Integrated Performance Measurement System Strategy and Firm Success: An Empirical Investigation of Thai-Listed Firms

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Abstract

The key issue in this research is "How does integrated performance measurement system strategy (IPMSS) affect firm success?" The key research objective was to investigate the effects of integrated performance measurement system strategy on firm success. IPMSS has been recognized as the firm's key capability to measure and track overall performance, input outcomes to control operational process, and compare the performance of other competitors in the same industry, departments, teams, and individuals within the firm. Likewise, it directly influences organizational competitiveness and firm success. IPMSS consists of five dimensions: market value-based appraisal orientation, accounting-oriented measurement capability, indicator-based assessment focus, value-added evaluation emphasis, and revenue-oriented criterion implementation. The data was collected from a survey of 153 Thai-listed firms of which the accounting executive is the key informant of each firm. The results of regression analysis indicated that integrated performance measurement system strategy regarding market value-based appraisal orientation, indicator-based assessment focus, and revenue-oriented criterion implementation positively influence organizational competitiveness. In addition, organizational competitiveness has a strong and positive effect on firm success. Finally, theoretical and managerial contributions, conclusion, and suggestions for future research are discussed.

Keywords: Integrated Performance Measurement System Strategy, Organizational Competitiveness, Firm Success

1. Introduction

The complexity of the global economic environments and the continuously changed manufacturing philosophies, many manufacturing firms, international companies, and others receive both positive and negative effects unavoidably (Levius, 2016; Marc et al. ,2010). Under these circumstances, firms and their managers need to seek new strategies and methods for creating and improving success and competitive

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advantage (Kumar & Shafabi, 2011). The majority of successful firms uses the diverse techniques and methods for improving their business management, such as new strategies, human resource management techniques, management accounting practice, and performance measurement system (Aracıoğlu et al., 2013). Especially, one of the crucial requirements is the firm's ability to follow-up their performance through selecting to use performance measures that fit with the style of operation and management of themselves.

Integrated performance measurement system strategy (IPMSS) is the firm's ability to apply the set of the diverse measures for quantifying the efficiency and effectiveness of the firm's actions (Gladen, 2011; Neely et al., 2005; Sandt, 2005). In detail, the set of diverse metrics or measures should include financial and non-financial measures, long and short-term measures, internal and external measures together in order to support the right decision-making processes through gathering, processing, analyzing, quantifying information about the firm's performances, and presenting performance outcomes in the form of a brief overview (Bisbe & Malagueno, 2012; Gimbert et al., 2010). IPMSS has an important role and is brought to use for controlling operations, measuring and comparing the performance of other businesses in the same industry, departments, teams, and individuals within the firm (Bhatti et al., 2014). In addition, it can provide the information to track the progress of plans by comparing actual performance against organizational strategic goals (Simons, 2000). When IPMSS is the best, it will improve the efficiency and effectiveness of allocating responsibilities, setting targets, and rewarding outcomes (Merchant & Van der Stede, 2007).

In the accounting management field, the evolution of performance measurement system is divided into two phases (Gomes et al., 2004; Khan & Shah, 2011) as follows: in the first phase (from the late 1880s to the early 1980s) many organizations focused on cost accounting orientation and internal control systems, while key techniques which were often used by firms as the cost variance analysis, standard costing, and flexible budgets (Bourne et al., 2003). During the 1940s to 1950s, the productivity concepts emerged in manufacturing organizations (i.e. quality control, variance reduction, and standardization) to lead to more emphasis on financial measures such as sales, profit, return on investment and other financial ratios (Bititci et al., 2009). Then, financial measures became the important part of performance measurement and were brought to use for developing cost and managing overall control systems. After 1980, due to the changes in the competitive business environment and technologies, the critical perspective of firms had shifted from productivity to quality, time, cost, flexibility and customer satisfaction instead. Later, the emergence of balanced performance measurement frameworks which provide the holistic view of the organizational performance had started on the second phase of evolution (Kurien & Qureshi, 2011). Non-financial measures began to be necessary for monitoring performance and motivating the work of employees because it could provide outcomes to be timely, measurable, precise, and meaningful, and help to adjust operating correspond to the aim and the strategy that the firm had previously set (Medori & Steeple, 2000). Since 1990, the integrated approach has

been continually designed and developed by academics to facilitate firms to lead these frameworks to apply for creating and developing their integrated performance measurement system strategy to be appropriate for the context and style of each firm (Khan & Shah, 2011).

As for traditional problematic issues, the majority of managers often rely on financial measures to support the decision-making and the performance evaluation of the organizations more than other measures (Anthony & Govindarajan, 2001; Berry et al., 2005). On the other hand, traditional performance measurement system which just focuses on financial measures only, has been criticized by users and academics for several reasons as follows: 1) it presents a one-sided view of operational activities; 2) it lacks strategic focus and fails to provide information that has quality, flexibility, and responsiveness; 3) it encourages managers to reduce the variances from the standard rather than seek to continually improve; 4) it fails to offer information on what customers want and how the firm' s competitors are performing, and 5) it emphasizes measuring the historical information (Johnson & Kaplan, 1987). Moreover, the well-designed and developed integrated performance measurement system strategy does not only depend on the organization's strategy but also should be created from the stakeholder's needs and satisfaction perspective (Neely et al., 2001). Moreover, the limitation of Balanced Scorecard has been criticized that it lacks other main perspectives, such as market, employees, suppliers, community, and stakeholders (Flak & Dertz, 2004). To meet firm success under the dynamic business environment, the firm's performance measurement system needs to combine financial and non-financial measures together to capture a complete picture of organizational performance. Tangen (2004) suggests that the contemporary IPMSS should be derived from a firm's strategic objectives, have an appropriate balance which should not be seen solely from a financial perspective and should have a limited number of measures to reduce the risk of information overload.

The previous literature reviews on IPMSS find that it establishes and improves firm success, firm performance and a competitive advantage (Bisbe & Malaguê̂o, 2012; Bhatti et al., 2014; Lee & Yang, 2011). IPMSS can increase competitiveness and the motivation of employees (Tätilä et al., 2014). However, prior empirical studies just examined the impact of the performance measurement system on firm outcome, but only little research focuses on the strategic capability of an integrated approach, and lack the investigation of the new dimensions of IPMSS. Moreover, it still lacks the linkage of the relationship between the ability of firms to implement IPMSS, competitiveness, and firm success. As a result, this research aims to investigate the effects of integrated performance measurement system strategy (IPMSS) on firm success. IPMSS has five dimensions which are adopted from Kasie and Belay (2013) as follows: 1) market value-based appraisal orientation; 2) accounting-oriented measurement capability; 3) indicator-based assessment focus; 4) value-added evaluation emphasis; and 5) revenue-oriented criterion implementation. It is the incorporation of main performance measurement perspectives, both from the four perspectives of Kaplan and Norton (1992) in Balanced

Scorecard; and the perspectives of social, employee, market, and supplier partnership in Performance Prism (Neely et al., 2001) in order to solve the defects and weaknesses of the traditional performance measurement. Besides, this research has added the perspective of using the set of diverse measures that combine financial and non-financial measures, long and short-term measures, and internal and external measures (Ittner et al., 2003).

Thai-listed firms are chosen as the population because: 1) these firms represent a large firm which has sufficient resources and higher capacities to use a variety of measures to track their performance. 2) They focus on using data from their performance measurement system to increase the level of the firm's higher capability and to emphasize the diverse methods for measuring their overall performance. 3) The business operational nature of Thai-listed firms has high competitive and emphasis to apply new strategies for creating the success in the long-term. The sample is selected from the database of the Stock Exchange of Thailand, amounts to 696 firms on its website is http://www.set.or.th/, as of April 11, 2016. The results are collected and analyzed from 153 Thai-listed firms of which their accounting executive is the key informant.

This research is organized into five sections as follows: the first section provides an overview of the issues and the importance of integrated performance measurement system strategy, the motivation to study for leading to the research objectives. The second section presents the literature review and hypotheses development. The third section presents research methods. The fourth section presents results and discussion. Lastly, the conclusion is presented.

2. Literature review and hypotheses development

In this research, integrated performance measurement system strategy is the main determinant of the firms' success through organizational competitiveness. The conceptual model is presented in Figure 1.

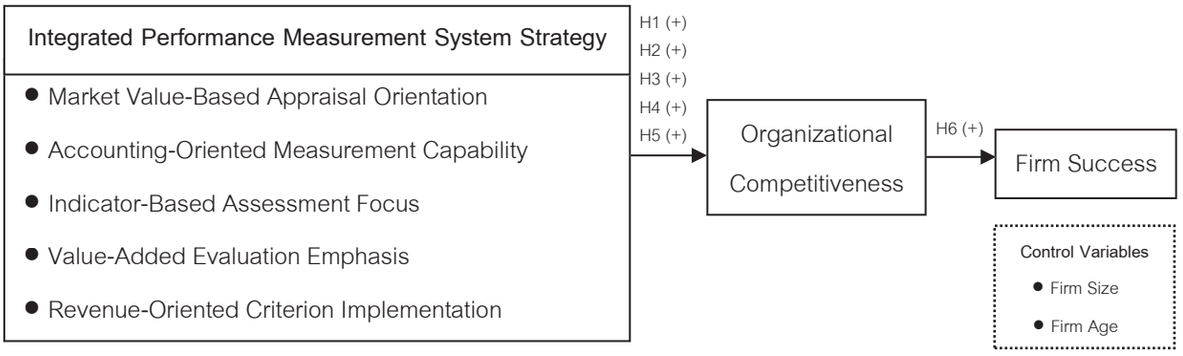

Figure 1: A Conceptual model of the relationships between integrated performance measurement system strategy and firm success

2.1 Integrated performance measurement system strategy

The term of “integrated” refers to a multi-dimensional process, or methods to interact together, and collaborate, that is unique, important and useful (Rouzies et al., 2005). Moreover, performance measurement system refers to the set of various metrics used to quantify both the efficiency and effectiveness of the organization’s actions (Neely et al., 2005). Thus, “integrated performance measurement system strategy (IPMSS)” in this research refers to the firm's capabilities to apply the diverse methods and metrics for tracking overall organizational performance, monitoring the progress related to strategic objectives and action plans, allocating responsibilities, supporting the right decision-making, setting performance targets and rewarding outcomes (Kasie & Belay, 2013; Merchant & Van der Stede, 2007; Neely et al., 2005). Moreover, the five dimensions of IPMSS (market value-based appraisal orientation, accounting-oriented measurement capability, indicator-based assessment focus, value-added evaluation emphasis, and revenue-oriented criterion implementation) are adopted from Kasie and Belay (2013).

2.1.1 Market value-based appraisal orientation

The performance measurement of the market and customer satisfaction has begun to receive the attention from firms (Khan & Shah, 2011). It has the important role in the operation by Lamberti and Noci (2010) to confirm that many firms utilize the market value-based appraisement to 1) review whether the intended strategy has been implemented; and 2) communicate to their employees what are the goals that they expect to achieve, and whether they are achieving those expected goals.

Market value-based appraisal orientation in this research refers to the firm's ability to measure the market and customer performance by using a set of several market metrics for tracking marketing efficiency, expansion of market share and customer satisfaction, and providing feedback regarding the outcomes of marketing efforts (Ahmed et al., 2011; Clark et al., 2006; Kasie & Belay, 2013; Lamberti & Noci, 2010). In the previous literature review, O’Sullivan et al. (2009) find that marketing performance measurement has a positive effect on firm performance and CEO satisfaction. Likewise, Van der Stede et al. (2006) find that the performance measurement diversity which emphasizes to use the customer-oriented measures has a positive impact on firm performance. Hence, market value-based appraisal orientation is likely to positively affect organizational competitiveness. The hypothesis is proposed as follows:

Hypothesis 1: The higher the market value-based appraisal orientation is, the more likely that a firm will gain greater organizational competitiveness.

2.1.2 Accounting-oriented measurement capability

Financial and accounting performance measurement began as a result of the industrial revolution in Europe and America since the first phase during the 1880s to the 1980s (Williams and Seaman,

2002). When the productivity concepts emerged in the manufacturing industry, firms had emphasized several financial indicators, such as sales, production, efficiency, return on investment (ROI) and other ratios for measuring overall performance (Bititci et al., 2009).

Accounting-oriented measurement capability in this research refers to the firm's ability to evaluate the performance of profitability, efficiency, operational costs and financial condition by depending on a set of accounting, financial, and cost metrics for providing feedback regarding the overall related financial, operational performance, comparing benefits and costs of actions, and tracking budget utilization capability (De Toni & Tonchia, 2001; Kasie & Belay, 2013; Taticchi et al., 2010). In the previous literature review, Schneider et al. (2003) find a relationship between employee attitudes, high-performance work practices, and financial performance measures. Accounting-oriented measurement can reduce an employee's ambiguity and conflict as well as enhance performance (Burney & Widener, 2007). Thus, accounting-oriented measurement capability is likely to increase organizational competitiveness. The hypothesis is proposed as follows:

Hypothesis 2: The higher the accounting-oriented measurement capability is, the more likely that a firm will gain greater organizational competitiveness.

2.1.3 Indicator-based assessment focus

Indicators or key performance indicators are utilized by a firm for determining and measuring the progress toward the goals. Indicators that related to strategy can contribute to understanding how to that firms find an achievement as well as help explain cause-and-effect relations. When firms select the right indicators, it can reduce employee's ambiguity, conflict, and enhance performance (Burney and Widener, 2007). The key indicators should consist of quality, flexibility, reliability, safety, environment, and community indicators (Heckl & Moormann, 2010).

Indicator-based assessment focus in this research refers to the firm's ability to measure the key success units of the internal business process which are linked to supplier performance and community satisfaction by relying on the set of diverse indicators for tracking overall process performance, providing feedback outcome, and using it to control all operational processes (Bhatti et al., 2014; Gosselin, 2005; Heckl & Moormann, 2010; Parmenter, 2009). In the previous literature review, Kasie and Belay (2013) found the performance measurement system that focuses on operational measures, social/environmental measures, and supplier performance improves better business performance. Van der Stede et al. (2006) find that the internal operation-oriented and employee-oriented measures have a positive effect on firm performance. Moreover, the diverse indicators improve firm performance in a long term (Bhatti et al., 2014). Therefore, indicator-based assessment focus is likely to improve competitiveness. The hypothesis is proposed as follows:

Hypothesis 3: The higher the indicator-based assessment focus is, the more likely that a firm will gain greater organizational competitiveness.

2.1.4 Value-added evaluation emphasis

When the firm's performance of training and development are continuously measured and tracked to lead feedback outcomes to improve operations in the future, it can enhance a firm's competitiveness greater than competitors (Taylor & Baines, 2012). It happens because organizational learning becomes the starting point of the development of employees (Sadler-Smith et al., 2001).

Value-added evaluation emphasis in this research refers to the firm's ability to assess the performance of training and development which can improve firm value and employee satisfaction; by using the set of diverse non-financial measures for tracking the enhancement of their employees' productivity and skills, innovations, and the reduction of employee turnover; and providing feedback outcomes for inputting plans and decision-making in the future (Kasie & Belay, 2013; Neely et al., 2001). Lee and Yang (2011) find that firm which emphasizes the measurement of innovation and learning growth improve firm performance. Specifically, Kasie and Belay (2013) find that to track employee satisfaction and the performance of training and development improves firm performance. Hence, value-added evaluation emphasis is likely to increase competitiveness. The hypothesis is proposed as follows:

Hypothesis 4: The higher the value-added evaluation emphasis is, the more likely that a firm will gain greater organizational competitiveness.

2.1.5 Revenue-oriented criterion implementation

Revenue measure is a financial measure which is implemented to track and evaluate the revenue variance and the sales growth of organizations (Bititci et al., 2009). Parmenter (2009) suggested that sale, sales by product, and the sales growth rate as the key financial measures to assess the organizational performance. Besides, sales, profits, and margins in the financial statement are considered static and backward-looking, regard marketing's short-term value to the firm (Ambler et al., 2004).

Revenue-oriented criterion implementation in this research refers to the firm's ability to measure the performance of sales and revenue by using the set of various revenue metrics to analyze and track the revenue variance, sales growth, the increase in total revenues, and to input outcomes for sales forecast and planning in the long-term (Clark et al., 2006; Kasie & Belay, 2013; Morgan et al., 2002). In the previous literature review, O'Sullivan et al. (2009) found the firm's ability of revenue-oriented performance measurement positively affects firm performance. Bhatti et al. (2014) found that financial performance indicators such as sales, sales by product, and sales growth rate are the key components and have a positive impact on the overall performance and organizational competitiveness. Hence, the hypothesis is proposed as follows:

Hypothesis 5: The higher the revenue-oriented criterion implementation is, the more likely that a firm will gain greater organizational competitiveness.

2.2 Consequents of integrated performance measurement system strategy

2.2.1 Organizational competitiveness

In any organization, maintaining a competitive advantage is critical to success (Yitmen, 2011). The firm's competitive advantage can reflect from financial performance, resources and capabilities underlying a competition of firm higher and more than other firms. Generally, the organizational competitiveness plays the important role to improve firm performance (Testa et al., 2011). Organizational competitiveness still includes the firm's economic strengths and interfaces between a firm and its markets, such as the improvement of corporate image, service quality, and customer satisfaction (Rao & Holt, 2005).

Organizational competitiveness in this research refers to the superiority of the organization when compared to other competitors in the same industry, including effective resource management, innovations, market shares, sales growth, corporate image, service quality, customer satisfaction, and productivity (Àlvarez, et al., 2009; Rao & Holt, 2005). The previous literature review finds that organizational competitiveness positively affects firm success and survival (Bharadwaj & Menon, 2000). Organizational competitiveness enhances firm success that results from the implementation of new strategies (Prasertsang et al., 2012). Thus, the stronger competitiveness leads to higher success through the firm's dynamic capabilities. The hypothesis is proposed as follows:

Hypothesis 6: Organizational competitiveness positively influences firm success.

2.2.2 Firm success in this research refers to the organization's goal achievement and higher firm performance, together with the continued abilities to retain customers, the excellence of innovations and operation, the high competency of members, and financial position stability (Mohrman et al., 2003).

3. Research methods

3.1 Sample selection and data collection procedure

Thai-listed firms, which are chosen from the database of the Stock Exchange of Thailand (SET) amounts to 696 firms, are used as the population of this research. The required sample size was a representative of Thai-listed firms as 248 firms by using the minimum usable sample size of Krejcie and Morgan (1970). In the previous literature, an adequate response rate for a mail survey is 20% (Aaker et al., 2001), and to maximize the response rate to 100 percent, this research systematically confines 1,240 (248x5) firms as a sampling frame. However, with a population of 696 firms, the population and sample become the same groups. Thus, 696 firms were selected as the sample for data collection. A total of received questionnaires

were 155 responses, but there were 153 complete and usable questionnaires. The effective response rate was approximately 22.01 percent. Moreover, the non-response bias is tested for generalization based on Armstrong and Overton (1977) to test the significant differences of the demographic of firm characteristics (the period of time registered in SET, the period of time in operating business, authorized capitals, the total assets of the firm, and average revenues per year) between 77 early respondents (the first group) and 76 late respondents (the second group). The result of t-test comparison provides the evidence that there are no statistically significant differences between the two groups at a 95% confidence level. Thus, it can be confidently mentioned that non-response bias is not a serious problem in this research (Armstrong & Overton, 1977).

3.2 Variables measurement

To measure each construct in the conceptual model, dependent and independent variables in table 1 are anchored by five-point Likert Scale, ranging from 1 (strongly disagree) to 5 (strongly agree), but control variables are represented as a dummy variable. Additionally, all constructs of variables are developed for measuring from the definition of each construct, and examining the relationship from theoretical framework and previous literature reviews. Therefore, the variables measurement of a dependent variable, independent variables, mediating and control variables are described as follows:

Dependent variable

Firm success is measured by using a five-item scale which involves firm performance, the excellence of innovations and operational processes, the continued abilities to retain customers, the high competency of members, and financial position stability.

Independent variables

This research has 5 independent variables including 1) market value-based appraisal orientation is measured by using a four-item scale, 2) accounting-oriented measurement capability is measured by using a four-item scale, 3) indicator-based assessment focus is measured by using a four-item scale, 4) value-added evaluation emphasis is measured by using a four-item scale, and 5) revenue-oriented criterion implementation is measured by using a four-item scale, by all variables are developed a new scale and based on its definition.

Mediating variable

Organizational competitiveness is measured by using a five-item scale which involves the superiority of the organization when compared to other competitors in the same industry, including effective resource management, innovations, market shares, sales growth, corporate image, service quality, customer satisfaction, and productivity.

Control variables

Control variables in this research include firm age and firm size because they may influence the relationships between IPMSS and firm success. Firm age refers to the firm's experience which is measured by

the period of time registered on the Stock Exchange of Thailand (0 = less than or equal to 10 years, 1 = more than 10 years). Firm size is measured by the total assets of the firm, that is a dummy variable (0 = the total assets of the firm that are less than 10,000,000,000 baht, 1 = equal to or more than 10,000,000,000 baht)

3.3 Reliability and validity

The questionnaire consists of seven parts. Part One and Two ask about the personal information of each accounting executive and the information and details of the firms. Parts Three to Six measure each of the constructs in the conceptual model. It is designed as a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). These items are adapted from previous related literature and are created from the definition of each variable. The last part is the recommendations and suggestions. Two academic experts have reviewed the instrument to ensure that the questionnaire is suitable words, and all constructs are adequate to cover the content of the variables. Then, the pre-test is conducted with the first 30 returned questionnaires. The range of factor loadings is between 0.775-0.958. These values are greater than the cut-off score of 0.4 to indicate acceptable construct validity (Hair et al., 2010). The results of Cronbach's alpha coefficients are between 0.830-0.941 which is equal to or greater than the acceptable cut-off score of 0.7 (Nunnally & Bernstein, 1994). Thus, it ensures that validity and reliability of all questionnaires are acceptable.

3.4 Statistical Techniques

The ordinary least squared regression (OLS) is used to test all hypotheses. OLS is appropriate to examine the relationships between dependent variable and independent variables which all variables are categorical and interval data (Hair et al., 2010). As a result, all proposed hypotheses are transformed to two statistical equations as shown:

$$\text{Equation 1: OC} \quad = \alpha_{01} + \beta_1 MBAO + \beta_2 AOMC + \beta_3 IBAF + \beta_4 VAEE + \beta_5 ROCT + \beta_6 FA + \beta_7 FS + \varepsilon$$

$$\text{Equation 2: FSC} \quad = \alpha_{02} + \beta_8 OC + \beta_9 FA + \beta_{10} FS + \varepsilon$$

4. Research results and discussion

In Table 1, the descriptive statistics and correlation matrix for all variables are presented. With respect to potential problems relating to multicollinearity, variance inflation factors (VIF) is used to provide information on the extent to which non-orthogonality among independent variables inflates standard errors. The VIF range from 1.019 to 4.588 (in equations 1 and 2) which is below the cut-off value of 10 as recommended by (Hair et al., 2010), meaning the independent variables are not correlated with each other. Therefore, there are no substantial multicollinearity problems encountered in this research.

Table 2 shows the regression analysis results of hypotheses 1–6 that the influence of five dimensions of integrated performance measurement system strategy on organizational competitiveness and the effect of

organizational competitiveness on firm success. Firstly, the result indicates that market value-based appraisal orientation (the first dimension) positively influences organizational competitiveness (β_1 = 0.307, p < 0.01). In terms of market value-based appraisal orientation, according to Clark et al. (2006), it can provide feedback outcome regarding marketing efforts. Market value-based appraisal orientation increases firm performance, CEO satisfaction, and managers' job satisfaction (O'Sullivan et al., 2009). It can improve the efficiency of decision-making (Morgan et al., 2002). Firms that continuously follow up the performance of customer satisfaction are likely to increase financial performance, the reputation of the organization, and competitiveness (Clark, 2001, Neely et al., 2005, Van der Stede et al., 2006). ***Thus, Hypothesis 1 is strongly supported.***

Table 1: Descriptive Statistics and Correlation Matrix

Variables	MBAO	AOMC	IBAF	VAEE	ROCI	OC	FSC	FA	FS
Mean	4.11	4.41	4.20	4.16	4.26	3.99	4.08	n/a	n/a
S.D.	0.71	0.55	0.62	0.65	0.58	0.76	0.70	n/a	n/a
MBAO	1								
AOMC	.664***	1							
IBAF	.759***	.765***	1						
VAEE	.733***	.716***	.832***	1					
ROCI	.708***	.729***	.754***	.764***	1				
OC	.745***	.678***	.743***	.718***	.717***	1			
FSC	.697***	.660***	.652***	.689***	.695***	.877***	1		
FA	.034	.013	.020	-.008	.070	.074	.026	1	
FS	.149	.103	.087	.171**	.138	.209***	.196**	.126	1

*** Correlation is significant at the 0.01 level (2-tailed), ** Correlation is significant at the 0.05 level (2-tailed)

Secondly, this result does not find a significant effect of accounting-oriented measurement capability on organizational competitiveness (β_2 = 0.112, p < 0.10). This is consistent with the study of Khan and Shah (2011) who criticized that accounting-oriented measurement alone is not sufficient to completely measure overall performance. Firms should design their new performance measurement system strategy that includes financial and non-financial measures together (Gosselin, 2005). It is also supported by the study of Kasie and Belay (2013) who identified that finance measures do not affect organizational competitiveness and performance (profit margin, sales growth, revenue). It implies that the influence of accounting-oriented measurement capability is the ability of firms to generate some quantitative data to react to the needs of the organization and their executives only. ***Thus, Hypothesis 2 is not supported.***

Thirdly, OLS regression results support that indicator-based assessment focus (the third dimension) has a positive impact on organizational competitiveness (β_3 = 0.207, p < 0.05) to be consistent with Bhatti, et al. (2014) who stated that the firm's indicator-based assessment focus establishes and continuously improves

firm performance. Moreover, Kasie and Belay (2013) found that the performance measurement system which focuses on operational measures, social measures, and their supplier partnership performance, improve better organizational competitiveness. ***Therefore, Hypothesis 3 is supported.***

Fourthly, the results indicate that value-added evaluation emphasis (the fourth dimension) does not find a significant influence on organizational competitiveness (β_4 = 0.088, p < 0.10). It is possible that firms emphasize the creation of activities to training and development over cause employees are unable to work during the training time. Besides, firms may spend much money to invest in these activities, resulting in a loss of investment in order to increase the competitiveness of the organization. This is consistent with the study of Chen et al. (2005) who found that tracking the performance of training and development has a positive impact on market value and financial performance, but it may not be clear in the year that investment. A firm should evaluate and track the performance of training and development, because it may increase organizational competitiveness in following. ***Thus, Hypothesis 4 is not supported.***

Table 2: Results of Regression Analysis

Independent Variables	Dependent Variable Organizational Competitiveness (OC) Equation 1
Integrated Performance Measurement System Strategy:	
Market Value-Based Appraisal Orientation (MBAO: H1)	.307***
	(.079)
Accounting-Oriented Measurement Capability (AOMC: H2)	.112
	(.080)
Indicator-Based Assessment Focus (IBAF: H3)	.207 **
	(.102)
Value-Added Evaluation Emphasis (VAEE: H4)	.088
	(.096)
Revenue-Oriented Criterion Implementation (ROCI: H5)	.180**
	(.084)
Control Variables:	
Firm Age (FA)	.071
	(.098)
Firm Size (FS)	.183*
	(.101)
Adjusted R^2	0.656
Maximum VIF	4.588

*** p < 0.01, ** p < 0.05, * p < 0.10, Beta coefficients with standard errors in parenthesis

Fifthly, revenue-oriented criterion implementation positively and significantly affects organizational competitiveness (β_5 = 0.180, p < 0.05). It is believed that when firms measure their performance to follow the suitable revenue criterion, it can encourage higher competitiveness. It corresponds with the prior research that indicates that revenue measure is a financial measure which is implemented to track and evaluate revenue variances and sales growth of the organizations (Bititci et al., 2009). The empirical evidence of O'Sullivan et al. (2009) who found that the ability of performance measurement, based on a revenue-oriented criterion, has a positive impact on the firm's performance. ***Thus, Hypothesis 5 is supported.***

Additionally, the result of equation 1 shows that firm size has a positive impact on organizational competitiveness (β_7 = 0.183, p < 0.10). Therefore, it can be interpreted that Thai-listed firms actually represent a large firm which they have sufficient resources and higher capacities to use a variety of measures to track their performance and generate competitiveness is higher than other firms that are not registered on SET. Correspondingly, the study of Marc et al. (2010) found that a large firm is normally associated with the better ability of resource allocation and competitiveness.

Table 3: Results of Regression Analysis

Independent Variable	Dependent Variable firm success (FSC) Equation 2
Organizational Competitiveness (OC: H6)	.877***
	(.040)
Control Variables:	
Firm Age (FA)	-.084
	(.080)
Firm Size (FS)	.037
	(.083)
Adjusted R^2	**0.767**
Maximum VIF	**1.048**

*** p < 0.01, ** p < 0.05, * p < 0.10, Beta coefficients with standard errors in parenthesis

In Table 3, the finding indicates that organizational competitiveness has a strong and positive effect on firm success (β_8= 0.877, p < 0.01). It can be surely stated that the finding is consistent with Bharadwaj and Menon (2000) who found that organizational competitiveness positively affects firm success and firm survival. Moreover, organizational competitiveness enhances firm success as a result of the implementation of the new

strategy and product innovation, leading to access new markets and a firm's superior success (Prasertsang et al., 2012). ***Thus, Hypothesis 6 is strongly supported.***

5. Conclusion

The investigation of the effect of integrated performance measurement system strategy on firm success is the purpose of this research. The results indicate that market value-based appraisal orientation, indicator-based assessment focus, and revenue-oriented criterion implementation have a positive effect on organizational competitiveness. Moreover, organizational competitiveness has a strong and positive influence on firm success. The results contribute to confirming the resource-based view that integrated performance measurement system strategy is the organizational capability that is created for increasing organizational competitiveness and firm success. The interesting results can provide the managerial implication for firms and their accounting executives that market value-based appraisal orientation, indicator-based assessment focus, and revenue-oriented criterion implementation of integrated performance measurement system strategy is, the more likely that a firm will gain greater organizational competitiveness and firm success. Moreover, the results can provide guidelines for firms that the integration and development of performance measurement system strategy should match the style of each firm's business operation. Firms require determining, aligning, and encouraging the use of integrated performance measurement system strategy because it can report the firm's comprehensive performance. In addition, some hypotheses are not statistically significant thus it indicates that accounting-oriented measurement capability and value-added evaluation emphasis do not influence organizational competitiveness. Future research should investigate other sectors and industries to uncover the full range of the ability of integrated performance measurement system strategy of firms in the every context in Thailand, as well as to confirm the findings of this research. Further research should investigate other moderating variable associating with the maintenance and improvement of long-term strategic capabilities such as organizational citizenship behavior and organizational loyalty.

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