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Market Orientation, Differentiation Strategy and the Use of Non-Financial Measures: Impact on Firm Performance

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ABSTRACT

Market orientation and differentiation strategy are essential determinants of contemporary performance measurement practice. However, studies investigating the association between market orientation and differentiation strategy on the use of non-financial measures (NFMs) in an emerging economy setting are still limited. This study examines whether these factors affect NFM use and eventually firm performance. A survey method was used in which the questionnaires were distributed to Indonesian manufacturing firms. Analysis was undertaken using Partial Least Square (PLS) Structural Equation Modelling (SEM). The results from a survey of 41 Indonesian managers documented positive and significant associations between market orientation and differentiation strategy, market orientation and NFM use, differentiation strategy and NFM use, and NFM use and firm performance. Additional tests revealed significant mediating relations in which NFMs facilitate positive impacts of market orientation and differentiation strategy on firm performance. These findings demonstrate the effect of market orientation and differentiation strategy in influencing NFMs use and illuminate the integral role of NFMs in bridging positive associations involving market orientation, differentiation strategy, and firm performance. This study contributes to the contingency-based management accounting literature in an emerging economy context by providing empirical evidence for the association between market orientation, differentiation strategy, NFMs, and firm performance.

Keywords: Market orientation; differentiation strategy; performance measurement; non-financial measures; firm performance.

Introduction

Research documents substantial shifts in the focus of contemporary performance measurement systems (PMSs) practice across firms, in which non-financial measures (NFMs) are increasingly considered to be essential factors that complement long-existing financial measures (Baines & Langfield-Smith 2003; Fullerton & Wempe 2009; Dossi & Patelli 2010; Chen et al. 2023). Researchers are increasingly considering whether NFMs such as customer satisfaction and retention, internal business processes improvement, and employee development and training are potential key factors that can improve financial performance (Guenther & Heinicke 2019; Yuliansyah et al. 2019; Fourne et al. 2023). Embedding NFMs in a firm's PMSs enables managers to incorporate essential non-financial information that leads to a more comprehensive understanding of the factors contributing to a firm's future competitive position (Ahn 2001; Kaplan & Norton 2001; Abernethy et al. 2013; Caker et al. 2022; Tawse & Tabesh 2023).

Contingency theory (Chenhall 2003; Otley 1980) argues that organisational effectiveness can be achieved by ensuring an appropriate match between contingency factors and performance measurement practice. Contingency factors refer to the underlying factors that determine a firm's operating and strategic decisions, including the decision to incorporate certain aspects into an organisation's PMSs (Chenhall 2003; Otley 1980). This study predicts that the use of NFMs across Indonesian manufacturing firms will be influenced by contingency factors of market orientation and differentiation strategy. This is in line with suggestions from prior studies (Bedford et al. 2016; Cadez & Guilding 2012; Fleming et al. 2009; Lee & Yang 2011; Lee & Wang 2020; Bedford et al. 2022; Tawse & Tabesh 2023) that call for an examination of relevancy and practicality of performance measurement concepts in contemporary workplace settings.

Several studies have investigated the impact of market orientation on firm performance (Cadez & Guilding 2008; Jaworski & Kohli 1993). Nevertheless, the question of whether firms' orientation towards the market can determine their adoption of differentiation strategy and how this relationship can affect performance measurement practice and firm performance is still relatively unexplored in the management accounting (MA) literature (Cadez & Guilding 2008; Iyer et al. 2019; Lee et al. 2015; Zhou & Li 2010). Prior studies have also highlighted the role of strategy in determining the integration of specific performance measures (Langfield-Smith 1997; Perera et al. 1997; Yuliansyah et al. 2016; Bedford et al. 2022). However, the research still lacks specific examination of how market orientation affects

the adoption of differentiation strategy and how this relation can affect a firm's decision to adopt non-financial PMSs, which may influence performance. Hence, this study aims to address this gap by investigating the effect of market orientation and differentiation strategy on NFM use and its effect on firm performance.

This study utilizes the survey method and applies Partial Least Square (PLS) Structural Equation Modelling (SEM) to examine the impact of two contingency factors—market orientation and differentiation strategy—on NFM use and its performance effect across Indonesian manufacturing firms. This study seeks to test whether firms' market orientation influences their adoption of differentiation strategy and how these factors determine NFM use and firm performance. This study predicts and finds positive relationships between market orientation and differentiation strategy, market orientation and NFMs NFMs, differentiation strategy and NFMs, and NFM use and firm performance. Additional results also reveal the role of NFMs in facilitating the association between market orientation, differentiation strategy, and firm performance, in which significant indirect relations between market orientation and differentiation strategy on firm performance occur via NFMs. This highlights the important role of NFMs in bridging the positive effect of market orientation and differentiation strategy on firm performance in line with the results of prior performance measurement studies (Baines & Langfield-Smith 2003; Fleming et al. 2009; Fullerton & Wempe 2009; Hoque 2004).

By empirically examining the relationships between market orientation, differentiation strategy, NFM use, and firm performance, this study aims to contribute to the contingency-based MA literature in Indonesia, especially regarding performance measurement and NFM-related research in the Indonesian context. This area is still limited and hence needed (Kristanto & Cao 2024). It is therefore expected that the results of this study can fill this gap. In addition, this study also attempts to bring a practical contribution to the current managerial practice in Indonesia by showing the essential role of NFMs in facilitating the positive effects of market orientation and differentiation strategy on firm performance.

This study is outlined as follows. Section 2 presents a literature review and hypothesis development, and Section 3 shows the research method. Section 4 explains the PLS-SEM analysis results, and Section 5 presents the discussion, conclusion, contributions, and limitations.

Literature Review And Hypotheses Development

The role of NFMs in facilitating a firm's decision-making processes has been determined based on the premise that NFM use can lead to improvements in performance (Asiaei & Jusoh 2017; Hoque & James 2000; Van der Stede et al. 2006). The underlying reason for this premise was distinctively attributable to the components of NFMs that drive financial performance (Hall 2008; Kaplan & Norton 2001; Malmi 2001). In line with contingency theory (Chenhall 2003; Otley 1980), we predict that NFM use across Indonesian manufacturing firms will be determined by the contingency factors of market orientation and differentiation strategy and that NFM use will be positively linked to firm performance. These predicted relations summarize the essential role of NFMs in facilitating performance-related effects from contingency factors of market orientation and differentiation strategy. This study used Indonesian manufacturing firms listed in the Indonesian Stock Exchange (IDX) as the source of respondents. This is in line with suggestions from prior studies that highlight the necessity for contingency-based PMS-related studies undertaken in an emerging economy context (Hoque 2014; Kristanto & Cao 2024). The hypothesized model is shown in Figure 1.

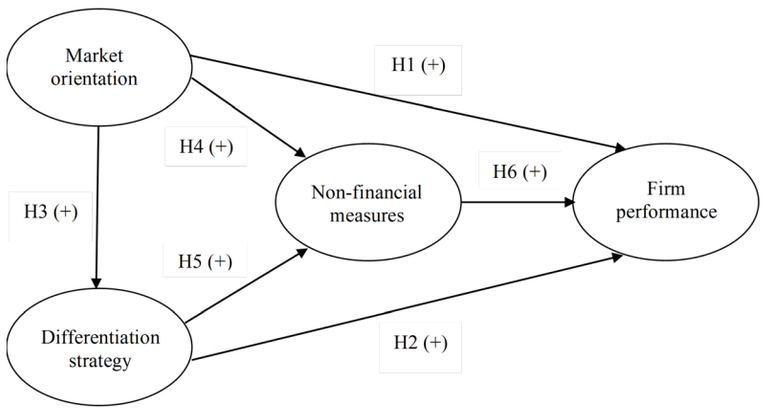


FIGURE 1. Hypothesized model

MARKET ORIENTATION AND FIRM PERFORMANCE

Market orientation involves the extent to which an organisation focuses on identifying the market's current needs and trends and tailoring its products accordingly (Narver & Slater 1990; Randhawa et al. 2021). Market orientation involves several processes such as intelligence gathering and analysis of customers and market trends and responsiveness toward the outcome of those processes (Kohli & Jaworski 1990). Market-oriented firms are typically characterized by better awareness of customers' existing and future demands and the capability to provide better products than their competitors (Slater & Narver 2000; Bhattarai et al. 2019). Cadez and Guilding (2008) found that market-oriented firms exhibit higher performance than less market-oriented firms. This is because firms with more market orientation can provide superior customer value from their products due to a better match between customers and market trends (Ellis 2006). Although Harris (2001) posited the inexistence of a direct association involving market orientation and firm performance, a study by Jaworski and Kohli (1993) documented a positive association between market orientation and a firm's overall performance because of a better understanding of customers' needs. The first hypothesis is therefore stated as follows:

H_1 A positive relation exists between market orientation and firm performance.

DIFFERENTIATION STRATEGY AND FIRM PERFORMANCE

Porter (1980) outlined two types of generic strategies: differentiation and cost leadership. Firms pursuing differentiation strategy are focused on offering products with a level of quality and the variability of features that match customers' demands and market trends (Govindarajan 1988; Jermias & Gani 2004). Meanwhile, firms adopting a cost leadership strategy position themselves to make products at lower prices and become cost-efficient producers in the industry (Chenhall & Langfield-Smith 1998; Langfield-Smith 1997). Prior literature has demonstrated the relevant practicability of differentiation over cost leadership strategy in contemporary business practices characterized by increasingly borderless and competitive environments (Jermias & Gani 2005; Yuliansyah et al. 2016). It is predicted that the adoption of a differentiation strategy will be positively linked to firm performance for two reasons. Firstly, the adoption of a differentiation strategy provides firms with the opportunity to address the quality-related demands of products characterized by current market trends that can facilitate profitability (Bhimani & Langfield-Smith 2007). Secondly, a commitment to pursue a differentiation strategy is often followed by increases in quality enhancement awareness and efforts of firm personnel that could positively affect performance (Lee & Wang 2020). Hence, the second hypothesis is outlined:

H_2 A positive association exists between differentiation strategy and firm performance.

MARKET ORIENTATION AND DIFFERENTIATION STRATEGY

Prior studies have documented the association between market orientation and adoption of business strategy (Guilding & McManus 2002; Liao & Rice 2010; Yuliansyah et al. 2019). Lee et al. (2015) posited that firms select business strategies after evaluating their external conditions such as current market trends and customers' demands. Zhou and Li (2010) and Kamarulzaman et al. (2023) argued that orientation toward the market can influence the type of strategy pursued, as firms focusing more on customer and market trends are more likely to adopt a more adaptive and customer-oriented strategic stance which closely resembles differentiation strategy. Market-oriented firms typically exhibit continuous and proactive initiatives toward identifying and delivering customer preferences (Dobni & Luffman 2003; Jaworski & Kohli 1993; Narver & Slater 1990), and this pattern resembles the characteristics of differentiation strategy (Chenhall & Langfield-Smith 1998; Langfield-Smith 1997). In contrast, firms under a cost leadership strategy tend to devote less effort to identifying and addressing the current market trends, as their focus is primarily on cost control and ensuring low prices (Miller 1988). Thus, they may not be as proactive as firms under a differentiation strategy. Iyer et al. (2019) found that a more proactive and adaptable stance toward the market is positively associated with specific positioning strategies that enable firms to differentiate themselves and cater to market demands. This leads to the third hypothesis:

H_3 A positive relationship exists between market orientation and differentiation strategy.

MARKET ORIENTATION AND NON-FINANCIAL MEASURES

Non-financial measures refer to a set of non-financial factors that are included in organisational performance measurement practice to complement the existing financial factors. The non-financial factors themselves are factors that can contribute to the attainment of financial performance (Chen et al. 2023). Kaplan and Norton (1992, 2001) provided an example of a performance measure that combines both financial and non-financial perspectives: the balanced scorecard (BSC). BSC combines financial-based performance, such as return on investment (ROI) and operating margin, with non-financial-based performance in the aspects of customers, internal business processes, and learning and growth. Performance measurement literature argues that the addition of NFMs in firm performance measurement practice was more prevalent among market-oriented firms that favour a more proactive and adaptable stance on market dynamics (Cadez & Guilding 2008; Henri 2006; Ho et al. 2014). Market-oriented firms also perceive non-financial information, such as

customer satisfaction, business process enhancement, and employee upskilling and innovation, as essential for business growth and capability development (Cadez & Guilding 2012; O'Connor et al. 2011; Hadid & Al-Sayed 2021). Having customer-related information can aid market-oriented firms when making effective and up-to-date decisions aimed at increasing current and future market shares and customer service quality (Conduit & Mavondo 2001; Guilding & McManus 2002). A clear picture of internal business processes such as operating capabilities and effectiveness can assist market-oriented firms in upgrading their business processes to match market demands (Jusoh & Parnell 2008; Liao & Rice 2010). Employee training and development also play a significant part in the business improvement of market-oriented firms as they can enhance employees' awareness and knowledge about the market (Kirca et al. 2005). The fourth hypothesis is as follows:

H_4 A positive relation exists between market orientation and the use of non-financial measures (NFMs).

DIFFERENTIATION STRATEGY AND NON-FINANCIAL MEASURES

Langfield-Smith (1997) argues that firms' PMSs are tailored to match their strategy in which PMSs are used to ensure successful strategy implementation. This perspective supports the argument according to contingency theory that contingency factors, such as strategy, influence performance measurement practice (Chenhall 2003; Otley 1980). The literature documents the relationship between differentiation strategy and more comprehensive PMSs that include a substantial portion of non-financial factors, including customers, internal operations, and learning and innovation (Braam & Nijssen 2004; Fleming et al. 2009; Perera et al. 1997). Firms under the differentiation strategy typically aim to make products with characteristics highly regarded by customers, and they tend to pay close attention to factors such as quality, dependability, and product features (Langfield-Smith 1997; Yuliansyah et al. 2016). Those firms also view growth and innovation as integral to achieving a competitive advantage (Simons 1990). In contrast, firms with a cost leadership strategy aim to reduce costs by focusing more on economies of scale and cost efficiency (Langfield-Smith 1997). This is associated with less reliance on non-financial performance measures (Lee & Wang, 2020; Lee & Yang 2011). Researchers argue that managers in firms under the differentiation strategy require PMSs embedded with non-financial measures to a greater extent compared to managers in firms applying a cost leadership strategy (Auzair & Amir 2017; Banker et al. 2024). This is due to the innovation and growth-focused nature of the differentiation strategy, which perceives non-financial information such as customer trends, internal quality enhancement, and upskilling of employees as important factors for decision-making processes (Chenhall & Langfield-Smith 1998; Perera et al. 1997; Van der Stede et al. 2006). This leads to the fifth hypothesis:

H_5 A positive association exists between differentiation strategy and the use of non-financial measures (NFMs).

NON-FINANCIAL MEASURES AND FIRM PERFORMANCE

Previous studies have examined the relationship between NFM use and firm performance (Asiaei & Jusoh 2017; Hoque 2004; Jusoh et al. 2008). These studies typically find a positive linkage between NFM use and firm performance, although a study by Ittner et al. (2003) found no association between non-financial measures and a firms' financial performance. The underlying reason for a favourable association between non-financial and financial perspectives stems from the usefulness of NFMs in facilitating more comprehensive and effective decision-making that is increasingly associated with non-financial factors, which positively affect performance. The typical non-financial factors include customer satisfaction, internal business processes, and learning and improvement. Researchers find that these factors ultimately drive financial performance (Abernethy et al. 2013; Kaplan & Norton 2001). Consideration of customer-related information such as customer trends, satisfaction, and retention enable firms to adjust their products with factors importantly perceived by customers (Iselin et al. 2008; Yuliansyah et al. 2019). A clear understanding of a firm's internal business processes allows managers to improve operating efficiency, effectiveness, and quality indispensable for delivering better product performance (Abdel-Maksoud et al. 2005; Guenther & Heinicke 2019; Van der Stede et al. 2006). Having learning and growth information in place ensures that managers understand how employees can learn and upskill themselves so that they can better meet the firm's value-creation objectives (Huang et al. 2007; Rhodes et al. 2008). The sixth hypothesis is therefore outlined:

H_6 A positive relationship exists between the use of non-financial measures (NFMs) and firm performance.

Methodology

This study uses an email-based survey method in which respondents work as accounting or finance managers for Indonesian manufacturers registered in the Indonesian Stock Exchange (IDX). An option for physical mail-based surveys is also available to cater to the respondents' preferences. The manufacturing sector was selected as a source for respondents, as this sector employs a majority of the workforce and contributes significantly to the economic development of Indonesia (Indonesian Stock Exchange 2021). The availability of archival data for the outcome variables of return on assets (ROA) and net

profit margin (NPM) for three consecutive years (2018-2020) was used as one of the criteria for selecting the manufacturing firms in this study.

As of October 2021, 193 manufacturing firms listed in the IDX satisfied the firm selection criteria in this study. However, 12 firms were dropped from this list due to the incompleteness of key financial data or cease of operation. This left 181 firms initially contacted for the survey. We asked those firms to nominate one potential respondent to whom the questionnaire will be addressed. This resulted in 103 firms agreeing to participate. Two stages of survey follow-up procedures suggested by Frohlich (2002) were undertaken in which the follow-ups for each respondent took place every two weeks. In total, 41 responses were received, which resulted in a response rate of 22.65 percent. Since the number of respondents in this study was somewhat low, the PLS-SEM will be used to analyse the data. One of the distinguishing characteristics of the PLS-SEM is that it can compensate for issues regarding sample size (Hair et al. 2011), which were experienced during this study.

Analysis for non-response bias (Van der Stede et al. 2007) was conducted by comparing respondents to non-respondents and early to late respondents with attention to key attributes such as total assets, total sales, ROA, and number of employees. Results (not tabulated) indicated that the differences for those attributes are not significant for the groups of respondents examined (all $p>0.1$). A comparison involving early and late respondents was also undertaken for each variable. The result (not tabulated) shows that the differences between early and late respondents are insignificant (all $p>0.1$). This asserts the nonappearance of a significant non-response bias. Harman's one-factor test was undertaken to assess common-method bias. Results (not tabulated) showed that the first component of a principal component analysis explains 44.44% of the variance, which is below the 50% threshold (Fuller et al. 2016; Podsakoff & Organ 1986). This indicates the nonappearance of a significant common-method bias.

Table 1 displays the demographic profile of firms surveyed for the industry segment and number of employees. Table 2 shows the demographic information of respondents. It is noticeable that more than 50 percent of respondents have worked in their company for five years or more. More than half of the respondents surveyed were tenured in their current position for 0-5 years. Descriptive statistics are provided in Table 3. The minimum and maximum mean scores for PERF (ROA) were -0.1111 and 0.2443, respectively, and the minimum and maximum mean scores for PERF (NPM) were -0.6355 and 0.1634, respectively. The mean score of PERF (ROA) was 0.020, and the mean score of PERF (NPM) was -0.006. This indicated a range of performance among the firms surveyed. Nevertheless, as displayed in Table 4, a positive and significant correlation exists between PERF (ROA) and PERF (NPM) ($p<0.05$).

TABLE 1. Demographics of firms

Category	Description	*N*	Cumulative *n*	%	Cumulative %
Industry segment	Food products	9	9	22.0	22.0
	Metal and steel	4	13	9.8	31.8
	Textile products	4	17	9.8	41.6
	Vehicle parts	4	21	9.8	51.4
	Packaging	3	24	7.3	58.7
	Wood and furniture	3	27	7.3	66.0
	Building materials	2	29	4.9	70.9
	Consumer goods	2	31	4.9	75.8
	Electronics	2	33	4.9	80.7
	Agriculture	1	34	2.4	83.1
	Chemicals	1	35	2.4	85.5
	Pharmaceuticals	1	36	2.4	87.9
	Other	5	41	12.2	100.0
Number of employees	0-100	3	3	7.3	7.3
	101-500	8	11	19.5	26.8
	501-2,000	15	26	36.6	63.4
	2,001-5,000	6	32	14.6	78.0
	5,001-10,000	4	36	9.8	87.8
	>10,000	5	41	12.2	100.0

TABLE 2. Demographics of respondents

Category	Description	*N*	Cumulative *n*	%	Cumulative %
Company tenure (years)	0-3 years	9	9	22.0	22.0
	3-5 years	9	18	22.0	44.0
	5-10 years	7	25	17.1	61,1
	10-15 years	5	30	12.2	73,3
	>15 years	11	41	26.7	100.0
Position in company	Manager (Accounting/Finance)	17	17	41.5	41.5
	Cost/Financial Controller	4	21	9.8	51.2
	Head of Division (Accounting/Finance)	6	27	14.6	65.9
	General Manager	1	28	2.4	68.3
	Senior Manager (Accounting/Finance)	2	30	4.9	73.2
	CFO	1	31	2.4	75.6
	Other	10	41	24.4	100.0
Position tenure (years)	0-3 years	16	16	39.0	39.0
	3-5 years	12	28	29.3	68.3
	5-10 years	3	31	7.3	75.6
	10-15 years	5	36	12.2	87.8
	>15 years	5	41	12.2	100.0

TABLE 3. Descriptive statistics

Variable	Mean	Standard deviation	Theoretical range		Actual range	
			Min	Max	Min	Max
MO	6.122	0.938	1.00	7.00	1.00	7.00
DS	5.171	1.374	1.00	7.00	1.00	7.00
NFMs	5.687	1.234	1.00	7.00	1.00	7.00
PERF (ROA)	0.020	0.068	NA	NA	-0.1111	0.2443
PERF (NPM)	-0.006	0.127	NA	NA	-0.6355	0.1634

MO: Market orientation; DS: Differentiation strategy; NFMs: Non-financial measures; PERF: Firm performance; ROA: Average return on assets (2018-2020); NPM: Average net profit margin (2018-2020).
n=41

Established scales were utilised for measuring each variable except firm performance, which used archival data from annual reports. Questionnaire development involved a review by three accounting faculty members and four business practitioners not participating in the survey. This review processes led to minor changes in the wording of several items before resulting in a final version of the questionnaire. Market orientation was measured using a list of questions adapted from Cadez and Guilding (2008). These questions measured market orientation related to the firm's understanding of customer requirements and preferences, market needs, trends, and long-term growth potential. They also determined the firms' attempts to create superior customer value. Responses were measured on a 7-point Likert scale, from 1 (not at all) to 7 (to a great extent). Higher scores indicated stronger market orientation, and lower scores indicated the opposite. Differentiation strategy was measured with an instrument adapted from Govindarajan (1988), which was specifically tailored to measure Porter's (1980) differentiation and cost leadership strategy. Respondents were required to assess the position of their firms relative to competitors across six aspects: selling price of products, percentage of revenues allocated to research and development, percentage of revenues allocated to marketing expenses, quality of firm's product, brand image of firm's product, and features in firm's products. Responses were anchored on a 7-point Likert scale, from 1 (significantly lower) to 7 (significantly higher). The total score above the scale midpoint of 4 indicated the pursuant of the differentiation strategy.

NFMs were measured with an instrument adapted from Hoque (2004). This instrument measured the extent of NFM use regarding three different aspects—customers, internal business processes, and learning and growth—which resemble the non-financial perspectives of the BSC (Kaplan & Norton 1992). Responses are on a 7-point Likert scale, from 1 (to a small extent) to 7 (to a great extent). A higher score indicates more extensive use of NFMs and a lower score shows lesser use. Archival

data of ROA and NPM for three years (2018-2020) were derived from each firm's annual reports to reflect firm performance. ROA and NPM were used to represent firm performance since these indicators have been utilized in prior studies (Widener 2007; Duh et al. 2009; Gani & Jermias 2012). Using archival data such as ROA and NPM to measure the dependent variable can mitigate common method bias, since data for independent and dependent variables are collected from different sources (Holm & Ax 2020; Podsakoff et al. 2003).

Results

PLS-SEM is used for hypothesis testing. PLS-SEM is a latent variable modeling analysis that can accommodate multiple dependent variables and recognize measurement errors (Hall 2008). This tool is used for two reasons. Firstly, it disregards data distributional assumptions and can address normality issues (Hair et al. 2019). Secondly, it can accommodate a relatively small sample size, which appears to be prevalent in studies in which prediction was the primary objective (Hair et al. 2011). PLS-SEM involves two stages of data analysis: measurement model and structural model. Table 4 displays the Pearson correlation matrix.

TABLE 4. Pearson correlation matrix

No	Variables	1	2	3	4	5
1	MO	1.000				
2	DS	0.513**	1.000			
3	NFMs	0.775**	0.676**	1.000		
4	PERF (ROA)	0.082	0.298	0.399**	1.000	
5	PERF (NFM)	0.353*	0.370*	0.506**	0.706**	1.000

MO: Market orientation; DS: Differentiation strategy; NFMs: Non-financial measures; PERF: Firm performance; ROA: Average return on assets (2018-2020); NPM: Average net profit margin (2018-2020).
** significant at 0.05, * significant at 0.1

Test Of Measurement Model

Tests of the PLS measurement model involve assessments of factor loadings, internal consistency reliability, and convergent and discriminant validities (Hair et al. 2019). For factor loadings, all items have loading scores >0.6 except several items: DS1 (Product selling price=0.419), DS2 (Percentage of sales spent on research and development=0.564), DS3 (Percentage of sales spent on marketing expenses=0.566), NFMs1 (Customer response time=0.513), NFMs7 (New product introduction=0.569), and NFMs8 (Warranty repair costs=0.458). Since items with low loading scores contribute less to the explanatory power of the research model (Hulland 1999), those items were excluded from further analysis. Table 5 shows the scores of factor loadings from the final PLS measurement model.

TABLE 5. Factor loadings from the final PLS measurement model

Variable	Item	Factor loading
Market orientation (MO) Please indicate the extent to which the following statements reflect the situation in your company (*1= not at all, 7= to a great extent*)		
MO1	My company has a strong understanding of our customers	0.839
MO2	The functions in my company work closely together to create superior value for our customers.	0.887
MO3	Management in my organisation thinks in terms of serving the needs and wants of well-defined markets chosen for their long-term growth and profit potential for the company.	0.917
MO4	My company has a strong market orientation.	0.917
Differentiation strategy (DS) Please indicate the position of your company relative to those of leading competitors in regards to these aspects (*1= significantly below, 7= significantly above*).		
DS4	Product quality	0.841
DS5	Brand image	0.867
DS6	Product features	0.877

continue ...

... continued

Non-financial measures (NFMs) Please indicate the extent of which the following measures are used in your company (*1= to a small extent, 7= to a great extent*).		
NFMs2	Customer satisfaction	0.640
NFMs3	Market share	0.640
NFMs4	On-time delivery	0.641
NFMs5	Material and labour efficiency or productivity	0.744
NFMs6	Process improvements and re-engineering	0.778
NFMs9	Relations with suppliers	0.784
NFMs10	Workplace relations (between co-workers, superior and subordinate)	0.819
NFMs11	Employee development and training	0.775
NFMs12	Employee health and safety	0.801
NFMs13	Employee satisfaction	0.831
Firm performance (PERF) Archival-based data (from company annual report)		
PERF1	Average return on assets (ROA) (2018-2020)	0.930
PERF2	Average net profit margin (NPM) (2018-2020)	0.917

Internal consistency reliability was evaluated through Cronbach's alpha and composite reliability. As in Table 6, the scores were all above 0.7, which indicated acceptable internal consistency reliability (Hair et al. 2019). Convergent validity of research variables is examined with Average Variance Extracted (AVE) scores. Table 6 shows that the AVE scores of each variable of interest are above 0.5, which reflects acceptable convergent validity (Hair et al. 2011).

TABLE 6. Cronbach's alpha, composite reliability, and average variance extracted (AVE)

Variable	Cronbach's alpha	Composite reliability	AVE
MO	0.913	0.927	0.793
DS	0.827	0.827	0.742
NFMs	0.911	0.916	0.561
PERF (ROA)	0.828	0.832	0.853
PERF (NPM)			

MO: Market orientation; DS: Differentiation strategy; NFMs: Non-financial measures; PERF: Firm performance; ROA: Average return on assets (2018-2020); NPM: Average net profit margin (2018-2020).
n=41

Discriminant validity was evaluated through the Heterotrait-Monotrait Ratio (HTMT). HTMT is an alternative method to test discriminant validity in studies using variance-based SEM, which is specified as the mean value of correlations of variable items relative to the geometric mean of average correlations for aspects measuring similar variables (Henseler et al. 2015). Table 7 shows the HTMT list. It is noticeable that the HTMT values of all research variables are below the minimum value of 0.9, and none of the HTMT results contain a value of 1. This indicates an adequate discriminant validity (Henseler et al. 2015; Hair et al. 2019; Iyer et al. 2019).

TABLE 7. Discriminant validity, Heterotrait-Monotrait ratio (HTMT)

Category	Heterotrait-Monotrait ratio (HTMT)
MO ←→ DS	0.597
MO ←→ NFMs	0.881
DS ←→ NFMs	0.875
MO ←→ PERF	0.271
DS ←→ PERF	0.478
NFMs ←→ PERF	0.578

MO: Market orientation; DS: Differentiation strategy; NFMs: Non-financial measures; PERF: Firm performance.

TEST OF STRUCTURAL MODEL

Table 8 shows the direct paths of the PLS structural model result, with path coefficients and t-statistics representing the hypothesized relationships (H_1-H_6). Figure 2 shows the PLS structural model accompanied by significant path coefficients resulting from the analysis.

H_1 predicts a positive relationship between market orientation and firm performance. Table 8 shows a significant yet negative relation between market orientation and firm performance (coefficient=-0.518, t-statistic=2.084, $p<0.05$). H_1 is not supported. This result contradicts Cadez and Guilding (2008), who assert a positive association between market orientation and performance but confirm the study by Harris (2001), which asserts the absence of a direct relation between firms' market orientation and performance. In line with several studies (Dobni & Luffman 2003; Hult et al. 2005; Zhao et al. 2023), we argue that a positive association between market orientation and firm performance may occur indirectly via contingency factors such as strategy adopted and firm performance measurement practice. These predicted relations are examined in the additional analysis.

H_2 predicts a positive association between differentiation strategy and firm performance. Table 8 shows an insignificant negative association between differentiation strategy and firm performance (coefficient=-0.096, t-statistic=0.413, $p>0.1$). This result does not support H_2. The plausible explanation for this outcome is that the positive effect of the adoption of differentiation strategy on performance may not occur directly but indirectly via PMS use (Abdel-Maksoud et al. 2005), since a firm's PMSs are typically tailored to match its strategy (Braam & Nijssen 2004; Langfield-Smith 1997; Perera et al. 1997). This finding implies the role of PMSs in facilitating the successful translation of firm strategy into expected performance (Van der Stede et al. 2006). This relationship is examined in additional analysis.

H_3 predicts a positive relation between market orientation and differentiation strategy. Table 8 confirms a positive and significant relation between market orientation and differentiation strategy (coefficient=0.532, t-statistic=4.987, $p<0.01$). H_3 is supported. Arguably, a firm's adoption of a differentiation strategy is significantly determined by its orientation to the market. Having a clear, proactive, and bold orientation to the market is regarded as a requirement for the successful adoption of a differentiation strategy that typically requires firms to be more proactive in identifying current market needs (Miller 1988; Narver & Slater 1990). This result resembles the argument from prior studies (Iyer et al. 2019; Kamarulzaman et al. 2023; Zhou & Li 2010) that highlight the positive association between market orientation and differentiation strategy.

H_4 anticipates a positive association between market orientation and NFM use. Table 8 shows a positive and significant linkage between market orientation and NFM use (coefficient=0.556, t-statistic=7.779, $p<0.01$). H_4 is supported. This result supports the assertions of prior literature that market-oriented firms typically require non-financial information for market enhancements such as customer satisfaction, internal business processes, and learning and growth (Cadez & Guilding 2008; Holm & Ax 2020; O'Connor et al. 2011). Market orientation encourages firms to identify current market trends and deliver products that match market preferences (Zhao et al. 2023). Having a wide array of NFMs can assist firms in successfully attaining this objective.

H_5 predicts a positive linkage between differentiation strategy and NFM use. Table 8 indicates a positive and significant association between differentiation strategy and NFMs (coefficient=0.469, t-statistic=5.440, $p<0.01$). H_5 is supported. This is in line with the assertion by Langfield-Smith (1997) that PMSs are designed specifically to match strategy. Managers in firms under a differentiation strategy require PMSs with a wide range of non-financial factors that support growth and innovation.

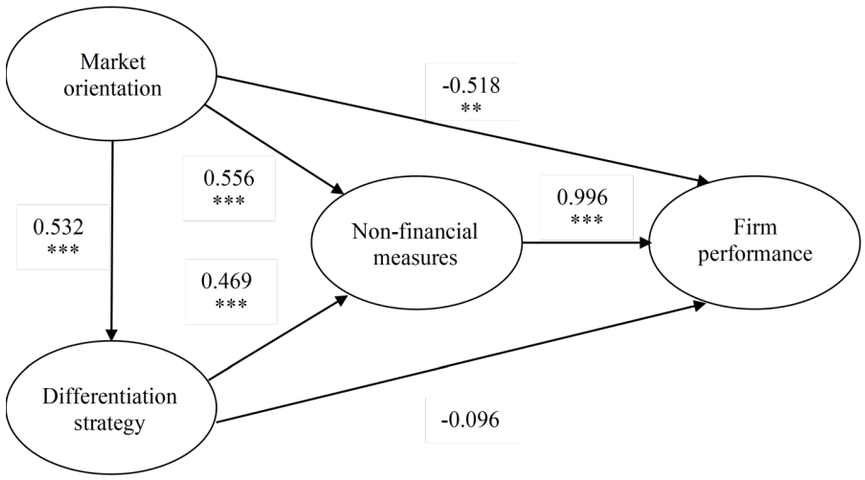
This result is also consistent with prior research (Baines & Langfield-Smith 2003; Chenhall & Langfield-Smith 1998; Yuliansyah et al. 2016) asserting that information contained in NFMs such as customer preferences and feedback, internal operating processes, and employee skill development are importantly appreciated by decision-makers in firms under differentiation strategy.

H_6 predicts a positive linkage between NFM use and firm performance. Table 8 shows a positive and significant relation between NFMs and firm performance (coefficient=0.996, t-statistic=3.340, p<0.01). H_6 is supported. This outcome is consistent with the results of prior studies, asserting that the use of NFMs can improve firm performance (Asiaei & Jusoh 2017; De Geuser et al. 2009; Hoque 2004; Huang et al. 2007). In a contemporary workplace situation, firm decision-making processes increasingly involve non-financial factors (Bedford et al. 2016; Kaplan & Norton 2001). By having NFMs that consist of information about customer satisfaction, internal business processes, and learning and growth, firms can formulate more comprehensive and effective decisions, which eventually lead to favourable financial performance. Table 9 presents a summary of the hypothesis results.

TABLE 8. Direct paths, PLS structural model result: Path coefficient (t-statistic)

Dependent variables	Independent variables		
	MO	DS	NFMs
DS	0.532 (4.987) ***		
NFMs	0.556 (7.779) ***	0.469 (5.440) ***	
PERF	-0.518 (2.084) **	-0.096 (0.413)	0.996 (3.340) ***

MO: Market orientation; DS: Differentiation strategy; NFMs: Non-financial measures; PERF: Firm performance.
*** significant at 0.01 (one-tailed), ** significant at 0.05 (one-tailed)



*** significant at 0.01 (one-tailed), ** significant at 0.05 (one-tailed)
FIGURE 2. PLS structural model with significant path coefficients

TABLE 9. Summary of hypothesis results

Hypothesis	Description	Findings
1	A positive relation exists between market orientation and firm performance.	Not supported
2	A positive association exists between differentiation strategy and firm performance.	Not supported
3	A positive relationship exists between market orientation and differentiation strategy.	Supported
4	A positive relation exists between market orientation and the use of non-financial measures (NFMs).	Supported
5	A positive association exists between differentiation strategy and the use of non-financial measures (NFMs).	Supported
6	A positive relationship exists between the use of non-financial measures (NFMs) and firm performance.	Supported

Additional Analysis

We examined several indirect paths to identify the significant mediating relationships that are not hypothesized. Table 10 shows the results of the indirect paths of the PLS structural model. We used criteria stipulated by Nitzl et al. (2016) and Zhao et al. (2010) to label the type of mediating relationship (indirect only, complementary, or competitive, partial, or full). A significant mediating relation is indicated by significant indirect path coefficients and the absence of a zero value within lower and upper confidence interval levels (Nitzl et al. 2016; Zhao et al. 2010). The first significant mediating relationship occurred between market orientation and NFM use via differentiation strategy. This relationship is labelled as complementary (partial) mediation (Nitzl et al. 2016) as the direction was consistent with the prediction stated in the hypothesis. The second and third significant mediating relationships involve market orientation and differentiation strategy on firm performance acting through NFMs. The second mediating relationship is regarded as competitive (partial) mediation due to the opposite direction compared to the result observed in the direct effect testing, and the third mediating relation is labelled as indirect only (full) mediation (Nitzl et al. 2016; Zhao et al. 2010), since the direct effect result was insignificant.

The fourth mediating relationship displays a significant sequential mediating effect (Reb et al. 2019) (coefficient=0.248, t-statistic=2.488, $p<0.01$) as two mediating variables (differentiation strategy and NFMs) indirectly facilitate the association between market orientation and firm performance. This sequential mediating relation can be labeled as competitive (partial) mediation as it shows that an eventually positive linkage between market orientation and firm performance occurred via differentiation strategy and NFMs (Nitzl et al. 2016). Taken together, these mediating results highlight an important mediating role of NFMs that involve three of four significant mediating relationships. These outcomes are in line with prior studies (Baines & Langfield-Smith 2003; Fleming et al. 2009; Fullerton & Wempe 2009; Hoque 2004) which collectively asserted the role of NFMs in facilitating relationships between firm strategic orientation and performance.

TABLE 10. Indirect paths, PLS structural model result

Indirect path	Coefficient	Standard deviation	t-statistic	Confidence interval (Bias corrected)		Type of mediation
				Lower (5%)	Upper(95%)	
MO → DS → NFMs	0.249 ***	0.054	4.618	0.169	0.346	Complementary (partial)
MO → NFMs → PERF	0.554 ***	0.181	3.055	0.217	0.816	Competitive (partial)
DS → NFMs → PERF	0.467 ***	0.161	2.911	0.238	0.757	Indirect only (full)
MO → DS → NFMs → PERF	0.248 ***	0.100	2.488	0.114	0.446	Competitive (partial)
MO → DS → PERF	-0.051	0.126	0.404	-0.255	0.161	No mediation

MO: Market orientation; DS: Differentiation strategy; NFMs: Non-financial measures; PERF: Firm performance.
*** significant at 0.01 (one-tailed)

Discussion And Conclusion

In line with contingency theory, this study predicts and finds positive relationships between market orientation and differentiation strategy, market orientation and NFM use, differentiation strategy and NFM use, and NFM use and firm performance. The results show that firms with greater market orientation adopted a differentiation strategy that emphasized growth and innovation. More emphasis on market orientation and differentiation strategy leads firms to use NFMs in their performance measurement practice to support comprehensive decision-making processes. Thus, the use of NFMs was significantly associated with firm performance. Additional analysis also reveals mediating roles, both indirect and sequential, of differentiation strategy and NFM use in facilitating the association between market orientation and firm performance. This highlighted the important role of NFMs in facilitating the positive effect of market orientation and differentiation strategy on firm performance, which confirmed the findings in previous studies (Baines & Langfield-Smith 2003; Fleming et al. 2009; Fullerton & Wempe 2009; Hoque 2004).

Theoretical And Practical Contributions

By investigating the relationship between market orientation, differentiation strategy, NFMs, and firm performance, this study contributes to contingency theory and contingency-based MA literature in emerging economies by examining the contemporary performance measurement practices in Indonesian manufacturers. Several indirect relations that highlight the role of NFMs in bridging the positive effects of market orientation and differentiation strategy on firm performance were also essential in enriching the current literature. As noted by the literature (Hoque 2014; Kristanto & Cao 2024), studies about the potential role of NFMs in facilitating the relationship between firm contingency factors and

performance in emergent economy settings are still sparse. Hence, this study addresses this gap, expands our understanding of contemporary PMS practices in an emerging economy setting, and contributes to enriching the contingency theory and empirical contingency-based MA studies. This study also provides essential implications relevant to managerial practices by documenting the role of market orientation and adoption of differentiation strategy in determining the addition of non-financial factors, such as customer services, internal processes, and employee-related factors, into firm performance measurement practice. It also clarifies whether the addition of those factors positively enhances performance.

Limitations

This study has several limitations. Firstly, we used a sample of survey respondents only from the manufacturing sector, hence limiting the generalizability of results. Upcoming studies can address this limitation by examining firms in different industrial sectors (e.g., services). Secondly, the number of samples in this study is somewhat lower than other PMS-related survey studies. Future studies can overcome this limitation by increasing the number of firms initially contacted for a survey to improve the likelihood of obtaining more responses (Frohlich 2002; Van der Stede et al. 2007). Finally, other contingency factors that might also influence NFM adoption such as the intensity of competition (Holm & Ax 2020) and organisational structure (Gerdin 2005) are worth investigating. In line with the current trends, the digitalization aspect of NFM practices would also be promising for further examination (Moller et al. 2020). Future studies can examine the potential relationships between those contingency factors and firm performance measurement practice and performance, thus expanding our understanding of the linkage between contingency factors, PMSs, and firm performance.

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