Effects of Change Capability and Knowledge Management on Financial Performance: SMEs in Meat Processing and Preservation Industry, Northeast Thailand

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Abstract

Thai small and medium enterprises (SMEs) have played an important role for a long time as they are fundamental for Thailand's economy because they provide the mechanisms for the sustainable development of the current economy of the country. This research tests and explains the factors of change capability and knowledge management affecting the financial performance of SMEs in the meat processing and preservation industry, Northeast Thailand. The sample was collected from 117 firms using a mailed questionnaire method. Structure equation modeling (SEM) was employed. The results show that for SMEs in the meat processing and preservation industry, Northeast Thailand, the factors of change capability and knowledge protection had significant positive effects on financial performance, with $p<.01$ and $p<.05$, respectively. The effect size obtained was 49%. The factor of knowledge transfer; however, had no effect on financial performance. The findings suggest that in this industry it is important to focus on a companies' own change capability (.82) to survive in the long term, to protect commercial knowledge (.72) and to be aware of transferring knowledge outside of the firms.

Keywords: Change Capability; Knowledge Management; Financial Performance; Small and Medium Enterprises; Meat Processing and Preservation Industry

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Introduction

Businesses, especially small and medium enterprises (SMEs), play a key role in various aspects of the economy, including manufacturing, employment, and providing support for entrepreneurs in Thailand. They produce various types of consumer goods and play an important role in product chains of intermediate goods. In 2012, Thai SMEs accounted for 37% of gross domestic product (GDP) and roughly 80% of workforces. The percentage of SME employment to total employment increased from 76% in 2007 to approximately 80% in 2012. During this period, the trade, service, and manufacturing sectors each served more than 30% of hiring by SMEs (Yoshino et al, 2015). By definition, a medium enterprise in a manufacturing industry has no more than 250 employees, and a small enterprise has between 10 to 49 employees (The Office of SMEs Promotion, 2019). Many SMEs have been established are now located in every region around the country.

According to the Thailand Standard Industrial Classification 2009 (TSIC 2009) (Department of Industrial Work, 2019), there are up to 99 industrial types of A-U sections. The food processing industry (TSIC 10), in the manufacturing industries (C section), have earned many hundreds of billions of Baht in income for the country and provide work for more than 40 million employees. Moreover, the food processing industry attracts the greatest investment. It has provided the highest value added and made the highest investment in research and development (R&D) compared with other industries. Additionally, this industry has directly served to develop agricultural products by making them more valuable, and Thailand is considered important among agricultural countries (Eastern Economic Corridor, 2020). Further, the Thai government has worked to develop Thailand as the "world kitchen" (Bangkok Post, 2020). One of the most important regions in Thailand in terms of food processing is the Northeast region, which is especially well known for the processing and preservation of meat such as white or red sausages (Moo-yoa/Kun-chiang), dry meat, Vietnamese sausage (Nam-nueng), etc. (Matichon Online, 2017). Additionally, this paper was funded by a research grant from Udon Thani Rajabhat University serving the provinces nearby. This paper also had a resource limit. Therefore, the research area in this study is narrowed down to SMEs in the meat processing and preservation industry in Northeast Thailand.

SME characteristics are flexible and simple in their business structures, which allows them to change quickly without such requirements as stockholders or board members for approval (Carpenter, 2017). However, SMEs' sizes have a high range of employee numbers from 10 to 249 (The Office of SMEs Promotion, 2019). That may be the result of the difference in change capability among SMEs. In addition, at present, it is likely that businesses including SMEs are necessarily operating in uncertain environments; as a result, they require greater change capability in order to be continuously flexible (Waldersee et al., 2003). Furthermore, the change capability in relation to both strategies and resources may be different for each firm because firms' organizational structures are not exactly the same. Some possibly are similar to organic organizations, which tend to adapt better to the environment than other types of organizations. Others with larger sizes may be like mechanical organizations which have been viewed as being are more formal and have complicated procedures which cause them to have a lower capability to adapt (Waldersee et al., 2003). The businesses that have the ability to quickly change or adapt to new environments can not only survive but also take greater advantage of opportunities to improve their organizational performance, including financial performance and non-financial performance (Tseng & Lee, 2014). Financial performance needs to be examined in order to determine the respective businesses' well-being and standing among other benchmarks (Corporate Finance Institute, 2021) while non-financial performance

is concerned about the qualitative aspects of a business such as satisfaction of customers, brand development, employee motivation, etc. As the traditional measures of business success have been based on either financial performance such as profit, turnover or return on investment (Upping & Kasorn, 2021), the financial performance is highlighted in this research.

In addition to change capability, knowledge management and employees' skills are among the factors that can improve finance performance (Tseng & Lee, 2014) as they enrich the process of knowledge integration within firms. That knowledge can in turn be used to develop the firms. Working processes become more effective, and innovations can be created. However, unfortunately, it has been recognized that in SMEs including family businesses, the owners as managers may play so great a role that they affect the management system or performance and make them less effective or cause a lack of innovation (Laforet, 2016).

As mentioned above, SMEs' sizes have a high range of employee numbers from 10 to 249. In this context, businesses even in the same industry may have different performances or management systems owing to the different sizes of their organizations, normally measured by the number of their employees (Gadenne et al., 2012; Wang et al., 2015) as well as annual incomes, which are related to change capability and knowledge management, as discussed above.

The current study aims:

1) to test and explain the effects of change capability on the financial performance of SMEs in the meat processing and preservation industry, Northeast Thailand;

2) to test and explain the effects of knowledge transfer, an aspect of knowledge management, on the financial performance of SMEs in the meat processing and preservation industry, Northeast Thailand;

3) to test and explain the effects of knowledge protection, an aspect of knowledge management, on the financial performance of SMEs in the meat processing and preservation industry, Northeast Thailand.

Literature Review

This research framework was developed by integrating two organization management theories related to change capability and knowledge management linked to financial performances as explained below.

Burns and Stalker's Theory of Organic/Mechanistic Structures, 1961

This theory has been used widely in former studies related to organizations, for example, Kessler et al. (2017). Their study used a sample of 20 firms from areas including the textile industry and the engineering and electronics industry in Scotland and England. Its results showed that there were associations among uncertain environments and organizational types and also relationships between the management styles and organization structures covering both organic organizations and mechanic organizations. Organic organizations are characterized by open and informal communication channels, flexible operation processes, and alternatives for recruitment. Moreover, the management control structures entail decentralization and the communication structures of networking. On the other hand, mechanic organizations are the opposite in these areas. They are characterized by formal organizational structures, tight job specification, rigid roles in the organizations, a high degree of control as well as centralization, hierarchy by nature, and systematic reports (Burns & Stalker, 1961). As

mentioned in the introduction section, Thai SMEs have a high range of business sizes from 10 to 249 (The Office of SMEs Promotion, 2019). Therefore, some possibly are similar to organic organizations, but others with larger sizes may be like mechanic organizations which have been viewed as being more formal and have complicated procedures (Waldersee et al., 2003). By exploring the data of all meat and preservation factories in Northeast Thailand updated on 18 January 2019 in this study, it shows only 19 out of 254 factories containing more than 50 employees (The Office of SMEs Promotion, 2019). This reveals that many Thai SMEs are more likely to be categorized as organic because most are small in size, having a small number of employees. Some larger enterprises that have more employees have characteristics closer to those of mechanic organizations. However, the organization size is only one of the firm's characteristics. This theory does not specify which type of organization is better because each type is suitable for its own environment. Both types probably have some ability to adapt to the external environment. Mechanic organizations are essentially systematic and have a high degree of formalization, reports, communication, and centralization; however, this may make them less flexible and slower to adapt to external factors which are quickly changeable. Briefly, this theory generalizes that small and medium entrepreneurial firms probably have different levels of capability to change as they have different characteristics such as the number of employees, managerial leadership styles, and/or technology, etc.

The Theory of Knowledge Management

Ability in knowledge management is defined as a firm's ability to expand on existing knowledge by continuously learning, which leads to the creation of new knowledge (Bose, 2003). This ability demands both the discovery of sufficient knowledge or information and the protection of knowledge or information (Liu et al., 2004). It is clear that knowledge is the main key for businesses as it is a strategic resource and enables them to gain greater value (Drucker, 1993). Gold et al. (2001) mainly studies organizational effectiveness, which is measured by two latent variables: 1) knowledge infrastructure and 2) knowledge process capabilities. The knowledge infrastructure capability consists of technology, structure, culture, and acquisition. In a technological knowledge infrastructure aspect, it reminds firms that knowledge is not stolen or used inappropriately. The knowledge process capability is explained by acquisition, conversion, application, and protection. Tanriverdi (2005) finds a positive link to knowledge management capability, and then exploit cross-unit synergies which increase financial performance. Tseng and Lee (2014) integrate the items of KM capabilities from Gold et al. (2001), Tanriverdi (2005), etc. and defines it that it is the ability of a firm to weigh existing knowledge to transfer and protect new knowledge. Although those rearranged items of the KM in Tseng and Lee (2014) present two parts of knowledge transfer and knowledge protect, it was tested as one KM variable. However, knowledge transfer and knowledge protection are newly applied in this study as two independent variables in order to be clearer in their differences. Overall, this theory and previous research suggests that successful small and medium entrepreneurial businesses must have the ability to manage their own knowledge.

Conceptual Framework

The conceptual framework of this research is formed based on the theories discussed above and includes three research hypotheses related to change capability and two aspects of knowledge management affecting the financial performances of SMEs in the meat processing and preservation industry, Northeast Thailand, as shown in Figure 1. Additionally, the development of the items in each factor of both the dependent and the independent variables are developed from previously related research (see the instrumentation section).

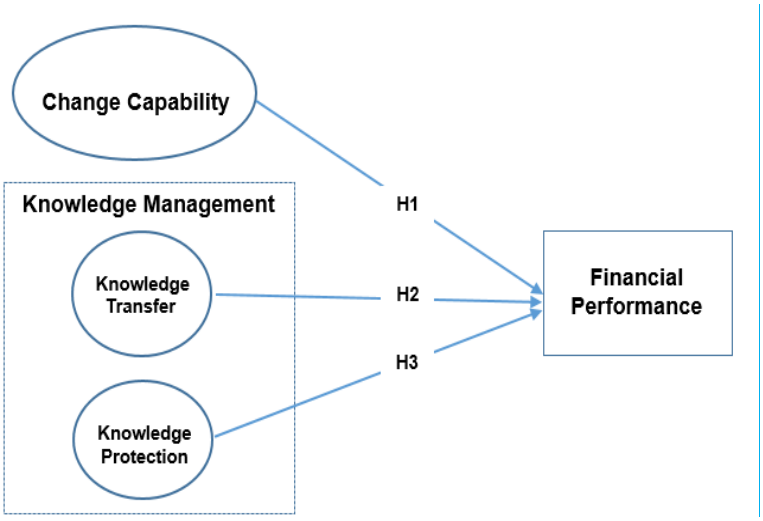

Figure 1: Conceptual Framework

Research Hypotheses

H1: Change capability positively affects the financial performance of SMEs in the meat processing and preservation industry, Northeast Thailand.
H2: Knowledge transfer positively affects the financial performance of SMEs in the meat processing and preservation industry, Northeast Thailand.
H3: Knowledge protection positively affects the financial performance of SMEs in the meat processing and preservation industry, Northeast Thailand.

The Dependent Variable

The dependent variable in this study is financial performance. Research has employed many indicators for the appraisal of business performance. The indicators that are able to measure a business' ability include two dimensions: 1) non-financial performance measured in terms of efficiency, effectiveness, and adaptability factors and 2) financial performance measured in terms of return on investment, sale growth rate, and revenue factors (Ruekert et al., 1985). However, some studies such as Upping and Kasorn (2021) confirm key business success is based on financial performance. They study successful factors of the SMEs in Northeast Thailand. They measure the financial performance by considering either one of profit, turnover or return on investment while Tseng and Lee (2014) considered the integration of sales amount, profit rate, revenue, and return on investment. The research (Tseng & Lee, 2014) has found that dynamic capability positively affected organizational financial performances. Also, its results have suggested that good knowledge management can improve their performance, including their financial performance. Similarly, Tanriverdi (2005) found a positive link between KM and financial performance.

The Independent Variables

Change capability. Contingency theory emerged during the 1960s, resulting from efforts to help organizations or businesses manage their internal and external environments effectively, survive, grow, and make a profit. In current uncertain environments, organizations are no longer able to use old paradigms; therefore, contingency theory refutes the idea of the "one best way" approach, holding instead that organizations should have the characteristic of capability to change, in all times and places. Emphasizing the capability to change means

taking what is known as the "dynamic capabilities approach." This characteristic enables businesses to gain advantages over their competitors (Waldersee et al., 2003). Dynamic capabilities have been defined as organizational abilities "to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece et al., 1997). Indeed, the term "dynamic" denotes the ability to renew competences so that businesses can adapt more easily under changing business environments. Also, the dynamic approach has been related to the capability to integrate all business resources and the existing skills of employees and then develop creative businesses as business creators. Furthermore, the flexibility of business structures and performance play an important role for the development of the capability to change (Soparnot, 2011). The actual ability of businesses to change means the ability to manage and integrate all of their existing resources to achieve their targeted business goals (Tseng & Lee, 2014). This is reflected in the ability of businesses to change their structures of resource allocation for the greatest possible resource utilization, for example, through the use of existing resources to produce new products to serve new demands, leading to increased financial performance (Gadenne et al., 2012). Based on the review of literature, We propose the following hypothesis:

> ***H1:*** *Change capability positively affects the financial performance of SMEs in the meat processing and preservation industry, Northeast Thailand.*

Specially, this current study opts to divide the KM defined by Tseng and Lee's research (2014) into two factors: knowledge transfer and knowledge protection in order to provide more insight into them.

Knowledge transfer. Many SMEs have been faced with a lack of resources including a shortage of employees with abilities to create business innovations; as a result, the owners have not only played a role as managers but also made efforts to undertake business innovations by themselves. Frequently, that may be a cause of decreasing the efficiency of their managerial role. Consequently, innovative and changing values in the businesses have not been established nor supported. These businesses may hesitate to carry out change although innovative changes enable businesses to gain greater achievements (Laforet, 2016). KM has been defined as a business' ability to use existing knowledge to create new knowledge continuously (Bose, 2003), and innovations can be produced by new knowledge. These capabilities affecting business performance consist of three dimensions: customer KM capability, product KM capability, and managerial KM capability. Whenever the process of knowledge management is engaged in, knowledge transfer will also occur (Tseng & Lee, 2014). In other words, knowledge in business will be established if knowledge is transferred from one to one or one to many (knowledge transfer). Knowledge transfer leads to new knowledge and the creation of innovations, which then leads to increased business achievement. Because the review of literature shows that there are positive associations between knowledge transfer and business performance, including financial performance, We propose the following hypothesis:

> ***H2:*** *Knowledge transfer positively affects the financial performance of SMEs in the meat processing and preservation industry, Northeast Thailand.*

Knowledge protection. The process of knowledge management (KM) in businesses is related to not only knowledge transfer but also knowledge protection (Tseng & Lee, 2014). If competitors obtain a firm's business knowledge (know-how), the firm will lose its advantage. Therefore, knowledge management requires the capability to protect a firm's key knowledge

for business survival in the long term. The key business knowledge is valuable and makes the firm unique or irreplaceable. The business knowledge has been accumulated through the business' expertise over time. Research by Kiessling et al. (2009) shows that there are strong associations among knowledge management, innovation, and product development. Moreover, the results of the study showed that knowledge management was one of the key factors affecting organizational performance. The review of literature as well as the theories of organization support the idea that knowledge protection is likely related to financial performance. In applying these variables to this study, We propose the following hypothesis:

H3: *Knowledge protection positively affects the financial performance of SMEs in the meat processing and preservation industry, Northeast Thailand.*

Research Methodology

The current study is quantitative and employed a cross-sectional survey design to collect data at one time, using questionnaires. The statistical method employed for testing the three hypotheses is Structural Equation Modeling (SEM). The statistical technique of Harman's single-factor test is used to control for common method variance bias (CMV) (Gorrell et al., 2011; Podsakoff et al., 2003; Reio, 2010; Rijn et al., 2013; Vodosek, 2007). If the value is between 20%-25% of all variances, this suggests that the problem of CMV does not affect the result of this study (Tansky & Cohen, 2001).

Delimitations

1) This study was delimited to the SMEs in the "meat processing and preservation industry," coded "101" in TSIC 2009 (Department of Industrial Works, 2019). According to TSIC 2009, the products produced in this sector are those such as white pork sausages, Chinese red sausages, and sour sausages. The data, however, were first collected in 2019, and it was found that some factories had already closed, thus, partly limiting the sample size of the study.

2) This research focuses on the meat processing and preservation industry, whose factories are located in Northeast Thailand. In this region, there are 20 provinces: Kalasin, Khon Kaen, Chaiyaphum, Nakhon Phanom, Nakhon Ratchasima, Bueng Kan, Buri Ram, Mukdahan, Yasothon, Roi Et, Loei, Si Sa Ket, Sakon Nakhon, Surin, Nong Khai, Amnat Charoen, Udon Thani, and Ubon Ratchathani (Department of Industrial Works, 2019).

3) In identifying the benefits of rapid turnaround and economy of design, this study is delimited to administering a survey design with self-reported measures.

4) This research investigates: 1) the three independent variables/ predictors of change capability, knowledge transfer, and knowledge protection; and 2) the dependent /criterion variable of financial performance.

Population and Sample

The population in this study initially was 262 SMEs in the meat processing and preservation industry located in 20 provinces of Northeast Thailand (Department of Industrial Works, 2019). However, during the data collection process, the population of the study was reduced to 254 factories as some were closed or had more than 250 employees (and were hence large organizations). To ensure the sample was representative of the population, the questionnaires were sent directly to all owners of the population as their addresses; however, each owner might assign a family member, a manager, or an employee in the factory to fill the

questionnaire. After three attempts to collect the data 117 completed questionnaires were returned to the researchers, representing the final sample size. A response rate of less than 50 percent is normal with voluntary participants (Creswell, 2014).

Instrument Development

The questionnaire items were adapted based on items used in studies from the scholarly journal literature (Tseng & Lee, 2014; Waldersee et al., 2003) to apply to the measures required for this study. The financial performance (FP) measures were applied in relation to the dependent variable in this research. Three measures were employed as independent variables: Change capability (CC), Knowledge transfer (KT), and Knowledge protection (KP). All of the measures were confirmed to have validity and internal consistency reliability as their values exceeded .70 (Nunnally, 1978). The studies showed the following Cronbach's alpha values: Financial performance = .94, Knowledge transfer =.96, and Knowledge protection = .95. Regarding the internal validity values, Financial performance ranged from .80 to .91, Knowledge transfer ranged from .70 to .80, and Knowledge protection ranged from .69 to .93. Furthermore, this research has retested validity and reliability via Composite Reliability (CR) and Convergent Validity (Average Variance Extracted or AVE) as they are commonly reported in CFA and SEM models. CR and AVE values should not be less than .50 (Hair et al., 2010). The AMOS software does not directly provide CR and AVE values; however, they can be computed through the application of these formulas:

$$CR = \frac{(\text{sum of standardized loading})^2}{(\text{sum of standardized loading})^2 + \text{sum of indicator measurement error}}$$

$$AVE = \frac{\text{sum of the squared standardized factor loadings}}{\text{sum of the squared standardized factor loadings} + \text{sum of indicator measurement error}}$$

Table 1: Sources of The Measures

Measures	Type of Variables	Source
FP	Dependent variable	Tseng and Lee (2014)
CC	Independent variable/Predictors	Waldersee, Griffiths, and Lai (2003)
KT	Independent variable/Predictors	Tseng and Lee (2014)
KP	Independent variable/Predictors	Tseng and Lee (2014)

As the original items are only available in English, the items employed in this study were translated into Thai. This was carried out by one associate professor and one assistant professor. Both of them had earned doctoral degrees in the USA. This study included a pilot test with 30 enterprises. The wording of survey items was developed to maintain the same meaning as the original but appropriate to a Thai context. The self-administered paper questionnaire included a total of 42 items, included three sections: demographic data in Section 1, four variables in Section 2 as shown in Table 2 below, and two open-ended questions in Section 3. All of the items in Section 2 were evaluated on a five-point Likert type scale ranging from 1 "strongly disagree" to 5 "strongly agree". The Section 3 contained optional questions for two reasons: 1) to give recommendations for change capability in current situations; and 2) to give recommendations for the ways to protect know-how from outside parties.

Table 2 is a summary of the survey items related to all variables and the hypotheses in this research. Table 3-5 show all items of the three independent variables (CC, KT, and KP measures). Table 6 presents the items of dependent variable (FP measure).

Table 2: Summary of Survey Items, Variables, and Hypothesis

Items	Variables	Hypothesis
1-5	Demographic data	-
6-15	Change capability	H1
16-29	Knowledge transfer	H2
30-36	Knowledge protection	H3
37-40	Financial performances	H1-H3
41-42	Opened-end questions	H1-H3

Table 3: Items of Change Capability (CC) Measure

Observed Variables	Items
cc1	Generating commitment to change.
cc2	Human resource capabilities.
cc3	Transforming asset structure in response to changing conditions.
cc4	Marketing and brand promotion capabilities.
cc5	Financial capabilities.
cc6	Renewal and development of organization's resources.
cc7	Technical assets and know-how.
cc8	Integrating resources.
cc9	Establishing effective communication channels.
cc10	Adapting and re-deploying, organizational resources, skills and abilities.

Table 4: Items of Knowledge Transfer (KT) Measure

Observed Variables	Items
kt1	We are already equipped with adequate professional knowledge.
kt2	We are able to proactively obtain new knowledge.
kt3	We adapt in utilizing information technology to search and obtain the required knowledge.
kt4	We are able to proactively share their knowledge.
kt5	We are already equipped with the ability to record and store knowledge (or techniques).
kt6	We are already equipped with the ability to filter knowledge.
kt7	We are already equipped with the ability to methodically classify and summarize knowledge.
kt8	We are already equipped with the ability to transfer organizational knowledge to individuals.
kt9	Our company is already equipped with the ability to retrieve knowledge from individuals into the organization.
kt10	We are already equipped with the ability to apply their knowledge to develop new products services.
kt11	We are already equipped with the ability to apply knowledge to improve work efficiency.
kt12	Our company is already equipped with the ability to apply knowledge to adjust strategic direction.
kt13	We are already equipped with the ability to use knowledge to solve problems.
kt14	Our company is already equipped with the ability to apply knowledge to face challenges from the competitors.

Table 5: Items of Knowledge Protection (KP) Measure

Observed Variables	Items
kp1	Our company has clearly point out which knowledge should be strictly protected.
kp2	We are already equipped with the ability to apply information technology to prevent any inappropriate knowledge accessing.
kp3	Our company has established an incentive scheme as an effective way to protect knowledge.
kp4	Our company has established an effective protective policies and procedures to prevent knowledge theft.
kp5	Our company has established effective protective policies and procedures to prevent knowledge from any inappropriate access.
kp6	Our company has established effective protective policies and procedures to prevent knowledge from any inappropriate usage.
kp7	We are already equipped with the concept of knowledge protection.

Table 6: Items of Financial Performance (FP) Measure

Observed Variables	Items
Fp1	Our sales amount is very high.
Fp2	Our profit rate is very high.
Fp3	Our revenue is very high.
Fp4	Our return on investment is very high.

Data Analysis

This section includes three parts. Firstly, the data were explored to check for missing data, outliers, and basic assumptions of normality by analyzing boxplots, stem leaf, skewness, and kurtosis. Also, the demographic data were described through the use of descriptive statistics. Secondly, measurement model analysis, the assessment of confirmatory factor analysis (CFA), must be confirmed for validity and reliability (Laksaniyanon, 2015; Schreiber et al., 2006) before structural equation modeling (SEM) is conducted. A factor loading of less than .60 should be excluded (Byrne, 2010). If its value is higher, that indicates less error (Fornell & Larcker, 1981; Hair et al., 2010). Lastly, structural equation modeling analysis was used to test the hypotheses. In this study, the fit criteria representing a good fit included six indices for the CFA and SEM models, as shown in the table below. The models were revised in response to the indications of not only the factor loading analyses but also the square multiple correlation considerations as well as Modification index (MI) suggestions (Grice, 2001; Laksaniyanon, 2015)

Table 7: Goodness of Fit

Indices	Criteria	Source
Ratio of chi-square (x^2)/(df)	<3.00	Kline (2005)
Comparative fit index (CFI)	>.90	Hu & Bentler (1999)
Normed-fit index (NFI)	>.90	Hu & Bentler (1999)
Goodness-of-fit (GFI)	>.90	Hu & Bentler (1999)
Root-mean-square error of approximation (RMSEA)	<.07	Hu & Bentler (1999)
Standardized root mean square residual (SRMR)	<.08	Hu & Bentler (1999)

Research Findings

Part I: Data Screening

The initial data from 117 respondents collected from 18 provinces (two provinces, Maha Sarakham and Bueng Kan, did not return any responses) were explored to detect missing values by using the Explore function in SPSS. The outliers of all quantitative observed variables, included Likert-scale variables were checked by using the Boxplot and stem-leaf tools in SPSS, and the normality assumption could be examined by skewness and kurtosis values as multivariate normality is difficult to test (Gold et al., 2001; Laksaniyanon, 2015). No missing values or extreme outliers were found. The skewness and kurtosis values did not violate the normality assumption as skewness values were not more/less than ±2 and kurtosis values were not more/less than ±7 (Laksaniyanon, 2015; Ryu, 2011)

Figure 2 presents boxplots showing the ages of businesses and their numbers of employees. Regarding the information from the 5 demographic data questions for the sample, the average age of the businesses was 22 years when rounded; the minimum was 12 years, and the maximum was 70 years. In fact, 95 percent of the sample were businesses with ages between 18 and 30 years. The number of employees showed a large range, between 2 and 163. The average number was 24 employees when rounded, and the highest frequency was 10 employees. Most of the entrepreneurs were ordinary persons, companies, and juristic ordinary persons, respectively. There was a small number of limited partnerships. More than half of the informants were managers or family members of the owners, and almost half were the owner, as shown in Table 8 below.

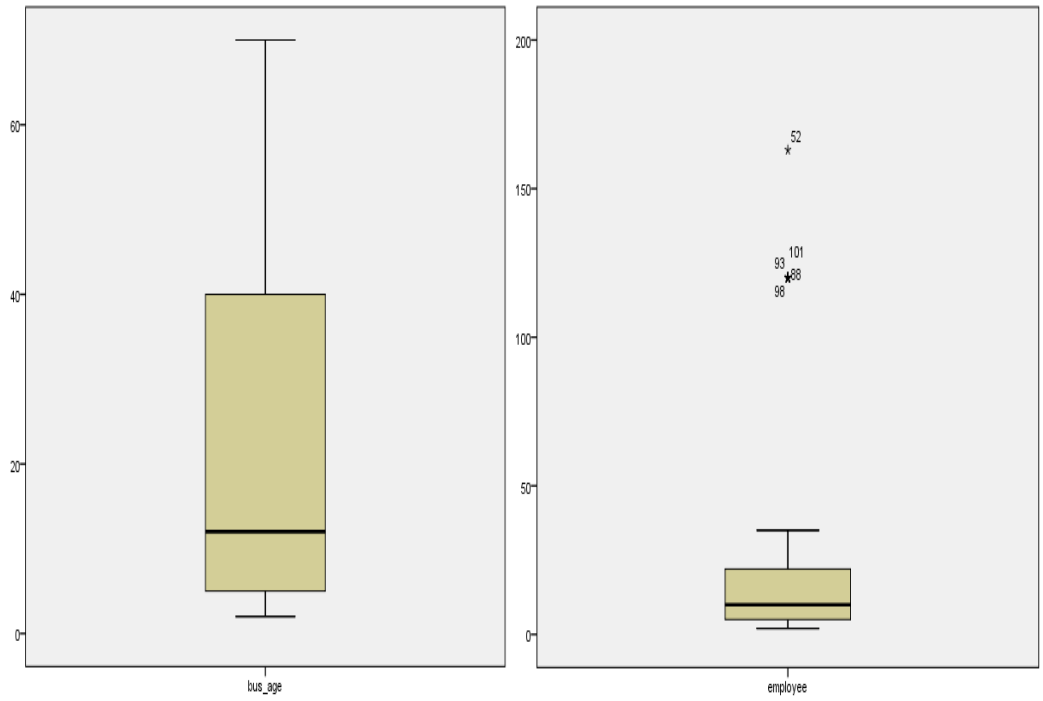

Figure 2: Boxplots of Age of Business and Number of Employees

Table 8: Demographic Data of The Sample

Demographic Data	Min	Max	Average	SD
Age of business	2	70	21.68	20.27
Number of employees	2	163	23.54	35.28
Type of Business			**Number**	**Percent**
Ordinary person			41	35.00
Juristic ordinary person			31	26.50
Ordinary partnership			0	0.00
Juristic ordinary partnership			0	0.00
Limited partnership			9	7.70
Company			36	30.80
Type of Informant			**Number**	**Percent**
Owner			45	38.50
Manager/Family member of the owner			56	47.90
Employee			16	13.70

Part II: CFA Models

Initial CFA Model. This model consisted of all 31 observed variables for three factors/constructions: Change capability (CC) = 10 items; Knowledge transfer (KT) = 14 items; and Knowledge protection (KP) = 7 items, as shown in the Figure 3 below.

The fit indices of the initial CFA model indicated a poor fit as shown in Table 10; therefore, the model was revised considering factor loadings and squared multiple correlations. Grice's (2010) approach suggested determining the problematic variables by examining the squared multiple correlation values. Factor loading lower than .60 (Hair et al., 2010) or squared multiple correlations lower than .499 were excluded because they were a result of problematic factor scores (Grice, 2001; Laksaniyanon, 2015). The results found nine problematic observed variables (cc1, cc2, cc3, cc7, kt4, kt5, kt8, kt11, and kp1), which were excluded, as shown in Table 9. In this step, the initial CFA model was revised and is presented as the revised CFA model.

The fit index values of the revised CFA model presented a better fit but could be increased following the suggestion of the Modification indices. AMOS suggested two correlations of error terms, e5-e6 and e22-e23, as they had a similarity of wordings. After those correlations were added, the fit indices were higher (Table 10). However, this resulted in kt9's squared multiple correlation being lower than .499 (.459), and kt9 was finally excluded from the CFA model.

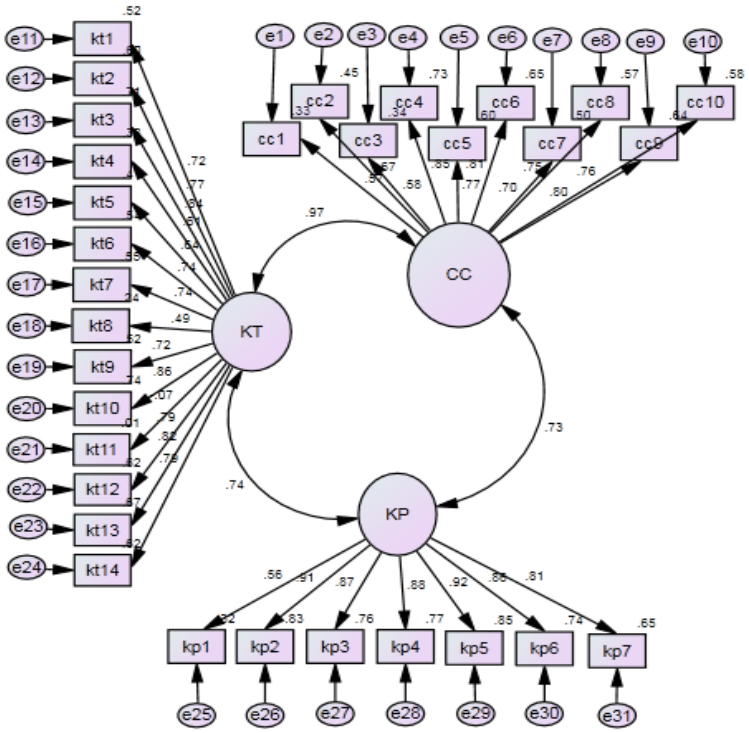

Figure 3: The Initial CFA Model

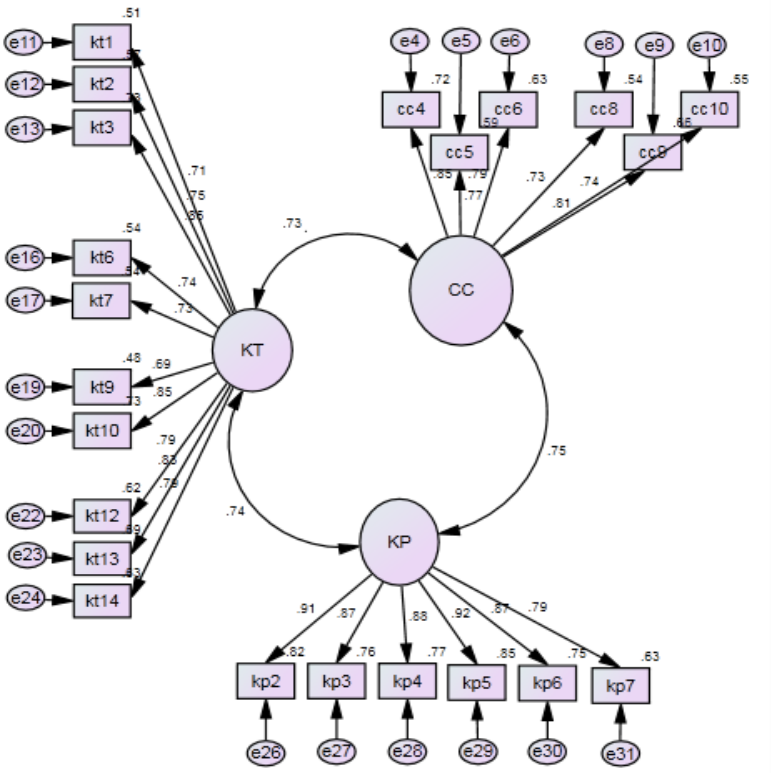

Figure 4: The Revised CFA Model

Table 9: Estimates of The Initial Measurement Model

Variables	Factor Loadings	Squared Multiple Correlations	Decision
Change Capability (CC)			
cc1	.573	.328	Excluded
cc2	.674	.454	Excluded
cc3	.580	.337	Excluded
cc4	.853	.728	-
cc5	.772	.596	-
cc6	.807	.651	-
cc7	.704	.496	Excluded
cc8	.753	.567	-
cc9	.800	.640	-
cc10	.760	.578	-
Knowledge Transfer (KT)			
kt1	.719	.517	-
kt2	.772	.596	-
kt3	.840	.706	-
kt4	.613	.376	Excluded
kt5	.643	.413	Excluded
kt6	.737	.544	-
kt7	.739	.649	-
kt8	.491	.241	Excluded
kt9	.723	.523	-
kt10	.861	.742	-
kt11	-.073	.005	Excluded
kt12	.786	.618	-
kt13	.822	.675	-
kt14	.786	.617	-
Knowledge Protection (KP)			
kp1	.562	.316	Excluded
kp2	.910	.828	-
kp3	.870	.757	-
kp4	.878	.771	-
kp5	.921	.848	-
kp6	.862	.743	-
kp7	.806	.649	-

Note: cc1-cc10, kt-kt14, and kp1-kp7 are all observed variable.

Table 10: Comparisons of Goodness of Fit Indices

Fit Index	Initial	Revised	Revised+MI	Revised+MI-kt9 (Final)
$(x^2)/(df)$	2.295	1.711	1.648	1.619
CFI	.545	.794	.814	.831
NFI	.415	.626	.643	.664
GFI	.470	.579	.599	.611
RMSEA	.201	.149	.142	.139
SRMR	.102	.083	.080	.079

Table 11: Reliability and Validity of The Final CFA Model

Variables	Factor Loadings	Squared Multiple Correlations	AVE	CR	Cronbach's Alpha
Change Capability (CC)			.60	.90	.90
cc4	.843	.711			
cc5	.730	.532			
cc6	.758	.575			
cc8	.752	.565			
cc9	.807	.651			
cc10	.759	.576			
Knowledge Transfer (KT)			.61	.93	.93
kt1	.729	.532			
kt2	.735	.540			
kt3	.867	.752			
kt6	.743	.552			
kt7	.737	.543			
kt10	.843	.710			
kt12	.760	.577			
kt13	.807	.651			
kt14	.788	.620			
Knowledge Protection (KP)			.78	.92	.95
kp2	.906	.820			
kp3	.872	.761			
kp4	.877	.770			
kp5	.924	.853			
kp6	.869	.755			
kp7	.794	.631			

Common method variance control. One statistics test that can check for the presence of Common method variance (CMV) and also control method bias is Harman's Single-factor Test (Podsakoff et al., 2003; Reio, 2010). This technique has been adopted in many studies and was applied for this study. This technique was carried out by analyzing factor analysis and fixed to be one factor. The value of 22%, lower than 25% (Tansky & Cohen, 2001) confirmed that the results in this study were not affected by a CMV bias.

Reliability and validity confirmation. The reliability and validity of the instrument (for all items) were confirmed by the CR, Cronbach's Alpha, and AVE of the three factors. All of CR and Cronbach's alpha values were higher than the acceptable value of .50 (Hair et al., 2010). Furthermore, the discriminant validity was demonstrated by the AVE value of each factor's being more than the value of the squared (inner-construct) correlations of all factors.

Table 12: Discriminant Validity of The Final CFA Model

Factor/Latent Variables	CC	KT	KP
Change capability (CC)	.60		
Knowledge transfer (KT)	.53	.61	
Knowledge protection (KP)	.52	.53	.78

Note: The diagonal elements are the average variance extracted. The off-diagonal elements are the squared correlations between factors.

Part III: SEM Models

The initial SEM model with the dependent variable (four items of the FP measure was averaged) is shown in Figure 5, and its fit indices are presented in Table 13. The AMOS outputs showed that the squared multiple correlation values of four observed variables (cc5 , cc6, kt2, and kt7) were lower than the criteria (.462, .493, .493, and .497, respectively) ; therefore, they were taken out of the model. The fit indices were thereby increased.

Table 13: Comparing The Fit Indices between The Initial and The Final SEM Models

Indices	SEM Models	
	Initial	Final/Selected
$(x^2)/(df)$	1.771	1.610
CFI	.777	.858
GFI	.584	.639
NFI	.613	.706
RMSEA	.155	.138
SRMR	.089	.084

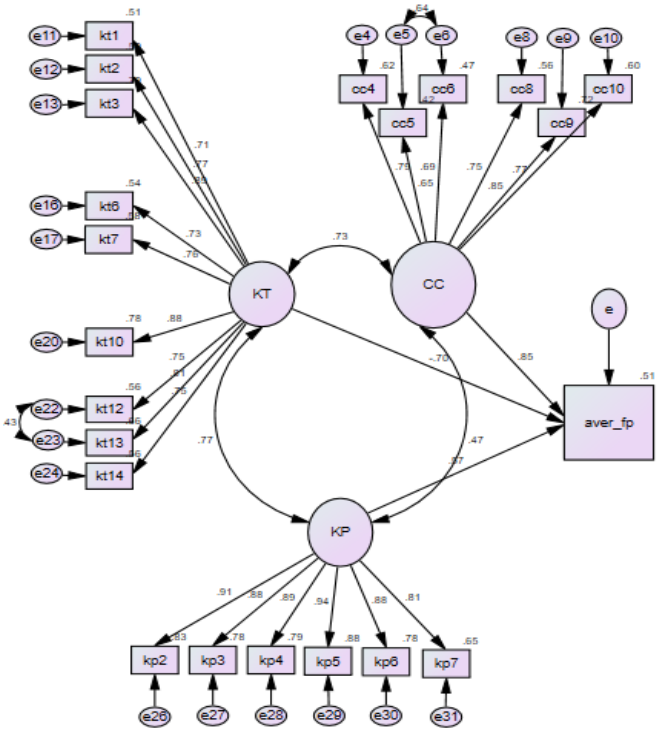

Figure 5: Initial SEM Model

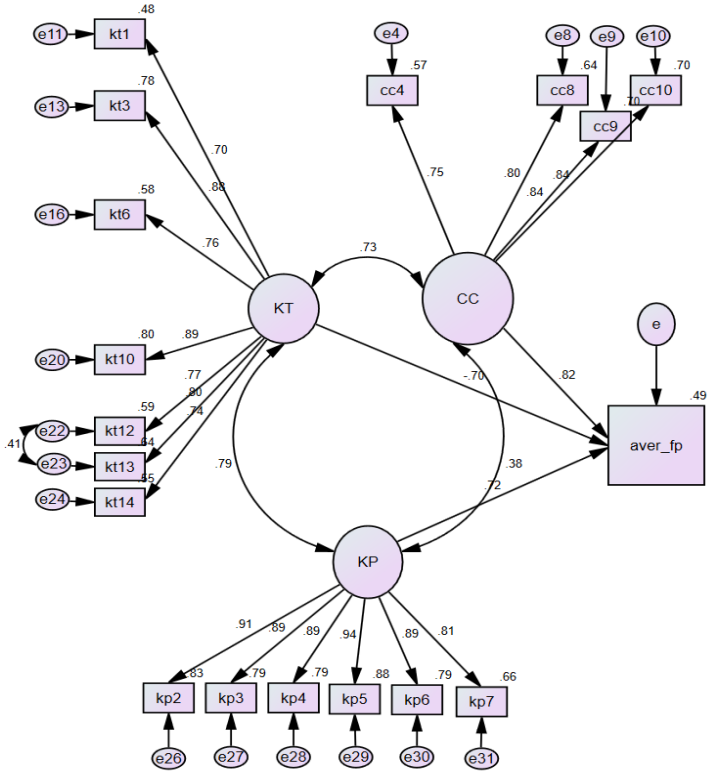

Figure 6: Final/Selected SEM Model

Table 14: Parameters in The Final SEM Model

Paths	Hypothesis	β	*p*-value	Sig
CC → FP	H1 (positive)	.815	.008**	Supported (positive)
KT → FP	H2 (positive)	-.705	.149	Not supported
KP → FP	H3 (positive)	.722	.034*	Supported (positive)
R^2 = .486				

Note: *=p < .05, **=p < .01, ***=p < .001

In addition, the optional open-ended questions in Section 3 were voluntarily answered by 1% of participants. All of them confirmed the importance of change capability and know-how protection. Most suggested that the way to protect know-how is to keep it as a trade secret from the employees or competitors while several recommended that firms equip a copyright approach.

Discussion

The selected final model (Revised+MI-kt9) needs to be discussed as it presents the highest fit when compared with the other models. However, the several fit values do not meet the criteria. The sample size in this research is quite small although it provided three efforts to collect data. Consequently, the limit of the sample size could lead to low goodness of fit for both the measurement and SEM models. In fact, the SEM analysis requires a large sample size. The acceptable sample size for SEM should be more than 200 (Kline, 2005) while this study obtained only 117 respondents.

The results of this study support Hypothesis 1 and Hypothesis 3. Both results were statistically significant, with *p*-values <.01 and <.05, respectively. The positive effect of Change capability was equal to .82, and the positive effect of Knowledge protection was equal to .72. Hypothesis 2 was not supported as its *p*-value was >.05 (=.149); therefore, its seven observed variables could not be interpreted.

H1: Change capability had a positive effect on financial performance; β = .82, p <.01
H3: Knowledge protection had a positive effect on financial performance; β = .72, p <.05

There are two possible reasons for rejecting the research hypothesis (H2). According to the results of the opened-end answers in Section 3, the firms agree that protecting know-how or trade secrets is so important and they should not transfer them to others outside. Also, they imply that know-how in meat processing and preservation firms is easy to be imitated; therefore, it should not transfer knowledge to employees or people outside. The findings are consistent with the study by Suwannaporn and Speece (2010), collecting data from 114 local Thai firms in food industry. They found that most of the firms had strong business secrecy and this led to limitations of collaborative development. Furthermore, as knowledge transfer is assumed that it generates employees' innovation skills or creativity (Tseng & Lee, 2014), some previous studies such as Soparnot (2011) found an indirect effect between employees' innovation skills/creativity and financial performance, not a direct effect.

Theoretical Implications

The concept of change capability. The results showed that for SMEs in the meat processing and preservation industry, Northeast Thailand, change capability had the largest positive impact on organizational financial performance. The effect of .82 means that the SMEs that were able to increase one unit of change capability gained .82 units of financial performance at a significance level of .01 The theoretical implication about the concept of change capability should be focused on the four related observed variables explained below:

cc4: Marketing and brand promotion capabilities (.75)
cc8: Integrating resources (.80)
cc9: Establishing effective communication channels for both customers and employees (.84)
cc10: Adapting and re-deploying, organizational resources, skills, and abilities (.84).

The items/observed variables of cc9 and cc10 played important roles and had the largest effects (.84), followed by cc8 (.80) and cc4 (.75). These variables are all related to the adapting of businesses' resources, including both personnel and product resources. The results suggest that SMEs in the meat processing and preservation industry should be concerned with adapting/changing/integrating their limited resources. This would lead to the establishment of their change capabilities. Similarly, the research by Tseng and Lee (2014) confirmed that the ability to integrate resources represents a true ability of a business. Further, the change capability is related to employees' skills. If the employees are skillful in producing all the types of products, an allocation change can easily be made. A previous study found that employees' having creative skills positively affected change capability (Soparnot, 2011). Moreover, the findings indicated that using effective communication channels with employees and clients, marketing, and brand promotion support financial performance as well.

The concept of knowledge protection. The factor of knowledge protection showed a positive effect on financial performance (.72) at a significant level of .05. The value of .72 means that if knowledge increases one unit, the financial performance will gain .72 units. Knowledge protection is comprised of 6 key observed variables listed below.

kp2: We are already equipped with the ability to apply information technology to prevent any inappropriate knowledge accessing (.91)
kp3: Our company has established an incentive scheme as an effective way to protect knowledge (.89)
kp4: Our company has established effective protective policies and procedures to prevent knowledge theft (.89)
kp5: Our company has established effective protective policies and procedures to protect knowledge from any inappropriate access (.94)
kp6: Our company has established effective protective policies and procedures to protect knowledge from any inappropriate usage (.89)
kp7: We are already equipped with the concept of knowledge protection (.81).

The item/observed variable of kp5 had the largest effect (.94). This finding implies that SMEs in the meat processing and preservation industry establish effective protective policies and procedures to protect knowledge from any inappropriate access. Also, the effect of kp2 (.91) suggests that SMEs in the meat processing and preservation industry must have the ability to apply information technology to protect knowledge from any inappropriate access. This is consistent with Gold et al. (2001), using technological infrastructure for protecting knowledge from being stolen. Protecting knowledge is key to achieving better financial performance. In this case, the knowledge is the recipes or food processing processes which are kept secret. If some knowledge must be transferred, it should be only basic knowledge. Similarly, previous studies have found that businesses' protecting knowledge known as "know-how" prevented their competitors from becoming competitive. This was one of the strategic advantages (Tseng & Lee, 2014). At present, some larger entrepreneurs have taken approaches to transferring knowledge such as E-learning; however, in the context of SMEs in the meat processing and preservation industry, the results indicated that transferring knowledge would not increase financial performance. On the other hand, if knowledge regarding recipes or meat processing processes is disclosed, the result may be the entries of additional competitors in this market. Then, firms' market shares would probably decrease, and finally financial performance also decline.

Practical/Managerial Implication

1) SMEs in the meat processing and preservation industry should change their resource allocation as the resources are limited. They should be used flexibly, rotated, increased, decreased, or subjected to a combination of changes. For example, the amount of pork may be adjusted for various types of products depending on customers' demands. In some situations, pork might be used to produce more white pork sausages (Moo-yoa) than red pork sausages (Kun-chiang) or Vietnamese grilled pork sausages (Nam-nueng). Other occasions may require the production of more Vietnamese grilled pork sausages (Nam-nueng) than white pork sausages.

2) SMEs in the meat processing and preservation industry should pursue insight into existing technologies related to their own businesses and apply them in their businesses as the result of kp2 effect (.91).

3) SMEs in the meat processing and preservation industry should learn more about the concept of knowledge protection. Although knowledge transfer may be necessary in workplaces, SMEs in the meat processing and preservation industry should balance transferring and protecting know-how. Transferring knowledge is required for increasing the levels of employees' skills and allowing for the creativity of employees, but it is also necessary to protect know-how from competitors.

Conclusion

The " Effect size" is the variance of the dependent variables explained by the independent variables. In this study, the effect size of R^2 was equal to .486, which means that 48.60% or about 49% of the variance of "Financial performance-FP" was explained by the two independent variables (the two factors of "Change capability-CC" and "Knowledge protection-KP). Both of them have positive effects on "Financial performance-FP"; however, the effect of "Change capability-CC" is larger. The "Change capability-CC" consists of four observed variables and "Knowledge protection-KP focuses on six observed variables. The rest of the variance may be explained by other variables which are not studied in this research.

Limitation and Future Research

1) Due to its focus on Thai SMEs in the meat processing and preservation industry located in Northeast Thailand, the findings of this study may not be generalizable to other industries or other regions.

2) Because of the use of questionnaires, the generalizability of the collected data may be limited due to self-reporting biases (McDonald, 2008; Paulhus & Vazire, 2007; Podsakoff & Organ, 1986).

3) This study employs the single method of a Likert-type scale for all of the factors; thus, the generalizability of the data may be limited by a CMV bias (Etchegaray & Fischer, 2010; Podsakoff et al., 2003; Podsakoff et al., 2012). Two approaches controlling for CMV bias are to strengthen the research design and to use statistical controls (Reio, 2010). The research design can be improved before the data are collected. The statistical approach is a way to check CMV (Reio, 2010; Williams et al., 2010).

4) Participation in the survey for this study was fully voluntary, and this may have created a response bias. This study provided anonymity and confidentiality for the participants in order to limit response bias (Reio, 2010).

5) The sample size in this research is quite small for the analyzing of SEM (Kline, 2005). This limitation can affect goodness of fit for both the measurement and SEM models.

Future research should retest the models in different industries or different groups of SMEs to further develop the theories and to seek the true effects of the observed variables. The results may be varied in different regions or industries. Also, the results of goodness of fit lower than the criteria suggest future research should provide enough of a sample size for types of statistics.

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