The Contingency Factors, Integrated Performance Measures and Organizational Performance – Evidences from Vietnamese Manufacturing Enterprises

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Abstract. Literature reviews on performance measurement systems propose that firms should focus more on non-financial performance measures in addition to financial measures. This research will empirically investigate whether some contingency factors motivate the firms to use the integrated performance measures in order to improve their performance. The collected data of 257 Vietnamese manufacturing enterprises relating to the extent to which these firms use the integrated performance measures and their determinants as well as consequences was used to analyze through quantitative research methods under PLS_SEM analysis technique. The research results show that two contingency factors comprising differentiation strategy and the managerial accountants' participation in the strategic decision-making process have significantly positive effects on the use of the integrated performance measures. In addition, the use of the integrated performance measures plays a partly mediating role in the relationship between each of the contingency factors and organizational performance. Finally, the study also concludes that level of competition does not moderate the relationship between the use of the integrated performance measures and organizational performance whereas the managerial accountants' participation also does not play that role in the association between differentiation strategy and the use of the integrated performance measures. Therefore, in order to improve performance in the enterprises pursuing a higher differentiation strategy and much participation of managerial accountants in the strategic decision-making process, their managers need to apply more integrated performance measures.

Keywords: contingency factor · the use of the integrated performance measures

1 Introduction

Today with significant changes in the business environment, such as the fierce competition, the continuous innovation of technology, the ability to analyze big data at a fast pace, etc.… the traditional performance measurement system in the years 1950–1980 provided management information that was too late and general as a result of over-emphasis on

P. Tra Lam and P. Quang Huy (Eds.): ICECH 2022, AEBMR 238, pp. 423–441, 2023.
https://doi.org/10.2991/978-94-6463-150-0_28

financial measures, leading to not able to meet useful and timely information for managers planning, controlling and decision-making (Johnson & Kaplan, 1987; Otley, 1999; Norreklit, 2000). Therefore, with today's volatile business environment, the traditional performance measurement system has no longer operated appropriately and effectively.

Studies in the 2000s found that in addition to financial measures of performance, enterprises should apply more non-financial measures to provide managers with appropriate information for their decision making. Recent articles have investigated the importance of non-financial measures as well as their use in measuring and evaluating the performance (Ahmad, Zabri & Omar, 2011; Wu, 2009; Henri, 2004).

However, the contingency theory of the management accounting system states that there isn't any management accounting system fit for every enterprise in every situation (Merchant, 1998; Fisher, 1995; Otley, 1999). Consequently, the question is how the managers can identify which kind of performance measurement system (such as the system including only financial indicators or including some or even many non-financial indicators) fits for their company? It is truly necessary to explore the relationship between contingency factors and the use of the integrated financial and non-financial performance measures and its impact on organizational performance. Hence, this study firstly gives a descriptive statistic of the use of the integrated performance measures in Vietnamese manufacturing enterprises. Next, the study examines six hypotheses. The first two are the relationships between each of the contingency factors (including differentiation strategy and the managerial accountants' participation in the strategic decision-making process) and the use of the integrated performance measures in Vietnamese manufacturing enterprises. The impact of each of these relationships on the organizational performance is the next two hypotheses. The last two hypotheses are trying to explore whether the managerial accountants' participation in the strategic decision-making moderates the relationship between differentiation strategy and the use of non-financial measures and whether the level of competition moderates the association between the use of the integrated performance measures and the organizational performance?

The remainder of the study is organized as follows. Section 2 briefly discusses prior literature to develop a research model including a set of research hypotheses. Then the applied research methodology is presented in Sect. 3, followed by the results and discussion in Sect. 4 before the study's contributions, implications, limitations and some avenues for further research are identified.

2 Literature Review

The contingency theory states that if an enterprise designs a management control system in accordance with its contextual factors (belongings to the internal environment - such as organizational structure, business strategy, the managerial accountants' participation in the strategic decision-making, organizational culture, application of information technology, customer orientation, etc. or the external environment - such as competition, tax regulations, etc.) will improve its organizational performance. In the set of contextual factors that might influence the design of the performance measurement system, this paper was limited to study impacts of three factors including differentiation strategy, the managerial accountants' participation in the strategic decision-making and level of

competition. This was because in order to survive and develop in the volatile business environment resulting from the economic globalization and the fierce competition, the business strategy that an enterprise pursues must really promote its effectiveness, might thanks to the effective support of its performance measurement system and the managerial accountants' participation in the strategic decision-making. The contents below would present the basis for hypothesis development in turn.

2.1 Differentiation Strategy, the Use of Integrated Performance Measures and Organizational Performance

Some studies (such as Grafton et al., 2010; Ittner et al., 2003; Stede et al., 2006; van Veen-Dirks, 2010) suggested that performance measures play an important role in implementing business strategy of an enterprise. Therefore, many studies based on contingency theory emphasize that the performance measurement system should be complied with corporate strategy (Chenhall, 2003; Langfield-Smith, 1997).

By quantitative research method conducted on 84 large manufacturing enterprises, Spencer, Joiner & Salmon (2009) confirmed the differentiation strategy (with the focus on product flexibility or customer service) has a positive impact on the use of integrated financial and non-financial measures. This study argues that a firm following differentiation strategy often focus on developing a specialty to make it different from its competitor, for example, product innovation, quick customer response, marketing or image management to react with the complexities of the environment and customer demands and so this firm needs non-financial information to focus on what sets it apart. Therefore, the performance measurement system should be designed in the way that focuses on non-financial measures in addition to the traditional financial measures to help enterprises pursue a successfully implemented differentiation strategy, thereby improving their competitive advantages.

By focusing on a specific type of differentiation strategy, Perera, Harrison & Poole (1997) and Van der Stede, Chow & Lin (2006) confirmed that the motivation for firms to use the non-financial measures in addition to the financial measures are come from customer-focused production strategy (Perera et al., 1997) and production quality strategy (Van der Stede et al., 2006).

In addition, many other studies have been carried out to explore the relationship between the prospector strategy (which has similar characteristics as the differentiation strategy) and the extent to which the performance measures were applied. For example, Hoque (2004) confirmed that enterprises pursuing the prospector strategy tend to use multiple non-financial measures to determine what customers expect, the level of employee involvement in creative activities and the ability of the enterprise to produce and market new products. In Vietnam, Le Thi My Nuong (2020) found a positive relationship between offensive strategy (including differentiation strategy) and application of strategic management accounting with emphasis on the use of non-financial measure in addition to financial measures.

The above analyses are the motivation for the authors to put forward the following research hypothesis:

H1: Differentiation strategy positively relates to the use of the integrated performance measures

Considerable accounting studies also provided empirical evidence to support the view that the performance measurement system should be designed in accordance with the business strategy to improve the firm's performance. However, the research results have been inconsistent. Specifically, some studies concluded that firms pursuing a differentiation strategy/prospector strategy, or a specific type of differentiation strategy (such as customer-focused production strategy and production quality strategy) tends to apply multiple non-financial performance measures in order to increase the performance (Chenhall & Langfield-Smith, 1998; Hoque, 2004; Perera et al., 1997; Spencer et al., 2009). On the other hand, Van der Stede et al. (2006) and Baines & Langfield-Smith (2003) found that the use of multiple non-financial measures in addition to financial measures will help enterprises increase their performance regardless of which strategy the enterprise pursues.

Therefore, for more clear research results, this issue needs to be studied more, consistent with the opinion of some authors that the influence of business strategy on the design of management control systems has been still controversial (Otley & Wilkinson, 1988; Langfield-Smith, 1997). As a result, the paper proposes the following research hypothesis to give a clearer picture:

H2: A positive association between differentiation strategy and organizational performance exists through the use of the integrated performance measures.

2.2 The Managerial Accountants' Participation in the Strategic Decision-Making Process, the Use of Integrated Performance Measures and Organizational Performance

In the volatile business environment along with the increasingly fierce competition today, many businesses give a priority in meeting customer satisfaction when they formulate their strategies (Hult et al., 2005). As a result, business management processes need to be adapted to this challenge (Brouthers & Roozen, 1999). Specifically, managerial accountants not only provide useful information for managers in decision-making, but they play the role of value creators for businesses in terms of actively participating in strategic decision-making so that their businesses can reap a lot of success (Rowe et al., 2008; Ramli et al., 2013).

Some empirical studies related to the strategic management accounting system (such as Cadez & Guilding, 2008 in Slovenia, Ah Lay & Jusoh, 2014 in Malaysia and Bui Thi Truc Quy, 2020 in Vietnam) or qualitative research (Ma & Tayles, 2009 in the UK) found that the managerial accountants' participation in the strategic decision-making process is the motivation for their enterprises to apply the strategic management accounting system - a system that includes the application of multiple non-financial measures in addition to the financial measures. In general, these studies suggested that when managerial accountants are more involved in strategy formulation and implementation, they will better understand the nature of the information needs set by strategic managers. This

may motivate them to pioneer in the change management by supporting their firms in designing new systems like the strategic management accounting system with different outputs from the traditional management accounting system in term of emphasizing the importance of integrated financial and non-financial information due to the change in business environment (Cadez & Guilding, 2008; Bui Thi Truc Quy, 2020). This results from the fact that above all, managerial accountants understand non-financial performance (such as customer satisfaction, employee satisfaction, lead time, factory flexibility and product design features) causing financial performance or in other words, they understand that they have to find out which non-financial activities need to be improved in order to control costs as well as increase revenue.

The above arguments motivate us to simulate the following research hypothesis:

H3: The managerial accountants' participation in the strategic decision-making process positively relates to the use of the integrated performance measures

With a deep understanding of cost management tools, if managerial accountants involve in strategic decision making, they can make significant contributions to the business process reengineering – one of the application management techniques in the process of radically improving the business processes to achieve the improvements in cost, quality, service and time (Herath & Gupta, 2008). Therefore, non-financial information such as customer and employee satisfaction, lead time, product quality or volume-based cost drivers such as machine hours, labor hours, etc. plays a significant role in helping businesses make sound business decisions in order to respond to ever-changing customer needs, resulting in the improvement in the organizational performance.

Some empirical studies related to the strategic management accounting system such as Cadez & Guilding (2008), Ah Lay & Jusoh (2014) or Bui Thi Truc Quy (2020) have explored that the managerial accountants' participation in the strategic decision-making process motivates their firms to apply the strategic management accounting system - a system that includes the use of non-financial measures in addition to financial measures. As a result, managers are provided with useful information to make the strategic decisions, leading to enhancing their organizational performance.

The above evidences are the motivation us to propose the following research hypothesis:

H4: A positive association between the managerial accountants' participation in the strategic decision-making process and organizational performance exists through the use of the integrated performance measures.

2.3 The Managerial Accountants' Participation in the Strategic Decision-Making Process, Differentiation Strategy and the Use of the Integrated Performance Measures

Certo & Peter (1991) argued that today's fiercely competitive environment has caused managerial accountants with a role to play in strategic decisions to realize that if they measure everything in money, they will find it difficult to catch on the benefits of non-financial information such as customer satisfaction, product quality, new product launch time and skills of the workforce, etc. As a result, managerial accountants become more interested in providing information with a wider scope in terms of integrating multiple

non-financial information in addition to financial information for managers in many departments to make strategic decisions. At the same time, the information is future-oriented rather than being recorded with past financial transactions and complied with the professional regulations. On the other hand, differentiation strategies need non-financial information to focus on what makes them different from the other competitors such as quality, innovation or faster customer response. For example, if the enterprise's strategy is providing high quality products, non-financial information will help managerial accountants focus on measuring the product characteristics that make their products superior to competitors in quality (Stede et al., 2006).

These arguments motivate us to state the following research hypothesis:

H5: The managerial accountants' participation in the strategic decision-making process positively moderates the association between differentiation strategy and the use of the integrated performance measures.

2.4 Level of Competition, the Use of the Integrated Performance Measures and Organizational Performance

In order to face the fierce competition nowadays, enterprises need to design and apply appropriate control systems in order to provide relevant information for managers' decision making, leading to achieving advantages over their competitors (Cooper & Kaplan, 1998; Khandwalla, 1972). The high level of product competition requires the more complex organizational form with many divisions such as divisions of research and development, new product testing and exploiting new markets. Therefore, enterprises need to have a complex control system with multiple non-financial measures in order to integrate activities of these departments (Khandwalla, 1972) as well as provide comprehensive information for lower-level managers to better understand their department's goals and what actions they need to take to achieve these goals (Demers et al., 2006). In addition, using non-financial measures will provide reliable feedback on performance and value added activities which are essential for taking appropriate control actions to strive for long-term financial and competitive performance (Otley, 1999; Hoque et al., 2001; Zuriekat, 2005 and Ahmad, 2012). Therefore, advantages that firms may achieve from using the integrated performance measures tend to be bigger when the competition is more intensive. However, Lee & Yang (2011) found that using more integrated performance measures do not help firms enhance performance in the fiercely competitive environment.

These controversial arguments encourage us to develop the following research hypothesis:

H6: The level of competition positively moderates the association between the use of the integrated performance measures and organizational performance.

All above research hypotheses are combined in the research model, illustrated in Fig. 1 as follows.

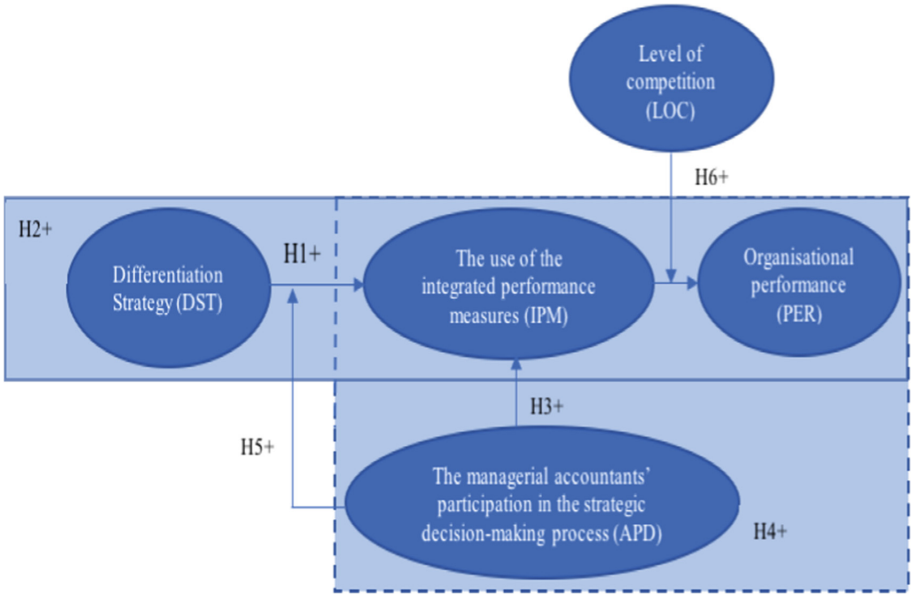

Fig. 1. Research model

3 Methodology

3.1 Methodologies of Scales and Hypotheses Validation

The quantitative research method is based on a deductive process (Nguyen Dinh Tho, 2013), through 2 phases – preliminary research (aimed at testing the scale with the support of SPSS 24.0 software) and official research (aimed at reconfirming the reliability and validity of the scales and testing the hypotheses through structural equation modeling with the support of SmartPLS 3.2.7 software).

3.2 The Samples Design and Data Collection Method

The analytical unit of this study was a firm. Respondents were knowledgeable people about the performance measurement system in medium and large-sized manufacturers in Vietnam, namely senior managers, middle managers, head/deputy accounting managers, managerial accountants, controllers, analysts or internal auditors. Only manufacturers with at least 100 employees or 20 billion VND in total assets were included in the target samples. This results from the fact that small manufacturers were less likely to operate a complex performance measurement system with multiple non-financial measures.

3.3 Variables Measurement

Differentiation Strategy (DST)
The differentiation strategy is the strategy that focuses on making products or providing

services unique in the industry and widely recognized by customers. The scales of this strategy were derived from Johnson, Whittington & Scholes (2011), including 5 observed variables (see Table 1), in the form of a seven-point Likert-type scale. Respondents were asked to indicate the degree of emphasis that their firms had given on the strategy from 1 (no emphasis) to 7 (great emphasis).

The Managerial Accountants' Participation in the Strategic Decision-Making Process (APD)

The participation of managerial accountants in the strategic decision-making process is the participation of managerial accountants in the implementation of management activities that guide and direct the enterprise. This concept is measured through a set of scales consisting of 5 observed variables, developed from Wooldridge & Floyd (1990), in the Likert form with 7 levels. Level 1 (strongly disagree) and level 7 (strongly agree) respectively shows that the lowest and highest level of agreement with the managerial accountants' participation in strategic decision-making.

Level of Competition (LOC)

The level of competition is the degree of conflict in the market for the provision of products and services. The authors reuse the scales of this term from Lee & Yang (2011). Respondents will answer for each observed variable according to 7 levels. Level 1 (strongly disagree) and level 7 (strongly agree) reflect the lowest and highest respondents' agreements on the competition that their enterprises have to face (see Table 1).

The Use of the Integrated Performance Measures (IPM)

The use of the integrated performance measures is the degree to which enterprises apply multiple financial and non-financial performance measures in the performance measurement system to manage their operations. The scale for this concept is developed from Ittner et al. (2003) in the form of Likert with 7 levels, including 8 observed variables corresponding to 1 group of financial performance measures and 7 groups of non-financial performance measures. Level 1 (completely opposed) and level 7 (completely agreed) respectively show the lowest and highest respondents' agreements on the application of groups of performance measures for evaluating managerial performance. The average value of 8 groups of performance measures reflects the extent to which enterprises use a variety of financial and non-financial performance measures in the organizational performance measurement system. Descriptive statistics for the use of each group of financial and non-financial performance measures for the purpose of evaluating managerial performance are presented in the Appendix 1.

Organizational Performance (PER)

Organizational performance was measured by an instrument firstly developed by Govindarajan (1984). However, similar to Hoque (2004), this instrument added two new observed variables, including workplace relations and employee health and safety. Respondents were asked to assess their firm's performance over the past 3 years relative to the competitors for 12 different performance perspectives on a seven-point Likert-type scale, ranging from 1 (well below average) to 7 (well above average). A single performance score for each firm was constructed by computing the weighted average of

respondent's score for all perspectives within the construct, given that the weight reflects how importantly each type of performance perspective contributes to the overall success of the enterprise.

4 Results and Discussion

4.1 Descriptive Statistics on Samples

The samples were 106 manufacturers with 22% of large firms and 78% of medium firms in preliminary research and 257 manufacturers with 47% of large firms and 53% of medium firms in official research, from 2019–2020.

In the preliminary research, 33% of firms surveyed have got the number of employees higher than 200 employees and 32% of firms have total asset valueshigher than 100 billion Vietnam Dong whereas these statistical data in the official research are 53% and 52% respectively. All surveyed firms met the requirement of total number of employees with at least 100 or total asset values with at least 20 billion Vietnam Dong. Moreover, in the official research, the highest proportion of respondents was middle managers (48%), followed by persons from accounting department/finance department (39%), senior managers (11%), and inspectors/internal auditors (4%) whereas in the preliminary research, the highest proportion of respondents was middle managers (63%), followed by persons from accounting department (27%), inspectors/analysts (6%) and top managers (4%). The working experience of respondents was 5.53 years on average and none of them had experience less than 1.5 years in the official research.

4.2 Scale Reliability and Validity

Preliminary Research

By applying data analysis techniques of Cronbach Alpha and Exploratory factor analysis (EFA) under preliminary research, concepts whose scales have not changed as the originally suggested scales, including the concept of DST (differentiation strategy) and the managerial accountants' participation in the strategic decision-making process (APD). The only concept whose scales vary slightly due to changes in the number of observed variables is the concept of LOC (level of competition). Specifically, this concept removes the observed variable of LOC5 (competitors' behavior threatens the existence and development of the enterprise) because this observed variable has not much difference (< 0.3) in the weight of the load factor on a single factor compared with those on other factors.

Official Research

Table 1 shows that all abstract research concepts have fairly high composite reliability values from 0.858 to 0.911, satisfying the minimum allowed threshold conditions (>0.7) (Hair, Ringle & Sarstedt, 2011). Moreover, the outer loadings of the observed variables measuring the latent variables in the research model ranged from 0.756 to 0.890, higher than the minimum allowed threshold (0.7) proposed by Hair et al. (2011) (except for the LOC6), confirming that the observed variables reached convergent validity of measured

constructs[1]. Furthermore, the degree of convergence of the observed variables on the latent variables in this study was also demonstrated by the average variance extracted (AVE) of each research concept meeting the minimum required threshold of 0.5 (Fornell & Larcker, 1981) with the range the from 0.581 to 0.672 (before deleting LOC6) from 0.624 to 0.720 (after deleting LOC6). In addition, the observed variables also ensured the discriminant validity between factors because the deviations of outer loadings which each observed variable loaded on factors were higher than ≥ 0.3 (Jabnoun & Al-Tamimi, 2003).

Finally, all bootstrap t-values of the observed variables (excepting LOC6) with the range from 18.555 to 62.806 (before deleting LOC6) and with the range from 18.276 to 66.948 (after deleting LOC6) reached the minimum allowed threshold of 1.96, leading to be statistically significant.

After deleting LOC6, the discriminant validity of the scales is also assessed in Table 2, specifically by checking the square root of the average variance extracted as proposed by Fornell & Larcker (1981). Whereby, the scales meet the discriminant validity when the square root of the average variance extracted (AVE) of each factor must be higher than all correlation coefficients between that factor and all other factors. Table 2 revealed that the square root of the average extract variance (AVE) of each factor was in the range of 0.762 to 1, which exceeded all correlation coefficients between that factor and all other factors (from 0.194 to 0.671), again showing the discriminant validity accepted. Furthermore, the discriminant validity was also reinforced by the criteria of heterotrait – monotrait coefficients (HTMT < 0.9) (Henseler et al., 2015). Table 2 showed the HTMT in the range from 0.219 to 0.671 satisfied the maximum required threshold of 0.9. Therefore, the scales of research concepts in this study met the discriminant validity under the tools proposed by Fornell & Larcker (1981), Jabnoun & Al-Tamimi (2003) and Henseler et al. (2015).

4.3 Results of Research Hypotheses Test and Discussions

The research hypotheses in the research model were tested by using SmartPLS 3 software. By assessing the magnitude and significance of each path in the structure model (representing the tested hypothesis), the paper could provide evidence to accept or reject that hypothesis. The indicators listed in Table 3 include the β coefficients, the t-value and the R^2 coefficient for each dependent variable. These indices were automatically calculated on the basis of running 500 bootstrap replicates. The results showed that the adjusted R^2 coefficients of all the dependent variables in the model were higher than the allowed minimum threshold of 0.10. For more details, these dependent variables, namely the use of the integrated performance measures and organizational performance, had adjusted R^2 coefficients of 0.508 and 0.542 respectively. Therefore, the proposed research model was highly compatible with the collected data.

The study was separated into two models - the model included the mediating variable (namely the use of the integrated performance measures) and the model did not

[1] LOC6 were excluded because if this variable were removed, the composite reliability and the AVE of the concept LOC increased sharply (specifically the composite reliability increased from 0.858 to 0.911; the AVE increased from 0.581 to 0.720). The Cronbach Alpha of this concept considerably increased, from 0.793 to 0.870.

Table 1. Scales and Assessment of Scale reliability and validity in the official research

	Outer loadings t-value	
The managerial accountants' participation in the strategic decision-making process *(Cronbach's Alpha = 0.850; CR = 0.893; AVE = 0.624)*		
• Managerial accountants participate in identifying problems and proposing the goals that the company needs to achieve (APD1)	0.803	29.519
• Managerial accountants participate in proposing business plans, and solutions to solving problems (APD2)	0.801	24.960
• Managerial accountants participate in evaluating business plans and solutions to solving problems (APD3)	0.764	18.988
• Managerial accountants are involved in developing details related to business plans and solutions to solving problems (APD4)	0.823	33.336
• Managerial accountants take the necessary actions to make important changes (APD5)	0.757	18.555
Differentiation strategy *(Cronbach's Alpha = 0.878; CR = 0.911; AVE = 0.672)*		
• Your company maintains a strong brand/image (DST1)	0.890	62.806
• Your company invests in innovation and creativity (DST2)	0.808	30.813
• Marketing expenses account for a high proportion of revenue (DST3)	0.756	25.944
• Your products/services different from your competitors' ones (DST4)	0.827	35.694
• Your company have strict service/product quality control procedures (DST5)	0.812	25.302
Level of competition *(Cronbach's Alpha = 0.793; CR = 0.858; AVE = 0.581)*		
• The company faces stiff competition on the product/service's price (LOC1) • The company faces stiff competition in developing new products/services. (LOC2) • The company faces stiff competition on marketing and distributing its products/services (LOC3)	0.874 0.857 0.860	38.309 42.811 35.196
• The company faces a high level of competition for market share (LOC4) • The company has many competitors (LOC6)	0.802 0.161	22.698 1.785

include this variable. The purpose of these separations was to test whether the use of the integrated performance measures played the mediating role in the relationship between each contingency factor and organizational performance. Thus, there were a total of 2 structural models.

Hypotheses H1 and H3 respectively suggest that differentiation strategy and the managerial accountants' participation in the strategic decision-making process have a positive impact on the use of integrated performance measures. Both hypotheses are supported by the data analysis results. Specifically, the β coefficient for the path from DST to IPM reaches a value of 0.289 at the statistical significance level of 0.000% (t-value = 6.408) and the β coefficient for the path from APD to IPM is 0.312 at the statistical

Table 2. Assessment of scale discriminant validity by the correlation matrix

	Mean	Standard deviation (SD)	1____	2____	3____	4____	5____	6
1. The managerial accountants' participation in the strategic decision-making process	4.3860	1.15534	**0.790**					
2. Differentiation strategy	5.4163	1.09839	0.194**	**0.820**				
			0.219					
3. The use of the integrated performance measures	3.9489	0.80549	0.477**	0.461**	**1**			
			0.510	*0.490*				
4. Level of competion	5.1144	1.57871	0.293**	0.398**	0.529**	**0.762**		
			0.341	*0.455*	*0.544*			
5. Organizational performance	5.0189	0.97811	0.473**	0.474**	0.671**	0.526**	**1**	
			0.506	*0.501*	*0.671*	*0.543*		
6. Size	2.4506	0.50983	0.283**	0.265**	0.569**	0.405**	0.455**	**1**
			0.308	*0.286*	*0.569*	*0.462*	*0.455*	

Notes: 1st value = Correlation coefficients between latent variables (the numbers below the diagonal line);
2nd value = HTMT coefficients (the numbers in italics below the diagonal line);
3rd value = Square root of average variance extracted (AVE) (the numbers in bold on diagonal lines).
**: The correlation is significant at the significance level of 0.01 (2-tailed test).

significance level of 000% (t value = 7.490). Specifically, the more enterprises pursue the differentiation strategy, the more likely they were to use the integrated performance measures (H1), consistent with the findings of many previous studies such as Spencer et al. (2009); Perera et al. (1997); Van der Stede et al. (2006); Hoang Van Tuong et al. (2018). These studies generally suggested that enterprises pursuing differentiation strategy should apply a variety of non-financial measures in addition to financial measures because these non-financial measures will help enterprises focus on measuring the performance of a particular feature that helps enterprises distinguish itself from competitors as mentioned by the spirit of this strategy, for example, product innovation, customer

response and changes in customers' needs and marketing that responds to environmental complexity, thereby enhancing the competitive advantage for enterprises. Similarly, if firms maintain the greater participation of managerial accountants in the decision-making process, the more likely they are to use the integrated performance measures (H3), which has not been discovered but is consistent with many articles related to the design of management accounting systems. For example, Cadez & Guilding (2008), Ah Lay & Jusoh (2014) and Bui Thi Truc Quy (2020) assert that the managerial accountants' participation in strategic decision making is the motivation for their enterprises applying the strategic management accounting system - a system that includes the application of non-financial measures in addition to the financial measures. As a result, their managers are provided with relevant information to make the strategic decisions, contributing to the enhancement of the organizational performance.

Next, hypothesis H2 and H4 respectively suggest that differentiation strategy and the managerial accountants' participation in the strategic decision-making process positively affect organizational performance through the use of integrated performance measures. Both these hypotheses are also supported by the data analysis results in Table 3. Indeed, the data presented in the model 1 of this table show that the β coefficients for the path from "DST → IPM" to PER and from "APD → IPM" to PER respectively have a value of 0.108 at the t-value of 4.432 and a value of 0.116 at the t-value of 5.008 with the significance level of 0.000%. In addition, also from this model, which included mediating variable (IPM), the β coefficients for the path from DST to PER and APD to PER reaches a value of 0.159 with the statistical significance level of 0.3% (t-value = 2.935) and 0.191 with the statistical significance level of 0.4% (t-value = 3.792) respectively, showing that DST and APD have a direct impact on PER. However, in the model without the mediating variable (model 2), the β coefficients for the path from DST to PER and APD to PER respectively arrive at 0.267 (t-value = 5.127) and 0.291 (t-value = 6.029), significant at statistical significance level of 0.000%, convincing that these two factors, including DST and APD, have a direct impact on PER. As a result, we perceived the association between each of these contingency factors and organizational performance (DST & PER and APD & PER) weakened when the IPM mediating variable was added. This resulted from the fact that the β coefficient decreased from 0.267 to 0.159 and the t-value dropped from 5.127 to 2.935 for the factor DST whereas the β coefficient reduced from 0.291 to 0.191 and the t-value declined from 6.029 to 3.792 for the factor APD. This confirmed that the IPM variable partially played a mediating role in the association between DST and PER as well as in the relationship between APD and PER. The empirical results of hypothesis H1 and H3 can be explained by the accepted hypothesis H2 and H4 respectively. In other words, the motivation for enterprises to use more or less non-financial performance measures besides the financial performance measures is that if the firms maintain the use of non-financial measures fitting with the differentiation strategy or the extent to which managerial accountants participate in strategic decision-making process, their organizational performance will be improved. The research result of H2 has been confirmed by a number of studies, such as Chenhall & Langfield-Smith, 1998, Hoque, 2004; Perera et al., 1997; Spencer et al., 2009. Meanwhile, the research result of H4 has not been discovered but is consistent with many articles related to the design of strategic management accounting systems, for

example Cadez & Guilding (2008), Ah Lay & Jusoh (2014), Bui Thi Truc Quy (2020) and Simon & Chris (2008). Both H2 and H4 have been supported by Simon & Chris (2008) with the conclusion that if firms maintained the fit between the application of strategic management accounting techniques - including the use of the integrated performance measures, the managerial accountants in strategic decision-making process and business strategy, their performance might be improved.

In addition, hypothesis H5 suggests that the managerial accountants' participation in the strategic decision-making process has a positive moderating role to the relationship between the differentiation strategy and the use of the integrated performance measures. This means that as the participation of managerial accountants in the strategic decision-making process increases (decreases), the degree of positive impact of the differentiation strategy on the use of the integrated performance measures also increases (decreases). The statistical data in model 1 of Table 3 presents that this hypothesis is not supported because the β coefficient of the path from the interaction variable (DST x APD) to the dependent variable (IPM) is −0.064, not statistically significant (t-value = 1.350). This means that the features of the differentiation strategy arise from the need to use the integrated performance measures, not affected by the managerial accountants' participation in the strategic decision-making process. This might result from the fact that in the enterprises pursuing the differentiation strategy, their product and service characteristics are designed with the standards as the manufacturing department's requirements in order to be different from competitors. These requirements might not meet the requirements of the strategy team as a result of a lack of coordination between the strategy team and the product design team.

Finally, hypothesis H6 proposes that level of competition plays a positive moderating role in the relationship between the use of the integrated performance measures and organizational performance. In other words, when the level of competition increases (decreases), the degree of effect of the use of the integrated performance measures on the organizational performance also increases (decreases). The data in the model 1 of Table 3 presents that this hypothesis is not convinced as the β coefficient of the path from the interaction variable (IPM x LOC) to the dependent variable (PER) is −0.093, not statistically significant (t-value = 1.749). Although this result does not support the H6, it is consistent with the findings of many previous studies such as Lee & Yang (2011) and Hoque & James (2000), affirming that enterprises with the greater use of the integrated performance measures do not attain a higher performance when the level of competition gets more severe.

Table 3. Hypothesis test results in the research model

		Dependent variables					
		Model 1 (including the mediating variable - IPM)				**Model 2 (not including the mediating variable -IPM)**	
		IPM		**PER**		**PER**	
		β	**t-value**	**B**	**t-value**	**β**	**t-value**
Hypotheses							
H1	DST → IPM	0.289**	6.408				
H2	DST → IPM → PER			0.108**	4.432		
	DST → PER			0.159	2.935	0.267**	5.127
H3	APD → IPM	0.312**	7.490				
H4	APD → IPM → PER			0.116**	5.008		
	APD → PER			0.191*	3.792	0.291**	6.029
H5	DSTxAPD → IPM	−0.064	1.350				
H6	IPMxLOC → PER			−0.093	1.749		
	Control variable						
	Size → IPM	0.405**	7.751				
	Size → IPM → PER			0.151**	4.591		
	Size → PER			0.100	1.723		
Adjusted R-squared		**50.8%**		**54.2%**		**48%**	

Notes: * and ** show the statistical significance level of 0.4% and 0.000% respectively (t-tailed test)

DST: Differentiation strategy; APD: the managerial accountants' participation in the strategic decision-making process; IPM: the use of the integrated performance measures; LOC: level of competition; PER: Organisational performance.

5 Conclusions

The supported hypotheses proposed some implications for managers as follows:

Firstly, the accepted H1 and H2 hypotheses suggest that managers in the enterprise pursuing the differentiation strategy should apply multiple non-financial measures in addition to the financial measures in order to improve their organizational performance. This results from the fact that non-financial measures will help managers focus on

the factors that lead to the success of enterprises as well as the factors that create their competitive advantages such as quality, reliability, innovation, meeting customers' needs or on-time delivery as mentioned by the spirit of differentiation strategy. This is consistent with the explorations from many studies, like Ittner et al., 1997; Miles & Snow, 1978; Simons, 1987, 1990. For more details, these studies conclude that the control system in general and the performance measurement system in particular should be designed to help businesses achieve their strategic goals.

Secondly, the accepted H3 and H4 hypotheses recommend that in the enterprises with the managerial accountants' participation in the strategic decision-making process, managers should support the managerial accountants' proposals to improve the business performance measurement system, especially supporting the greater usage of the integrated performance measures in this system. This results from the fact that more than anyone else, managerial accountants are aware that non-financial performance enhances financial performance. In other words, they understand that if enterprises desire to achieve the strategic goals like cost reduction, they need to identify which activities should be improved. Suppose that enterprises want to achieve the goal of increasing revenue, they need to find out how they are able to meet their customers' satisfaction?

The limitation of this study came from the use of cross-sectional data. In other words, all data for a sample was collected only once from a respondent. Consequently, it was hard to really convince that the fit between the use of the integrated performance measures and contingency factors (the cause) positively affected organizational performance (the results) because a cause often took time leading to a result. Therefore, future research needs to use time-series data to engender causality.

Appendix 1. Descriptive Statistics for the Use of Each Group of Financial and Non-financial Performance Measures for Evaluating Managerial Performance Purpose

Categories of performance measures	N statistic	Minimum	Maximum	Mean	Std. Deviation
Financial measures	257	1	7	5.28	1.132
Customer measures	257	3	7	5.32	0.943
Employee measures	257	1	7	4.58	1.415
Supplier measures	257	1	7	3.15	1.219
Operational performance measures	257	1	6	3.36	1.21
Quality measures	257	1	7	3.72	1.163
Innovation measures	257	1	7	4.14	1.34
Measures of corporate social responsibilities	257	2	7	4.27	0.97

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