The Influence of Enterprise Risk Management on Firm Performance Measured by the Balanced Scorecard: Evidence from SMEs in Southern Thailand

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ABSTRACT

Even though enterprise risk management (ERM) has been extensively studied in recent years, the influence of ERM on firm performance in small and medium enterprises (SMEs) and its benefits to them has been little studied in emerging countries. Therefore, the main objectives of the study reported were to (1) investigate the extent and level of ERM among SMEs in southern Thailand, and (2) test for the influence of ERM on firm performance measured by the balanced scorecard (BSC) of SMEs. Using a mailed questionnaire, a sample of 385 (out of 394) SMEs from southern Thailand were analyzed. Descriptive analysis, a correlation matrix, and multiple regression were used to analyze the data obtained. From the results, the most common element of ERM employed was information and communication followed by control activities, monitoring, risk response, internal environment, event identification, objective setting, and risk assessment. Moreover, objective setting, risk assessment, control activities, and monitoring were found to significantly and positively influence SMEs' performance measured by BSC while event identification had a negative influence on SMEs' performance. The study demonstrates that SMEs in developing countries can benefit from the adoption of ERM in the same way as large firms in developed countries.

Keywords: Enterprise risk management, Firm performance, Balanced scorecard, SMEs, Southern Thailand

INTRODUCTION

In today's world, the growth of complex risks has increased stakeholders' demands for top management to effectively manage risks which may threaten a business with bankruptcy, financial losses or loss of reputation, competitive advantage, customers or employees. Risk management is therefore key to reducing business problems. Traditional risk management, which has been described as the silo or stovepipe approach to risk management, manages risks in isolation rather than taking a more holistic view encompassing all perspectives (Beasley et al., 2006; Quon et al., 2012). However, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) developed and launched the concept of Enterprise Risk Management (ERM) in 2004. This not only involves top management personnel, but also every employee as they seek to achieve the corporate mission and fulfill its visions.

ERM consists of eight elements: the internal environment, objective setting, event identification, risk assessment, risk response, control activity, information and communication, and monitoring. ERM is a risk management process which helps the business to: (1) identify its risk events and environment, (2) set its objectives, (3) assess and respond to risks, (4) control its activities, and (5) improve its communication and monitoring processes. The main goals of ERM are to: (1) forecast uncertain events and developments in its environment (Beasley et al., 2006), (2) reduce risks that can adversely affect performance (Gordon et al., 2009), and (3) maximize stakeholder values (Hoyt & Liebenberg, 2011; Quon et al., 2012).

The study reported focused on the ERM goal of reducing risks and improving firm performance. ERM has been found to be positively related to firm performance (Calandro & Lane, 2006; Gordon et al., 2009; Hoyt & Liebenberg, 2011; Callahan & Soileau, 2017; Florio & Leoni, 2017). However, previous studies have focused solely on financial performance (Bartram, 2000; Gordon et al., 2009; Hoyt & Liebenberg, 2011; Quon et al., 2012) rather than on both financial and non-financial performance (Calandro & Lane, 2006; Callahan & Soileau, 2017) because it is easier to compare financial performance calculated to satisfy shareholders', investors', and creditors' requirements. In addition, the reporting of financial performance is a mandatory practice required by law. However, financial performance alone can neither predict a firm's future performance, nor serve all its stakeholders' needs and does not address the issue of sustainable development.

A common performance measurement tools which can measure both financial and non-financial performance is the balanced scorecard (BSC), proposed by Kaplan and Norton (1996). BSC divides performance into four perspectives: financial, customer, internal process, and learning. BSC is a strategic management system that prioritizes implementation (Kaplan & Norton, 2001). The link between ERM and BSC was noted by Beasley et al. (2006) who suggested that "BSC can be leveraged to support the ERM view of risk management." Moreover, BSC can provide an excellent platform for firms to focus on risk management as a part of their performance evaluation because it adopts a firm-wide approach (Kaplan & Norton, 2001). However, although the relationship between ERM and BSC has been studied, the results have not been congruent (Bartram, 2000; Calandro & Lane, 2006; Wisutteewong & Rompho, 2012).

In Thailand, small and medium enterprises (SMEs) are as important for economic development as larger firms and there are more than 3 million SMEs in Thailand which contribute 37 percent of the total productivity in Thailand and 80 percent of total employment (Office of Small and Medium Enterprise Promotion, 2017). However, SMEs in Thailand are under great pressure from increasing competition fuelled by globalization, legislation, and the relaxing of trade barriers, as well as having to address increased market expansion due to emerging technology and innovation (Smit & Watkins, 2012). Risk management is also a considerable problem for Thai SMEs. For example, risk assessments are normally linked to specific disciplines which are not necessarily understood by the SME's owner and managers (Smit & Watkins, 2012). In addition, although the SME's owner and managers may be able to identify obvious risks, their depth of knowledge of risks which may potentially threaten their business may impede their control activities as they may fail to identify indirect risks, or to take account of inter-connections between risks (Watt, 2007).

Previous studies have found problems regarding the use of ERM in SMEs as well as in identifying the relationship between ERM and firm performance. Firstly, although there have been a number of studies of ERM in large or stock market listed companies (Yazid et al., 2012; Ghazali & Manab, 2013; Laisasikorn & Rompho, 2014; Florio & Leoni, 2017), little previous research has explored the implementation of ERM in SMEs (Aziz & Yazid, 2015; Brustbauer, 2016) especially in emerging economic nations (Yazid et al., 2012; Ghazali & Manab, 2013; Laisasikron & Rompho, 2014). All large or stock market listed companies adopt ERM

as a mandatory practice, while in SMEs, ERM is still based on voluntary practice. Secondly, even though there have been some previous studies investigating the relationship between ERM and firm performance (Bartram, 2000; Calandro & Lane, 2006; Wisutteewong & Rompho, 2012; Callahan & Soileau, 2017; Florio & Leoni, 2017), the findings have produced mixed results. On the one hand, a positive relationship between ERM and performance was found by Laisasikorn and Rompho who noted that ERM indicates transparency, accountability, and the reliability of firms' actions and activities indicating that firms use ERM as a management tool to respond to their stakeholders' demands; when those demands are met, the firm obtains benefits in terms of performance, reputation, value, and market price. On the other hand, some previous studies have found a negative relationship or no relationship between ERM and firm performance (McShane et al., 2011; Qoun et al., 2012; Anton, 2018) either because (1) firms incurred high costs implementing and managing ERM, or (2) firms were under pressure to adopt ERM to comply with the law, rather than adopting it to gain direct economic and non-economic benefits.

Therefore, based on the research problems identified above, this study aimed to (1) investigate the extent and level of ERM in SMEs in southern Thailand, and (2) test the influence of ERM on firm performance measured by the BSC of SMEs in southern Thailand, The study will contribute to knowledge in relation to ERM and SMEs by (1) shedding light on the benefit of ERM for SMEs in the same way as for large or listed companies, (2) building knowledge of ERM in emerging-economy nations to add to that relating to developed countries, (3) revealing the nature of the relationship between ERM and firm performance of SMEs in developing countries, and (4) demonstrating how stakeholder theory can be used to explain the relationship between ERM and firm performance.

The study adopted stakeholder theory as its theoretical framework and hypotheses were developed based on a review of previous related studies. The method adopted included identifying the population, selecting a sample, data collection, variable measurement, and data analysis is also described. The findings are presented and discussed, followed by conclusions and suggestions.

THEORETICAL PERSPECTIVE

Several theories have been advanced in the previous studies to explain the extent of use and level of ERM, and the relationship between ERM and firm performance including stakeholder theory (Liebenberg & Hoyt, 2003; Beasley et al., 2006), signaling theory (Certo, 2003), and agency theory (Lambert, 2001; Subramaniam, 2006) However, stakeholder theory was adopted in this study because (1) the growth of significant complex risks is increasing stakeholders' demands for top managements to effectively manage all risks which threaten firms, (2) one of the main objectives of ERM is maximizing stakeholder value (Hoyt & Liebenberg, 2011). Moreover, stakeholder theory can explain why firms take actions and perform activities to satisfy stakeholder demands since companies are a part of a broader social system, in which there are many and various groups of stakeholders. Each stakeholder group has a right to expect the performance of corporate actions and activities in which they have an interest, although the power of each group to compel companies to perform such actions and activities is different (Ratanajongkol et al., 2006). An organization's stakeholder groups can be defined as including its owners or shareholders, its creditors, suppliers, customers, workforce and, competitors, the government and government organizations, society and communities, charities, the environment and environmental lobbies, and future generations (Suttipun & Nuttaphon, 2014). When the demands of stakeholders are served, this will provide a positive return to companies in terms of greater reputation, higher performance, better corporate value, competitive advantage, and sustainability (Islam & Deegan, 2010).

In relation to the extent and level of ERM adopted, and the relationship between ERM and the performance of SMEs considered in this study, once firms try to perform actions and activities to satisfy the demands of their various groups of stakeholders, those stakeholders will contribute to the firms' higher performance in both financial and non-financial aspects (Suttipun & Nuttaphon, 2014). For example, ERM can help to increase shareholder and investor confidence by establishing a process which can stabilize financial and non-financial results, and contribute to stakeholders' understanding of firms' activities (Quon et al., 2012).

There have been several prior studies which have used stakeholder theory to explain the relationship between ERM and firm performance (Hillman & Klein, 2001; Harrington et al., 2002; Sobel & Reding, 2004; Gordon et al., 2009; Ellul & Yerramilli, 2013). For example,

Hillman and Klein noted that the expectations and demands of various stakeholders have to be fulfilled by firms if they want to improve their performance, reputation and value. Therefore, ERM is one of the business management tools which can address their stakeholders' needs. Gordon et al. stated that ERM plays a role in firms' ability to evaluate and control all risks, and to seek benefit and invest capital, with the main goal being to increase both short-term and long-term performance for their stakeholders. Thus, stakeholders are confident if firms adopt ERM in their businesses (Ellul & Yerramilli, 2013).

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

In this study firm risk is identified as an unsuccessful strategic implementation for both unintentional and/or intentional reasons (Caladro & Lane, 2006). For the management of common risk, COSO initially promulgated a management process for internal control consisting of five elements: control environment; risk assessment; control activity; information and communication; and monitoring. COSO then developed and revised that framework in 2004 from one of internal control to the ERM concept (COSO, 2004). ERM has been developed and improved from the original five elements of internal control to eight elements consisting of internal environment, objective setting, event identification, risk assessment, risk response, control activity, information and communication, and monitoring. The main goal of ERM is to forecast uncertain events and environments, and to reduce any risk that can adversely affect firm performance (Gordon et al., 2009). There are several ways in which ERM can create value by, for instance, improving the management of firm performance, improving risk-adjusted decision making, enhancing board supervision, increasing capital efficiency, and providing higher quality of strategic planning (The Milliman Risk Institute Survey, 2014). Therefore, firms which adopt ERM can benefit in terms of both financial and non-financial performance (Beasley et al., 2006).

Although there have been several prior studies which have investigated the relationship between ERM and firm performance (Bartram, 2000, Gordon et al., 2009, Hoyt & Liebenberg, 2011, Quon et al., 2012), most have focused only on financial performance as a proxy for firm performance. However, only a small number of studies

have used both financial and non-financial performance as indicators of firm performance (Calandro & Lane, 2006; Callahan & Soileau, 2017; Florio & Leoni, 2017) because is easier to compare financial performance calculated to meet the needs of the firm's main stakeholders such as shareholders, investors, and creditors. Moreover, the reporting of financial performance is mandatory under national law. But, there are some limitations of financial performance such as of its inability to make future predictions, or meet all stakeholders' needs, and it does not take sustainable development into consideration. However, some performance measurement tools can take into consideration both financial and non-financial performance. One of the most common performance measurement tools is BSC which was proposed by Kaplan and Norton (1996). BSC can deal with the shortcomings of traditional financial reporting because it covers not only aspects of financial performance such as return on capital, return on equity, and return on assets, but also includes aspects of non-financial performance. BSC reports financial and non-financial performance within four perspectives: financial, customer, internal process, and learning. BSC is used as a strategic management system that is focused on implementation (Kaplan & Norton, 2001). Nagumo and Donlon (2006) commented on the link between ERM and BSC suggesting that "...the BSC without risk management cannot be the best choice for enhancing and retaining stakeholder value in the change of *(sic)* business environment".

Of the previous studies, most (Calandro & Lane, 2006; Gordon et al., 2009; Hoyt & Liebenberg, 2011; Callahan & Soileau, 2017; Florio & Leoni, 2017) have found a positive relationship between ERM and firm performance. This is explicable because firms that adopt ERM as a management tool respond the stakeholder demands and demonstrate transparency, accountability, and the reliability of the firms' actions and activities with respect to their stakeholders (Beasley et al., 2006). Therefore, when stakeholders' demands are met, the firms will derive benefits from their stakeholders such as performance, reputation, value, and market price. Moreover, Calandro and Lane (2006) suggested that the positive relationship between risk management and firm performance reflects the effective implementation of a strategy designed to create firm value and sustainability.

On the other hand, some prior studies have found a negative relationship between ERM and firm performance (Allayannis et al., 2012; Belghitar et al., 2013). This may be because firms may incur significant costs in adopting and managing ERM, which may reduce their performance. However, Quon et al. (2012) and Anton (2018) were unable to find any relationship between ERM and firm performance mainly because the personnel and departments which manage risk are different from those which measure firm performance (Calandro & Lane, 2006).

Nevertheless, despite the previous mixed results, this study hypothesized that there is a positive relationship between ERM and firm performance. Moreover, the study divided ERM into the eight elements proposed by COSO (2004) which are internal environment, objective setting, event identification, risk assessment, risk response, control activity, information and communication, and monitoring. Thus, there were eight independent variables corresponding to the eight elements of ERM, and a single dependent variable, firm performance represented by BSC. The eight hypotheses thus derived are indicated below:

H1: Internal environment has a positive influence on firm performance.

H2: Objective setting has a positive influence on firm performance.

H3: Event identification has a positive influence on firm performance.

H4: Risk assessment has a positive influence on firm performance.

H5: Risk response has a positive influence on firm performance.

H6: Control activity has a positive influence on firm performance.

H7: Information and communication has a positive influence on firm performance.

H8: Monitoring has a positive influence on firm performance.

METHODOLOGY

To test for the influence of ERM on firm performance measured by BSC, SMEs in southern Thailand were adopted as the population in the study, and 394 SMEs out of just over 20,000 SMEs were selected as the sample using simple random sampling with allowable error at 0.05 level (Yamane, 1973). A mailed questionnaire was used to collect data from each SME in the sample. The questionnaire was adapted from previous related studies (Yazid et al., 2012; Ghazali & Manab, 2013; Laisasikron & Rompho, 2014). The questionnaire was separated into

three sections as follows: (1) general information relating to the SMEs, (2) the extent and level of their ERM, and (3) the extent and level of their performance measured by BSC. In the first section, the general information collected relating to the SMEs consisted of the firm's size (measured by market capitalization), the firm's age (measured from the date of the SMEs registration), and the firm's type (measured by dummy variables as 1 = manufacturing firm, and 0 = others). The items in the second and third sections were measured by items to which the firms responded based on 5-point Likert scales in which 5 represented the highest level, 4, a high level, 3, a moderate level, 2, a low level, and 1 the lowest level. The rating scale in this study was adapted from prior related studies (Srisa-sard, 2010; Yazid et al., 2012; Ghazali & Manab, 2013). The answers to each item were averaged and the mean values for each item were expressed based on five levels: 4.51-5.00 as the highest level, 3.51-4.50 as a high level, 2.51-3.50 as a moderate level, 1.51-250 as a low level, and 1.00-1.50 as the lowest level.

Three groups of variables were used in this study. The dependent variable was the firm performance as represented by its BSC (Beasley et al., 2006; Calandro & Lane, 2006) and corporate characteristics consisting of firm age and firm size were used as control variables. The independent variables were, as indicated above, the eight elements of ERM consisting of internal environment, objective setting, event identification, risk assessment, risk response, control activities, information and communication, and monitoring (COSO, 2004; Beasley et al., 2008; Gates et al., 2012; Florio & Leoni, 2017). The components of each ERM element are as follows: (1) internal environment consists of risk tolerance, and risk philosophy in the working environment; (2) objective setting is the objectives that are related to and consistent with mission and risk tolerance; (3) event identification represents identifying events that may both negatively and positively impact corporate objectives including corporate environmental considerations; (4) risk assessment is the consideration of the effect of risk including the possibility of and the level of risk; (5) risk response is the choice to avoid, accept, reduce, or divide risk by considering the costs and benefits; (6) control activities consist of the policy setting, working priorities and planning of how to directly respond to risk; (7) information and communication relates to the use of IT for the identification and recording of risk and communication within the organization; and (8) monitoring includes ongoing supervision and development and implementation of ERM (Beasley et al., 2008; Gates et al., 2012). The details of the measurement of all the variables used in this study are shown in Table 1.

Table 1. Variable measurement.

	Independent variables	Initial	Proxy
No.	Elements of ERM		
1	Internal environment	INTER	5-point Likert scale
2	Objective setting	OBSET	5-point Likert scale
3	Event identification	EVENT	5-point Likert scale
4	Risk assessment	RISKA	5-point Likert scale
5	Risk response	RISKR	5-point Likert scale
6	Control activities	CONAC	5-point Likert scale
7	Information and communication	INFOR	5-point Likert scale
8	Monitoring	MONIT	5-point Likert scale
	Dependent variable		
1	Performance by balanced scorecard	BSC	5-point Likert scale
	Control variables		
1	Firm age	AGE	Age (years)
2	Firm size	SIZE	Total assets

The draft questionnaire was sent to three experts who considered its content validity and credibility. The questionnaire's reliability was also measured based on Cronbach's (1951) coefficient alpha which was found to be satisfactory at 0.788. In addition, the validity and reliability test results are listed in Table 2.

Table 2. Validity and reliability test.

No.	Variable	Item	Pearson Correlation-Validity		Reliability
			Pearson (sig.)	Validity	
1	Internal environment	INTER-A	.927**	Valid	.882
		INTER-B	.880**	Valid	
		INTER-C	.909**	Valid	
2	Objective setting	OBSET-A	.921**	Valid	.883
		OBSET-B	.923**	Valid	
		OBSET-C	.866**	Valid	
3	Event identification	EVENT-A	.835**	Valid	.620
		EVENT-B	.868**	Valid	
		EVENT-C	.823**	Valid	

Table 2. Continued.

No.	Variable	Item	Pearson Correlation-Validity		Reliability
			Pearson (sig.)	Validity	
4	Risk assessment	RISKA-A	.827**	Valid	.649
		RISKA-B	.898**	Valid	
		RISKA-C	.854**	Valid	
5	Risk response	RISKR-A	.881**	Valid	.830
		RISKR-B	.912**	Valid	
		RISKR-C	.896**	Valid	
6	Control activities	CONAC-A	.892**	Valid	.772
		CONAC-B	.915**	Valid	
		CONAC-C	.868**	Valid	
7	Information and communication	INFOR-A	.909**	Valid	.751
		INFOR-B	.883**	Valid	
		INFOR-C	.896**	Valid	
8	Monitoring	MONIT-A	.919**	Valid	.763
		MONIT-B	.838**	Valid	
		MONIT-C	.880**	Valid	

Note: ** significant at $p < 0.01$, and * significant at $p < 0.05$.

Descriptive analysis, a correlation matrix, and multiple regression were used to analyze the data in this study. Descriptive analysis by mean and SD was used to indicate the extent and level of each element of ERM, and firm performance was measured by the BSC of each SME in the sample. A correlation matrix was used to test for multicollinearity between the variables used in this study. Multiple regression was used to test for the influence of ERM on firm performance measured by the BSC of the SMEs in the sample. The regression equation was as follows:

$$BSC = a + b_1 INTER + b_2 OBSET + b_3 EVENT + b_4 RISKA + b_5 RISKR + b_6 CONAC + b_7 INFOR + b_8 MONIT + b_9 AGE + b_{10} SIZE + error$$

In addition, the study also employed a robustness test using each perspective of firm performance based on the four elements of BSC consisting of the financial, customer, internal process, and learning perspectives.

RESULTS

From 394 SMEs selected as the sample and approached, 385 of them have completed and returned the questionnaires, representing a response rate of 97.72 percent. The empirical results of each study's objectives are presented as below.

The extent and level of ERM in SMEs in southern Thailand

The descriptive analysis indicating the extent and level of ERM among the SMEs from southern Thailand sampled is shown in Table 3. The results show that out of the eight elements of ERM, information and communication (Mean = 3.85, SD = 0.63) was the most commonly practiced element of ERM, followed by control activities (Mean = 3.69, SD = 0.66), monitoring (Mean = 3.65, SD = 0.69), risk response (Mean = 3.63, SD = 0.68), internal environment (Mean = 3.60, SD = 0.62), event identification (Mean = 3.56, SD = 0.68), objective setting (Mean = 3.53, SD = 0.66), and risk assessment (Mean = 3.41, SD = 0.73). For the firm performance measured by BSC, the customer perspective (Mean = 3.58, SD = 0.67) was found to be the highest performance measurement followed by internal process (Mean = 3.51, SD = 0.66), learning (Mean = 3.48, SD = 0.68), with the financial perspective the lowest (Mean = 3.30, SD = 0.66). The average of all the perspectives of the BSC means was 3.47 (SD = 0.58).

Table 3. Descriptive analysis.

ERM elements	Mean	SD	Max/Min	Ranking
1. Internal environment	3.60	0.62	5.00/1.00	5
2. Objective setting	3.53	0.66	5.00/1.00	7
3. Event identification	3.56	0.68	5.00/1.00	6
4. Risk assessment	3.41	0.73	5.00/1.00	8
5. Risk response	3.63	0.66	5.00/1.00	4
6. Control activities	3.69	0.66	5.00/1.00	2
7. Information and communication	3.85	0.63	5.00/1.00	1
8. Monitoring	3.65	0.69	5.00/1.00	3
Average ERM	3.62	0.67	5.00/1.00	
BSC perspectives				
1. Financial	3.30	0.66	4.75/1.00	4
2. Customer	3.58	0.67	5.00/1.00	1
3. Internal process	3.51	0.66	5.00/1.00	2
4. Learning	3.48	0.68	5.00/1.00	3
Average BSC	3.47	0.58	4.81/1.00	

The influence of ERM on firm performance measured by the BSC of SMEs in southern Thailand

The correlation matrix used to test for multicollinearity between the nine variables used in this study, consisting of one dependent variable, and eight independent variables is shown as in Table 4. Based on a fixed effects model for panel testing, the variance inflation factor (VIF) of the correlation matrix between the variables was 1.835, which indicates that there was no multicollinearity which would be indicated by a VIF exceeding 10. The low coefficients in the correlation matrix between the variables used in the study indicated that multicollinearity was unlikely to be a problem in the multiple regression. Based on the correlation coefficients between the nine variables used in this study, there was a positively significant correlation between BSC and each element of enterprise risk management (INTER, OBSET, EVENT, RISKA, RISKR, CONAC, INFOR, and MONIT) at the 0.01 level.

Table 4. Correlation matrix.

Variables	1	2	3	4	5	6	7	8
1.BSC	1							
2.INTER	.744**	1						
3.OBSET	.669**	.744**	1					
4.EVENT	.649**	.724**	.744**	1				
5.RISKA	.700**	.652**	.656**	.717**	1			
6.RISKR	.655**	.616**	.588**	.663**	.738**	1		
7.CONAC	.741**	.679**	.691**	.740**	.697**	.742**	1	
8.INFOR	.682**	.630**	.634**	.642**	.615**	.716**	.747**	1
9.MONIT	.748**	.696**	.703**	.718**	.708**	.713**	.746**	.749**

Note: ** significant at $p < 0.01$, and * significant at $p < 0.05$.

Table 5 shows the outcome of the multiple regression of the elements of ERM on firm performance measured by BSC (the "BSC Model") and their influence on the four perspectives of BSC consisting of financial, customer, internal process, and learning, using the robustness tests. The results from the BSC model indicate that OBSET, RISKA, CONAC, and MONIT had a significant positive influence on BSC at or above the 0.05 level. However, firm performance measured by BSC was negatively and significantly affected by EVENT at the 0.05 level. Furthermore, the study did not find any influence of INTER, RISKR, and INFOR on firm performance as measured by BSC at the 0.05 level.

To summarize, from eight hypotheses tested, four, H2, H4, H6, and H8, were accepted while H1, H3, H5, and H7 were not accepted based on the BSC model. For the control variables, including firm age and size, analyzed in the BSC model, the results showed that although there was a significant negative relationship between AGE and BSC at the 0.01 level, no significant influence was found between SIZE and BSC at the 0.05 level.

In addition to the BSC model, the study conducted the robustness tests, as in Table 5, by separately looking at each perspective of BSC consisting of the financial, customer, internal process, and learning perspectives. The findings indicated the significant positive influence of RISKA, CONAC, and MONIT on all four perspectives of BSC at the 0.01 level, while there was no significant influence found for RISKR and INFOR on any of the BSC perspectives at the 0.05 level.

Table 5. Multiple regression and robustness tests.

Variable	BSC model	Robustness tests			
		Financial model	Customer model	Internal model	Learning model
	t (sig.)	t (sig.)	t (sig.)	t (sig.)	t (sig.)
-Constant-	2.62**	4.09**	3.08**	3.00**	2.70**
INTER (H1)	0.93	1.64	0.64	0.15	2.19*
OBSET (H2)	2.10*	-0.34	1.07	2.98**	1.83
EVENT (H3)	-1.99*	-0.29	-2.22*	-2.27*	-0.69
RISKA (H4)	2.87**	2.50**	2.73**	3.69**	2.38**
RISKR (H5)	-0.62	0.40	0.37	-0.67	-1.17
CONAC (H6)	3.64**	2.47**	3.04**	4.42**	2.34**
INFOR (H7)	0.44	-0.43	1.50	-0.09	1.16
MONIT (H8)	4.88**	3.23**	4.21**	3.97**	4.84**
AGE	-1.95**	-1.67*	-1.99**	-2.68**	-2.21**
SIZE	1.31	2.38**	0.58	0.52	2.67**
R Square	0.71	0.41	0.58	0.62	0.59
Adj. R Square	0.69	0.39	0.57	0.61	0.58
F-value (sig.)	55.86**	32.72**	45.49**	53.77**	48.14**

Note: ** significant at $p < 0.01$ and * significant at $p < 0.05$.

DISCUSSION

The study set out to investigate two research questions: what is the extent and level of ERM among SMEs in Southern Thailand?, and does ERM influence firm performance as measured by the BSCs those SMEs? This study found that the most commonly applied element of ERM was information and communication, followed by control activities, monitoring, risk response, internal environment, event identification, objective setting, and risk assessment. Moreover, objective setting, risk assessment, control activities, and monitoring had a significant positive influence on the SMEs' performance as measured by BSC, while event identification had a negative influence on the SMEs' performance. The positive influence found in this study was consistent with prior studies, such as those of Calandro and Lane (2006), Gordon et al. (2009), Florio and Leoni (2017), and Callahan and Soileau (2017). This is because firms use ERM as a management tool to respond to stakeholder demands and the adoption of ERM indicates transparency and accountability, and the reliability of firms' actions and activities to their stakeholders (Liebenberg & Hoyt, 2003; Beasley et al., 2006). Therefore, when stakeholder demands are met, firms will obtain benefits from their stakeholders such as performance, reputation, value, and market price. Moreover, Calandro and Lane (2006) suggested that the positive relationship between risk management and firm performance should ensure the effective implementation of a strategy designed to create firm performance, value, and sustainability. In terms of the negative influence from event identification element on performance as measured by BSC, it could be due to firms' disclosure of sensitive information to markets, and hence to their competitors (Calandro & Lane, 2006). Such sensitive risk management information mainly affects the customer and internal process perspectives of BSC. Moreover, when a firm provides higher levels of event identification, its stakeholders, such as shareholders, investors, and creditors may start to panic and cast doubt on firm's decision making.

However, there was no significant relationship found between internal environment, risk response, information and communication, and the level of firm performance as measured by BSC. The internal environment, which sets the tone and attitude towards risk manage-ment, of SMEs with a much less complicated organizational structure and hierarchy may not have an impact on the performance. Moreover, with the fact that the sample used in this study comprised of SMEs in

which the owners and top management are often the same person or are members of the same family, management's selection of actions to respond to risks maybe indifferent and do not have an effect on the performance. Also, these SMEs may not need complex IT as a tool to communicate, and IT then may not play a major roll for communication within smaller companies.

The negative relationship between firm age, one of the control variables used in the study, and the performance measured by BSC was because new companies in Thailand tend to focus on both financial and non-financial performance as opposed to longer-established ones which still pay more attention to financial performance than non-financial performance. New firms probably pay attention of both financial and non-financial performance in order to promote sustainable development rather than purely to maximize profit, which was the traditional goal of firms established in the past.

The findings suggested, by performing the robustness tests to specifically analyze the influence of each ERM element on each individual perspective of the BSC, the significant influence on all four perspectives from three ERM elements including risk assessment, control activities and monitoring. The results were consistent with the prior study of Beasley et al. (2006) who also found a positive influence of ERM on each perspective of BSC. These findings are as would be anticipated, since, for example, in terms of the learning perspective, ERM can improve the recognition of risk by a firm's employees. Under the internal process perspective, goals related to risk aversion or risk tolerance and performance metrics can be applied to reduce the impact of threats to business processes. For the customer and financial perspectives, ERM can achieve better reputation, customer satisfaction, and market share, and under financial performance ERM may be taken into consideration when conducting cost/revenue analyses.

This study provides several contributions and implications. In terms of its theoretical contribution, the study's results demonstrate that stakeholder theory can be used to explain the influence of ERM on the SMEs performance as measured by BSC. ERM can help to increase shareholder and investor confidence by establishing a process which helps to stabilize both financial and non-financial results, and helps to improve stakeholders' understanding of the firm's affairs. Moreover, the findings of this study contribute information concerning the adoption of ERM in emerging-economy nations about which

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the literature has previously been generally lacking. In terms of its practical contributions, the study provides evidence of the positive influence of ERM especially objective setting, risk assessment, control activities, and monitoring on firm performance measured by BSC in under-investigated contexts such as Thailand. Therefore, in view of the positive influence of ERM on firm performance, firms' owners and top-managements can consider implementing ERM systems to better manage risk within their business contexts. The positive relationship between ERM and SMEs' performance measured by BSC will benefit not only the firms' owners and top managements, but will also contribute to firm's stakeholders. For example, investors can also have important information from Just-in-time implementation for decision making because this bundle list of lean manufacturing practices already indicate how it can predict the higher financial performance. Finally, regulators and policy makers will implicate the advantage of lean manufacturing practices in Thailand as well as developed countries.

There were some limitations to the study. First, the sample used in this study consisted of SMEs in southern Thailand and the adoption of ERM may differ in other parts of the country. Therefore, the extent and level of ERM may not be representative of the whole of Thailand. Secondly, the questionnaire also represents a limitation to this study because it did not establish details of why the SMEs approached adopted ERM. Finally, there may be other variables affecting the relationship between ERM and SMEs' performance such as corporate governance, and other corporate characteristics which were not investigated in this study. Therefore, in a future study, a questionnaire including open-ended questions should be used or representatives of the firms included in the sample should be interviewed to better understand the practice of ERM among SMEs in Thailand. Moreover, other variables should also be considered in future studies.

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