness to Enter the AEC

ASEAN Economic Community	Knowledge Management					Readiness				
	Full	Score	SD.	%	Level	Full	Score	SD.	%	Level
1. (Organizational) Knowledge creation	8	1.22	1.76	15.25	Minimum	40	13.93	5.50	34.83	Low
(1) external knowledge acquisition	4	0.33	0.77	8.25	Minimum	20	6.96	2.86	34.80	Low
(2) internal knowledge acquisition	4	0.89	1.28	22.25	Low	20	6.97	3.06	34.85	Low
2. Knowledge codification	10	1.64	2.49	16.40	Minimum	50	16.76	7.03	33.52	Low
(1) knowledge classification	2	0.45	0.73	22.50	Low	10	3.61	1.61	36.10	Low
(2) knowledge mapping	2	0.29	0.69	14.50	Minimum	10	3.41	1.61	34.10	Low
(3) knowledge profiling	2	0.41	0.75	20.50	Low	10	3.28	1.57	32.80	Low
(4) knowledge modeling	2	0.20	0.52	10.00	Minimum	10	3.26	1.53	32.60	Low
(5) knowledge standardization	2	0.29	0.58	14.50	Minimum	10	3.20	1.59	32.00	Low
3. Knowledge sharing	53	17.50	8.27	33.02	Low	65	23.29	9.12	35.83	Low
(1) brainstorming	15	5.16	3.29	34.40	Low	15	5.28	2.30	35.20	Low
(2) team-work	2	0.49	0.74	24.50	Low	10	3.47	1.70	34.70	Low
(3) general discussion	10	3.58	2.41	35.80	Low	10	3.83	1.61	38.30	Low
(4) use of e-mail	10	3.22	2.27	32.20	Low	10	3.65	1.68	36.50	Low
(5) knowledge sharing via internal network	6	1.76	1.20	29.33	Low	10	3.22	1.63	32.20	Low
(6) knowledge sharing via external network	10	3.30	2.21	33.00	Low	10	3.84	1.76	38.40	Low
4. Knowledge utilization	20	7.22	3.51	36.10	Low	20	7.33	3.15	36.65	Low
(1) intentional knowledge utilization	10	3.33	2.04	33.30	Low	10	3.69	1.64	36.90	Low
(2) unintentional knowledge utilization	10	3.89	2.12	38.90	Low	10	3.64	1.69	36.40	Low

Table 3: Frequencies, Percentages, Means, and Standard Deviations Categorized by Knowledge Management for Readiness to Enter the AEC (continued)

ASEAN Economic Community	Knowledge Management					Readiness				
	Full	Score	SD.	%	Level	Full	Score	SD.	%	Level
5. Knowledge assessment and improvement	35	13.33	6.30	38.09	Low	35	12.88	5.52	36.80	Low
(1) review, assessment, improvement of strategies and activities	10	4.04	2.19	40.40	Moderate	10	3.69	1.62	36.90	Low
(2) benefits from knowledge assessment and improvement	15	5.47	2.93	36.47	Low	15	5.67	2.60	37.80	Low
(3) current status, progress, and impact of knowledge management	10	3.83	2.18	38.30	Low	10	3.51	1.71	35.10	Low
Overall	**126**	**40.92**	**16.45**	**32.48**	**Low**	**210**	**74.19**	**27.25**	**35.33**	**Low**

According to Table 3, the overall knowledge management and readiness for the AEC were at a low level (32.48% and 35.33% respectively). The items which exhibited a low level of knowledge management and readiness for the AEC included knowledge assessment and improvement (38.09% and 36.80%), knowledge utilization (36.10% and 36.65%), and knowledge sharing (33.02% and 35.83%). The two processes that had the lowest level of knowledge management and readiness for the AEC were knowledge codification (16.40% and 33.52%) and knowledge creation (15.25% and 34.83%).

Objective 2: To study the causal relationship of knowledge management and the readiness to enter the ASEAN Economic Community of small and medium enterprises in Thailand. The results are shown in Table 4.

Table 4: Analysis Results of the Causal Relationship between Knowledge Management and the Readiness to Enter the AEC of Small and Medium Enterprises in Thailand

Dependent Variables	Effect	Independent Variables				
		KCr	KCo	KSh	KUt	KAI
KCo	DE	0.918*				
	IE	-				
	TE	0.918*				
	R^2	0.842				
KSh	DE	-	0.110*			
	IE	0.009*	-			
	TE	0.009*	0.110*			
	R^2	0.012				
KUt	DE	-	-	0.888*		
	IE	0.008*	0.009*	-		
	TE	0.008*	0.009*	0.888*		
	R^2		0.789			
KAI	DE	-	-	-	0.927*	
	IE	0.008*	0.008*	0.823*	-	
	TE	0.008*	0.008*	0.823*	0.927*	
	R^2		0.859			
R	DE	0.068	0.346*	0.227	0.522*	0.360*
	IE	0.417*	0.109*	0.760*	0.334*	-
	TE	0.538*	0.455*	0.987*	0.856*	0.360*
	R^2			0.752		

*P-value < 0.05

Accourding to Table 4, all knowledge management processes, including knowledge creation, knowledge codification, knowledge sharing, knowledge utilization, and knowledge assessment and improvement, had a causal relationship with readiness for the AEC. It was found that 1) knowledge creation had an indirect effect on the readiness for the AEC through knowledge codification, knowledge sharing, knowledge utilization, and knowledge assessment and improvement (IE=0.417); 2) knowledge codification had a direct and indirect effect on the readiness for the AEC through knowledge sharing, knowledge utilization, and assessment and improvement (DE=0.346+IE=0.109); 3) knowledge sharing had an indirect effect on the readiness for the AEC through knowledge utilization, and knowledge assessment and improvement (IE=0.760); 4) knowledge utilization had a direct and indirect effect on the readiness for the AEC through knowledge assessment and improvement (DE=0.522+IE=0.334); 5) knowledge assessment and improvement had a direct effect on the readiness for the AEC (DE=0.360). It can be concluded that if small and medium enterprises in Thailand implemented all knowledge management processes (knowledge creation, knowledge codification, knowledge sharing, knowledge utilization, and knowledge assessment and improvement), it would positively affect the readiness for the AEC.

The structural equation model of the causal relationship between knowledge management and readiness for the AEC of small and medium enterprises in Thailand can be written as follows.

$KCo = 0.918^{*} KCr; R^2 = 0.842$

$KSh = 0.110^{*} KCo; R^2 = 0.012$

$KUt = 0.888^{*} KSh; R^2 = 0.789$

$KAI = 0.927^{*} KUt; R^2 = 0.859$

$R = 0.068\ KCr + 0.346^{*}\ KCo + 0.227\ KSh + 0.522^{*}\ KUt + 0.360^{*}\ KAI; R^2 = 0.752$

Objective 3: To develop a knowledge management model for the readiness to enter the ASEAN Economic Community of small and medium enterprises in Thailand that fits with the empirical data. The goodness-of-fit of the model to the empirical data (Wiratchai, 1999, and Vanichbuncha, 2013) was examined and is summarized in Table 5.

Table 5: Summary of Goodness-of-fit Indices for SEM

Indicators	Criterion	SEM: Results
χ^2 / *df*	≤3	2.656
GFI	≥0.90	0.977
AGFI	≥0.90	0.966
NFI	≥0.90	0.972
NNFI (TLI)	≥0.90	0.931
IFI	≥0.90	0.985
CFI	≥0.90	0.984
HOELTER	> 200	265
RMR	<0.05	0.014
RMSEA	<0.05	0.030
Summary: all values met the criteria for acceptable model fit		

Furthermore, the causal relationship between knowledge management and readiness for the AEC of small and medium enterprises in Thailand was analyzed based on the research framework with the use of statistical software. The results are presented in Figure 2.

In terms of latent variables, KCr = Knowledge Creation, KCo = Knowledge Codification, KSh = Knowledge Sharing, KUt = Knowledge Utilization, KAI = Knowledge Assessment and Improvement, R = Readiness of Thai SMEs for the AEC. The data of all variables was standardized in form of Z-score.

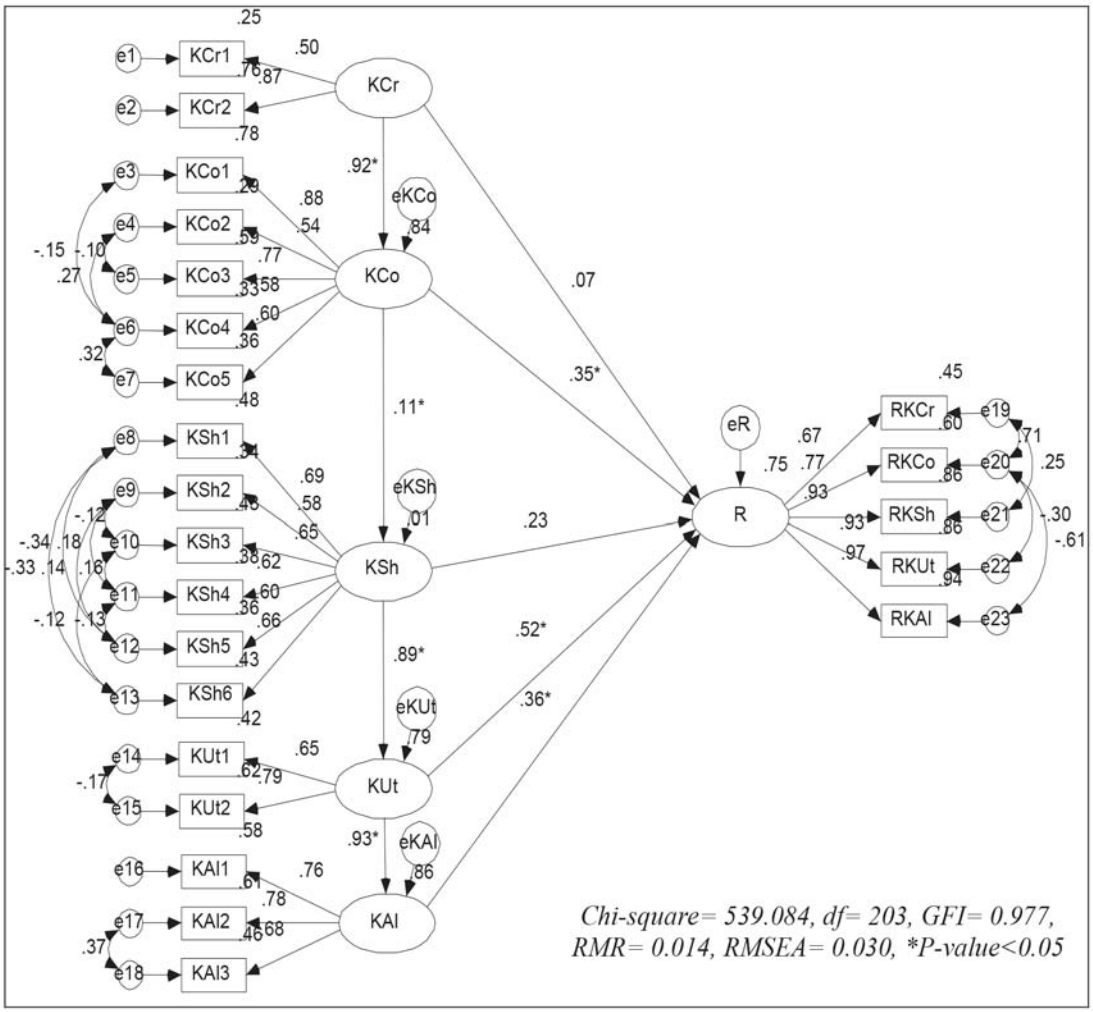

Figure 2: Analysis Results of the Causal Relationship Based on the Research Framework

Considering the component fit measure, it was found that the factor loading of all of the knowledge management processes, which were knowledge creation (KCr), knowledge codification (KCo), knowledge sharing (KSh), knowledge utilization (KUt), and knowledge assessment and improvement (KAI), as well as the readiness to enter the AEC (R), was in the range of 0.502-0.873, 0.540-0.882, 0.581-0.691, 0.646-0.788, 0.681-0.784 and 0.674-0.967, respectively. This indicated that this knowledge management model had validity, with factor loadings greater than .30 in absolute value, which was considered to be statistically significant (Kline, 1994). Therefore, it could be said that the predictive efficiency of this developed model was at a good and acceptable level with the squared multiple correlation (R^2) of 0.752 (75.2%),

which was higher than the acceptable criterion of 40% (Saris & Strenkhorst, 1984). The development model of knowledge management is displayed in Figure 3.

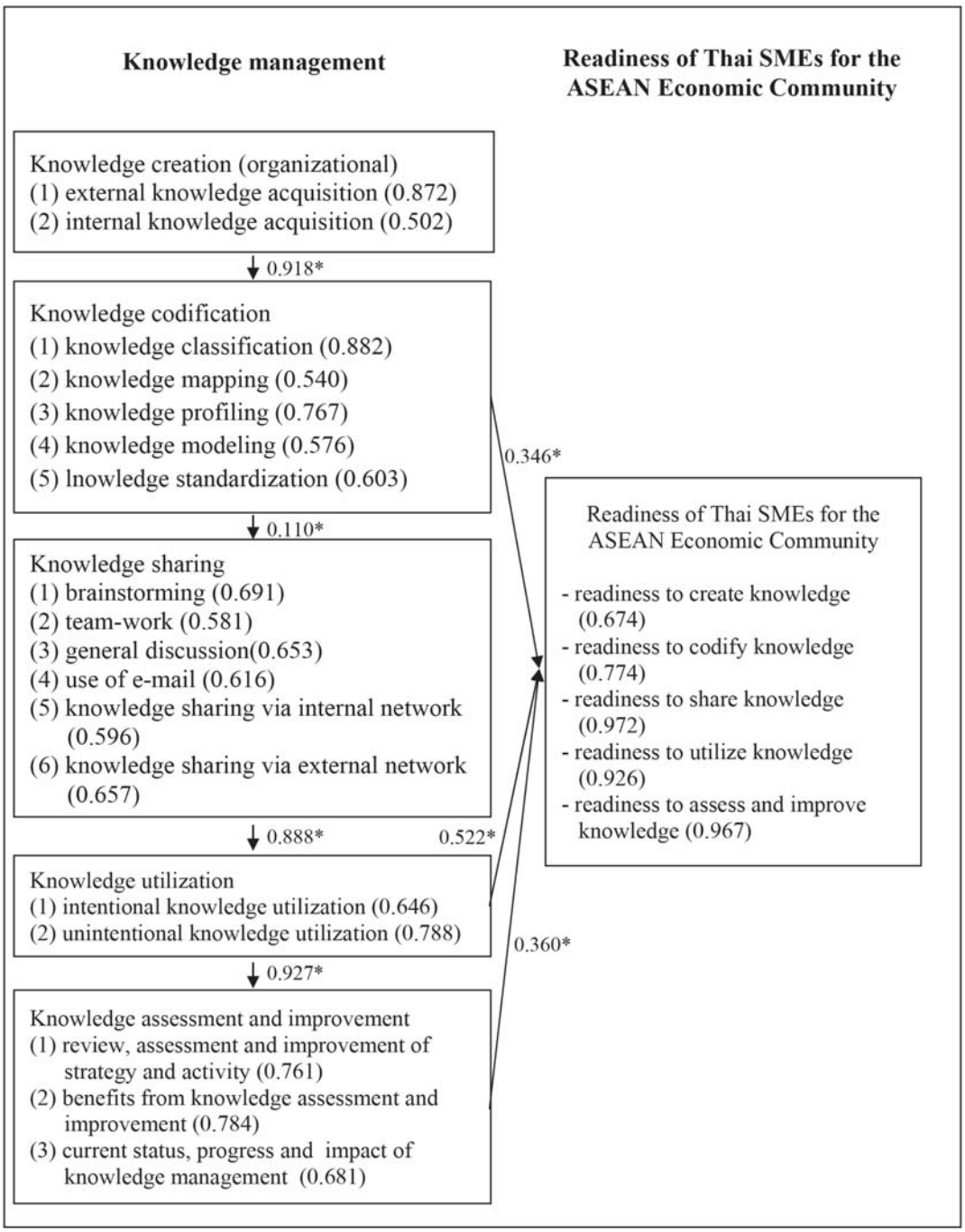

Figure 3: Development Model of Knowledge Management for the Readiness of Thai SMEs for the ASEAN Economic Community (after Model Adjustment)

Discussion

The results of the present research on a knowledge management model for the readiness to enter the ASEAN Economic Community of small and medium enterprises in Thailand can be discussed as follows.

Regarding the general characteristics of small and medium enterprises in Thailand, it was found that the majority of them were sole proprietors (66.2%) in the wholesale, retail, and maintenance sector (48.81%) with a fixed asset value of less than 30 million baht (63.8%). They had a maximum of 15 organizational employees (53.6) with an average length of business operation of 8.85 years. As for operational performance compared to the prior year, their average current profit was 9.58%. This reflects that most of the samples were small retailers with less than 15 employees and with a fixed asset value of less than 30 million baht (Office of Small and Medium Enterprise Promotion, 2013). Their business registration was done in the form of sole proprietorship under the Civil and Commercial Code (Section 15), which defined a sole proprietorship as a solo-owned business by a natural person who individually invested money, received benefits, and took risks. This enabled them to have independence in operation and decision-making, flexibility in administration, and the capability to easily establish or cancel business operations without a large amount of investments (Chankoson, 2013). In addition, the sole proprietors were required to pay personal tax income, charged at progressive rate. The progressive tax system took a larger percentage of income from enterprises with higher incomes. Their maximum tax rate was 35% of net profits (The Revenue Department, 2014). However, most sole proprietors required a certain amount of time to gain experiences and to develop a loyal customer base. This made their annual profits only enough for retaining existing customers.

As for the level of knowledge management and readiness for the ASEAN Economic Community, the statistical results yielded in the present study suggested that the samples had a low level of knowledge management (35.33%). This might be because most enterprises tended to use repetition to achieve business expertise. When their businesses became stable, they seemed unlikely to learn more and to be unwilling to adapt to the changes in competitive situations. This was similar to

the research of Suanpang (2008), who created a knowledge management model for developing Rajabhat Universities toward becoming a learning organization. The results suggested that Rajabhat Universities had a somewhat low level of knowledge management which consequently made their senior management teams require a high level of knowledge management.

Considering the knowledge management processes, it was found that the processes with a low level of knowledge management were knowledge assessment and improvement (38.09%), knowledge utilization (36.10%), and knowledge sharing (33.02%). On the other hand, the processes with the lowest level (0-20%) of knowledge management were knowledge codification (16.40%) and knowledge creation (15.25%). This could be because knowledge creation was the key fundamental process of developing new knowledge that required considerable amount of time and high determination essential for the next procedures (Marquardt, 1996). After that, knowledge codification had to be implemented in order to create readiness for utilization. Its core principles were how to effectively codify knowledge, how to retain the essences of knowledge, and how to optimize knowledge utilization (Davenport & Prusak, 1998). In terms of knowledge sharing, it was seen as the process of transferring knowledge among employees, which was considered organizational communication. It included hiring an external expert or specialized consultant to be a trainer providing knowledge that met corporate interests, face-to-face conversations, and an exchange of information for quick results (Senge, 1990). Concerning knowledge utilization, this was seen as the heart of knowledge management. Once knowledge is absorbed into individuals or groups, there should be an activity leading them into practice or implementation. If there is no leading activity, it could represent a loss of knowledge management (Gamble & Blackwell, 2001). When knowledge utilization is stimulated by employment, it becomes easier to access and save more time but costs would be incurred. Mutual benefits could also be used to stimulate this process. As for knowledge assessment and improvement, it was seen the process of analyzing, synthesizing, comparing, and summarizing organizational knowledge which led to organizational knowledge management development and thus contributing to future advantages (Bloom, 2007).

Concerning the causal relationship of knowledge management with the readiness for the ASEAN Economic Community of small and medium enterprises in Thailand, it was found that all processes of knowledge management, including knowledge creation, knowledge codification, knowledge sharing, knowledge utilization, and knowledge assessment and improvement, had a causal relationship with the readiness for the ASEAN Economic Community. This indicated that each knowledge management process played a major direct and indirect role in encouraging and enhancing readiness for changes, which would contribute to business stability and survival in high competitive situations when entering the ASEAN Economic Community in the near future. This was consistent with the study of the development of a knowledge management model for the public sector of Hansaphiromchok (2007), who suggested that the knowledge management model consisted of 7 main procedures: 1) knowledge identification; 2) external and internal knowledge acquisition; 3) knowledge creation; 4) systematic knowledge storing; 5) knowledge sharing through learning activities and knowledge distribution channels; 6) knowledge utilization in personnel, work, and organization development; and 7) monitoring and assessment. This was also similar to the research on knowledge management development for community organizations of Janthonsombrat (2007), who indicated that knowledge enhancement and explicit knowledge development required 6 aspects of knowledge management: creation, classification, storing, utilization, sharing, and assessment, which were consistent with the 5 processes of knowledge management stated in the present research. In addition, the developed knowledge management model had validity and predictive ability regarding the readiness for the ASEAN Economic Community of small and medium enterprises in Thailand at an acceptable level of 75.2% (Saris & Strenkhorst, 1984 and Joreskog & Sorbom, 1993).

Recommendations

Based on the findings and conclusions of this study, the following recommendations for enhancing the knowledge management of small and medium enterprises in Thailand for the readiness to enter the ASEAN Economic Community are made for relevant organizations.

1. Establishing awareness and policies on knowledge network development should be done by forming an association or cooperation in the form of a business alliance between the public and private sectors in order to encourage knowledge sharing and to control risks which may arise from non-transparent business operations (corruption and bid rigging). In addition, business ethics should be upheld by setting standard levels for ethical evaluation such as a fair level (3 stars), good level (4 stars), and excellent level (5 stars). This evaluation should be constantly implemented until it becomes routine.

2. Establishing awareness and policies on knowledge assessment and improvement should be done by examining and monitoring every step of knowledge management, before, during, and after implementation. After improving all of the processes, watchful waiting and active monitoring should be carried out again. Strengths, weaknesses, and other limitations should also be summarized in the form of written reports that are easy to use and distribute to relevant organizations. The policies on knowledge utilization should be encouraged by communicating knowledge utilization methods that focus on practical implementation through various media channels, including personal, mass, and activity media. Real success stories should be used as a showcase for other enterprises to follow. Counseling services offering professional advice and job rotations that will enhance the expertise of diverse personnel should be provided. Additionally, knowledge sharing should be driven by conducting brainstorming, workshops, training, knowledge and skills development, team working, establishing specific knowledge exchange centers in order to create good communication and unity without any errors, and focusing on two-way communication. Comments and suggestions should be categorized and given priority so that knowledge sharing problems can be solved accurately based on public interest. Other small details should also be taken into account for truly complete implementation.

3. Establishing awareness and policies on knowledge codification should be done by applying computer and information technology systems to classifying, mapping, modeling, and storing knowledge in easy-to-use hard disks, including knowledge dissemination through Internet networks. The same standard of language, keywords, and definitions should be applied to information and knowledge storing

so that organizational personnel can understand it in the same way. Furthermore, knowledge creation should be supported by outsourcing, hiring expert consultants and specialized trainers, establishing partnerships with educational institutions to research and develop innovation, quality controlling, and driving strategies to enhance growth and business survival. A spider map displaying all operational processes and responsible persons should be created. Interested employees should be allowed to participate in the thinking process for learning and administration because they are engaged at work and are truly aware of problems.

Recommendations for further research

1. Future research should investigate knowledge management indicators suitable for assessing each knowledge management process of small and medium enterprises and community enterprises groups nationwide because they are considered a significant element and have effective standards for learning enhancement.

2. Due to business dynamics and the coming of the ASEAN Economic Community, knowledge assessment and monitoring, which are considered essential processes for small and medium enterprises and community enterprise groups in Thailand, should be further studied. Knowledge monitoring should be done before, during, and after an assessment since it is a tool that indicates the benefits of knowledge management and suggests if a correction or modification is required.

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