

Surviving the turbulence: A dynamic capabilities perspective on market orientation and business performance of MSMEs

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Abstract

Purpose: This study seeks to understand how market and technological turbulence shape and potentially moderate the relationship between market orientation and the business performance of micro, small, and medium enterprises (MSMEs).

Design/methodology/approach: The study employs a survey design. The respondents are owners or managers of MSMEs in Bali, a developing region in Indonesia. The primary data was analyzed using SEM-PLS. A robustness check was conducted by testing for non-linear effects and endogeneity.

Findings: This study shows that market orientation positively influences business performance. Market turbulence weakens this relationship, while technological turbulence strengthens it, although with a weak effect. Customer orientation and inter-functional coordination are essential for enhancing MSME performance in developing regions.

Research limitations: The cross-sectional design limits the ability to infer causal relationships. The absence of back translations from Indonesian to English and of a pilot test may reduce confidence in construct validity. This study used two different data collection methods, thus limiting the response rate calculation. The findings may have limited generalizability.

Practical implications: MSMEs need to regularly explore consumer needs in a cost-effective way and participate in exhibitions to interact directly with customers. They should also strengthen their resources to improve their ability to respond to market information.

Social implications: By adopting a market-oriented approach, MSMEs become more aware of consumer needs, enabling them to develop products and services that meet market demands, which, in turn, enhance business performance and employee welfare within the sector.

Originality/value: This study contributes to the literature on intangible capital by conceptualizing market orientation as an intangible dynamic capability under environmental turbulence. It integrates market and technological turbulence as moderating variables in the relationship between market orientation and the business performance of MSMEs. This perspective remains underexplored in prior studies, as it situates the analysis within the dynamic context of MSMEs in Bali as a developing region that has a strong dependence on tourism, which in turn exposes firms to high levels of environmental uncertainty. We extend the scope of research beyond the conventional focus on large firms and developed regions to MSMEs in developing regions. This study further advances dynamic capabilities theory by demonstrating that environmental turbulence does not uniformly enhance the effectiveness of market-oriented capabilities in resource-constrained MSMEs.

Keywords: Market orientation, Market turbulence, Technological turbulence, Business performance

Jel Codes: D22, L20, M20, M40

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1. Introduction

MSMEs play an essential role in Indonesia, making their performance a focus of researchers' attention. The performance of MSMEs in developing regions often fluctuates. They contribute 60.51% to the national gross domestic product (Kementrian Koperasi dan UKM Republik Indonesia, 2019). However, MSMEs contributed only approximately 15.7% of total national exports in 2025, despite their important role in the economy (Kementerian Koordinator Bidang Perekonomian Republik Indonesia, 2025). The performance of MSMEs in Indonesia is strongly influenced by MSME performance in each region. As each region has distinct characteristics, these differences may also shape MSMEs' capabilities. Bali's economic structure is greatly influenced by the tourism sector, making it dependent on tourism activities. Therefore, MSME performance in this region is sensitive to changes in market demand and environmental uncertainty. This makes Bali an appropriate research context for examining strategies to improve MSME performance.

Given this phenomenon, MSMEs in Bali need to develop unique resources to improve their performance. They must make greater effort to integrate information, knowledge, business ideas, and networks into their strategies despite having more limited resources (Naudé et al., 2014; Raju et al., 2011). Considering that MSMEs have limited financial resources, market orientation as a low-cost intangible resource is considered a dynamic capability relevant to improving business performance. Market orientation refers to an organization's approach to meeting its customers' needs. MO makes MSMEs aware of the factors consumers require, the economic environment they face, and how they respond to a dynamic, competitive market. Decision-making will be based on customer satisfaction (Kocak et al., 2017; Leisen et al., 2002). Market orientation encourages MSMEs to obtain information related to what customers need, what actions competitors are taking, and what coordination between functions should be done (Kocak et al., 2017; Leisen et al., 2002) to face dynamic market and technology conditions. This encourages MSMEs to generate new ideas and innovations, which can enhance competitive advantage and ultimately improve business performance.

Previous literature has shown inconsistent empirical evidence regarding the relationship between market orientation and MSME performance in developing countries. Buli (2017) investigated SMEs in Ghana and found that higher levels of market orientation are associated with improved business performance. Conversely, Kocak et al. (2017) in their research in Turkey found that market orientation is not significantly related to SME performance. A similar finding was reported by Ho et al. (2018) who found that market orientation is not significantly related to firm performance in Vietnam. These inconsistencies could be attributed to differences in business environments across regions. In addition, prior studies may have considered MO as a strategy that universally enhances performance. Consequently, prior studies on the relationship between MO and performance have yielded inconsistent results because they did not consider the role of environmental turbulence in shaping the effectiveness of MO. On that basis, we sought to add the role of environmental turbulence to provide more comprehensive results. Conceptually, MO is an intangible capital whose effectiveness depends on environmental conditions. These results also prove that RBV theory has limitations in explaining the relationship between MO and business performance under different environmental conditions. RBV emphasizes that the ownership and management of unique resources will enable companies to achieve optimal performance under stable conditions. However, this may not be effective in a dynamic environment. This aligns with contingency theory, which is also limited in explaining this relationship. Contingency theory explains when a strategy is appropriate for a particular

environment. However, this theory has a limitation in explaining how companies manage their resources to respond to environmental conditions, whether or not there are changes in the environment. In contrast, from the perspective of dynamic capabilities, these resources become valuable when companies are able to utilize them through the processes of sensing, seizing, and reconfiguring in order to respond to environmental uncertainty. On that basis, dynamic capability theory is considered relevant for explaining the relationship between MO and business performance under an uncertain environment.

The business environment is highly dynamic. Changes in the business environment, such as market and technological turbulence, pose significant challenges for MSMEs in developing regions. Market turbulence reflects changes in consumer preferences for a product or service and indicates shifts in the market (Ebrahimi et al., 2018). Similarly, technological turbulence refers to rapid and unpredictable technological development (Huo et al., 2024). Market and technological turbulence may take the form of shifting market demand, increasing digitalization, the transition from cash payments to electronic payment systems, and the shift from traditional sales channels to e-commerce platforms. In response, MSMEs must exert greater effort to remain flexible and adapt effectively to these developments.

To survive in a dynamic market, MSMEs need to manage their resources effectively to achieve optimal business performance. A conceptual framework that examines the relationship between market orientation and business performance was developed. This study seeks to address gaps in prior research on this relationship by incorporating market and technological turbulence as moderating variables. Accordingly, it seeks empirical evidence on whether intangible resources, such as market orientation, are effective in improving business performance under dynamic market and technological conditions in MSMEs in developing regions. Ultimately, this study contributes by providing insights for MSMEs in developing regions in responding to dynamic markets and technologies. In line with the objectives of this research, the research questions are as follows:

1. Does market orientation affect the business performance of MSMEs in developing regions?
2. Does market turbulence moderate the relationship between market orientation and business performance of MSMEs in a developing region?
3. Does technological turbulence moderate the relationship between market orientation and business performance of MSMEs in the developing region?

This paper consists of six sections. Section 1 presents the introduction; Sections 2 and 3 review the literature and describe the methodology, respectively. Sections 4 and 5 present the results and discussion, while Section 6 presents the conclusions, implications, limitations, and directions for future research.

2. Literature Review

2.1. Resource-Based View Theory

The Resource-Based View (RBV) posits that a firm's unique resources confer competitive advantage by differentiating it from competitors. The effective ownership and management of these resources can create a competitive advantage and contribute to improved performance (Barney, 1991; Hanggraeni et al., 2019; Lin & Wu, 2014). A resource is said to be unique when it has Valuable, Rare, Inimitable, and Non-substitutable (VRIN) aspects (Kraaijenbrink et al., 2010; Nason & Wiklund, 2018). Referring to this theory, MO is conceptualized as a unique resource that may be utilized to improve business performance under stable conditions. However, this theory does not adequately explain how firms use market orientation to respond to dynamic environments. This is in line with the criticism of prior studies, which states RBV is not dynamic (Kraaijenbrink et al., 2010; Shafeey & Trott, 2014). In this regard, RBV has a limitation in explaining the relationship between MO and business performance under market and technological turbulence.

2.2. Contingency Theory

Contingency theory posits two main principles: (1) there is no single best way to manage an organization; and (2) organizational activities are carried out differently across organizations, depending on environmental or contextual factors. There is no universal solution for every firm's condition (Abedin, 2022; Alves et al., 2017; Otley, 2016). Firm management is significantly influenced by contextual factors, including the characteristics of

the environment in which the firm operates (Luthans & Stewart, 1977). To achieve optimal management, firms must identify contextual factors and create flexible and adaptable systems (Alves et al., 2017). This theory emphasizes the need for alignment between strategy and environmental conditions. In the context of this study, MO is considered merely a strategy used to improve performance in a dynamic environment. If performance improves, MO is considered an appropriate strategy, and if performance declines, MO is considered inappropriate. This theory is considered incapable of explaining how companies adapt, such as identifying changes in customer needs, adjusting production to meet customer demand, and integrating resources to respond to change.

2.3. Dynamic Capabilities Theory

Dynamic capabilities theory integrates the factors of competition, cooperation, and innovation. This theory is used to integrate, build, and reconfigure internal and external competencies to face changes in a dynamic environment (Kapoor & Aggarwal, 2020). In simple terms, this theory describes how an organization acquires and synthesizes information, then uses it to generate innovations in a dynamic environment. Key factors in this theory include the ability to manage resources, such as developing learning strategies, building a trust culture, enhancing technological resources, and designing and making the organizational structure more flexible (Eisenhardt & Martin, 2000). Organizations use this theory as a basis for dealing with uncertain situations and the impacts of that uncertainty (Mero & Haapio, 2022). This research aims to integrate RBV, contingency theory, and dynamic capabilities theory to explain a firm's ability to innovate amidst market and technological uncertainties. The dynamic capabilities theory complements the limitations of RBV and contingency theory. Firms must explore and integrate information to continuously generate innovations. These innovations will become their unique resources, helping the firm achieve a competitive advantage amid market and technological uncertainties. The enhancement of competitive advantage will subsequently improve their business performance. Simply put, the dynamic capabilities theory holds that firms must actively and continuously learn to adapt to environmental changes. Thus, the role of market orientation in business performance amid market and environmental uncertainty can be explained in a very relevant way by integrating these three theories.

2.4. Business Performance

Business performance is a crucial factor in a firm's sustainability. Business performance is defined as an organization's ability to achieve its goals and its capacity to adapt to fluctuations in environmental factors, including profit, productivity, satisfaction, social responsibility, and business survival (Cho & Lee, 2018). From an owner's perspective, business performance is used to track the achievement of organizational goals. From an investor's perspective, business performance serves as an indicator of a firm's financial capability and productivity. From a management perspective, business performance is used as a basis for analyzing past performance and evaluating future operational implementation.

Business performance is not only manifested in financial performance but also in non-financial performance. Previous literature identifies three indicators of business performance: profitability, efficiency, and service (Kumar et al., 2018). This indicates that business performance will be more comprehensive when measured using both financial and non-financial aspects. Non-financial performance is considered to provide more information than economic data (Lee et al., 2015). In this study, business performance encompasses both financial and non-financial aspects, which are measured by financial performance, customer satisfaction, internal process efficiency, and learning and growth (Tjahjadi et al., 2022).

Competitive advantage will be achieved when an organization can accurately analyze information, generate and implement innovations continuously, regardless of environmental changes. The primary focus is the firm's ability to learn continuously. These actions will enable the firm to adapt more actively to the business environment. The same applies to MSMEs operating in a dynamic environment. They need to achieve optimal business performance, both financial and non-financial, by developing their own unique resources to be competitive.

2.5. Market Orientation

Market Orientation (MO) is an orientation that focuses on customer orientation, competitors, and other market-related knowledge (Ho et al., 2018; Ozkaya et al., 2015). The concept of market orientation can be

explored from multiple perspectives, including cultural and behavioral perspectives. From a cultural perspective, market orientation refers to the culture within an organization that prioritizes meeting customer needs, including providing added value to products, services, and other aspects (Montiel-Campos, 2018). The dimensions of market orientation are customer orientation, competitor orientation, and inter-functional coordination (Narver & Slater, 1990). From a behavioral perspective, market orientation is an organizational behavior that focuses on deploying market intelligence throughout the organization to address current and future customer needs (Kohli et al., 1993). This study views market orientation as a culture that serves as an organizational resource, which can then be leveraged to enhance organizational performance.

Customer orientation refers to the extent to which an organization and its employees are committed to meeting the needs of its consumers (Kiffin-Petersen & Soutar, 2020; Zhao, 2022). Customer orientation will help companies identify changes in consumer preferences, enabling them to provide what customers want and need more quickly. This will contribute to sales, which in turn will contribute to firm performance. Competitor orientation is a view when a firm understands the short-term strengths, weaknesses, long-term capabilities, and strategies of existing and potential competitors. (Crick & Crick, 2022; Narver & Slater, 1990). By identifying competitors' weaknesses, firms may develop more competitive strategies in terms of pricing, promotion, and product innovation to improve their performance. Inter-functional coordination is the process of aligning communication, sharing strategic information, and other resources, which are then integrated and collaborated with different functional units throughout the firm to create value for customers (Ruiz-Alba et al., 2020). Effective coordination will ensure that information is disseminated effectively. This allows changes to be responded to more quickly, thereby contributing to effective decision-making to improve firm performance. Therefore, customer orientation and competitor orientation help firms detect market changes (sensing), while inter-functional coordination helps firms take advantage of opportunities and reconfigure their resources (seizing and reconfiguring). These three dimensions complement each other to form a market orientation that becomes a unique resource for the firm. This is further reinforced by the fact that the three dimensions of market orientation may become cost-effective intangible capital in providing information for MSMEs that tend to be resource-constrained in determining strategies and actions in responding to the market.

Based on RBV, market orientation is considered an intangible unique resource that gives MSMEs a competitive advantage, which is believed to contribute to their performance. Supported by dynamic capability theory, MSMEs require intangible unique resources as their dynamic capabilities to optimize their performance in responding to specific environmental conditions. With market orientation, MSMEs possess dynamic capabilities to manage their resources effectively and efficiently in a sustainable manner. They will have knowledge related to consumers' needs, monitor competitors' movements, and coordinate across functions to innovate, thereby improving their business performance.

Lee et al. (2015) demonstrated that market orientation is significantly related to firm performance. However, Kocak et al. (2017) reported that responsive market orientation is not related to firm performance in Turkey. Similar results were also obtained by Le et al. (2018), who found that market orientation is not associated with firm performance in Vietnam. These inconsistencies in previous research may be attributable to differences in environmental conditions. Differences in the business environment lead to variation in the effectiveness of market orientation (MO) in increasing sales. Countries or regions characterized by dynamic markets and technologies tend to have more adaptive MSMEs. Under such conditions, the implementation of MO may help improve firm performance. Conversely, in relatively stable environments, the role of MO does not always have a significant impact. Differences in business culture may also lead to differences in work culture within MSMEs. A work culture that prioritizes innovation tends to embed MO in the work culture, thereby effectively improving performance. In contrast, a work culture that tends to be rigid and closed to innovations tends to render MO ineffective in improving performance.

This study proposes that market orientation enhances the business performance of MSMEs in developing regions. MSMEs in these areas face challenges related to limited financial resources, which leads them to rely on relatively low-cost intangible assets with substantial impact, such as market orientation.

H1: Increased market orientation will be accompanied by increased business performance.

2.6. Market Orientation, Market Turbulence, and Business Performance

Firms with a strong market orientation (customer orientation, competitor orientation, and inter-functional coordination) tend to focus on consumer needs and competitors' strategies. They will also strengthen coordination between departments to ensure they have adequate information that is shared promptly. Previous studies have yielded inconsistent findings regarding the relationship between market orientation and business performance. Some studies suggest that higher market orientation leads to improved firm performance (Lee et al., 2015). However, other literature suggests that market orientation is not significantly related to performance (Kocak et al., 2017; Le et al., 2018). The differences in market conditions may affect the effectiveness of market orientation on business performance. This indicates that the effectiveness of market orientation as an intangible resource in enhancing performance may vary across environmental conditions. In a stable environment, MO may be considered ineffective because companies can utilize their accumulated knowledge. In a turbulent market, MO may be considered more effective because market-related information changes rapidly and becomes obsolete. This situation forces firms to act quickly to gather current information, modify products and services continuously (Andotra & Gupta, 2016; Jaworski & Kohli, 1993; Wang et al., 2015). In light of this, the role of MO in improving performance is considered more effective under market turbulence. Therefore, the positive impact of market orientation on business performance is expected to be stronger under high levels of market turbulence.

According to contingency theory, firms may carry out their activities in different ways depending on the environmental or contextual conditions they face (Abedin, 2022; Alves et al., 2017). This theory only demonstrates the compatibility of strategy and environment. This theory has a limitation in explaining why the relationship between MO and business performance may differ in different environments. Therefore, dynamic capability theory is needed to explain that market orientation is considered a dynamic capability of MSMEs to continue to grow in a dynamic environment, one of which is market turbulence. Market orientation may be integrated with other MSME competencies to produce optimal performance.

H2: Market turbulence moderates the relationship between market orientation and business performance.

2.7. Market Orientation, Technological Turbulence, and Business Performance

The effectiveness of market orientation in improving performance is also influenced by technological conditions. Differences in technological environments may cause MO to have a significant impact on business performance, while others do not. Technological turbulence is an environmental uncertainty that drives firms to innovate continuously. Increasing competition and rapid technological advancements make the innovation and implementation of new ideas in products or production processes crucial for maintaining a firm's competitive edge (Chen et al., 2018). Therefore, it is essential to examine how a firm responds to technological turbulence. In a stable technological environment, a firm's resources, knowledge, and capabilities can be managed over the long term. The firm continues to benefit from its existing knowledge. However, things are different when a firm experiences technological turbulence. Technology changes rapidly, and a firm's expertise and capabilities quickly become outdated (Huo et al., 2024). This necessitates that firms adapt to these conditions.

In conditions of low technological turbulence, technological change is relatively slow, and existing routines may still be used. Thus, MO is less essential. However, in conditions of high technological turbulence, technological change is relatively rapid, requiring new knowledge. In such conditions, MO becomes very useful and becomes a dynamic capability that plays an essential role in improving performance. For instance, in the digital era, online marketing and sales are popular because they are considered effective in reaching a wider range of consumers. This forces MSMEs to gather market information and develop innovations to remain competitive. Another example is that MSMEs recognize the high demand for environmentally friendly products. In a dynamic technological environment, MSMEs will strive to meet consumer needs by updating their knowledge and capabilities to produce ecologically friendly products. This will contribute to achieving a competitive advantage, thereby enhancing MSME performance under technological turbulence.

According to dynamic capability theory, MO is considered intangible capital that may be used to accommodate environmental changes by facilitating continuous learning through close interactions with customers and

competitors. The resulting learning is then effectively coordinated internally. Based on this explanation, the following hypothesis is developed.

H3: Technological turbulence moderates the relationship between market orientation and business performance.

We recognize that market and technological turbulence may occur simultaneously. For instance, during the Covid-19 pandemic, market conditions changed significantly, such as the increase in online purchases. This led to technological changes to respond to changing market conditions. However, in this study, we examine the role of market turbulence and technological turbulence separately to provide a more specific understanding of each and avoid potential conceptual overlap that could obscure the contribution of each.

Based on the hypothesis formulation, the conceptual framework of this research is as follows.

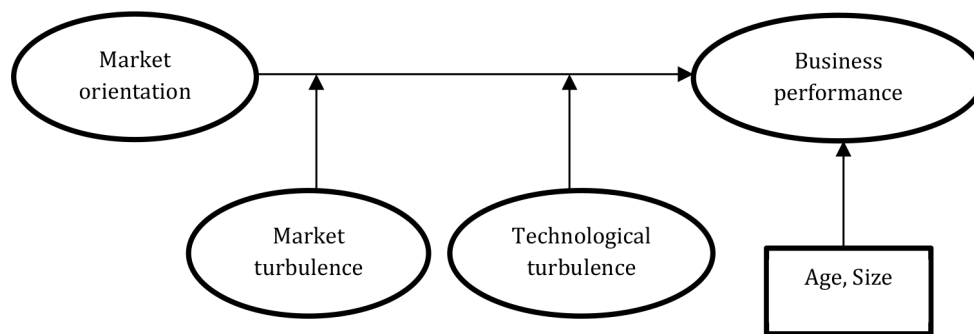


Figure 1. Conceptual Framework

3. Methodology

3.1. Population and Sample

The population in this study consists of MSMEs in Bali, a developing region in Indonesia. The respondents are owners and/or managers of MSMEs. The development of MSMEs in Bali is relatively high, reaching 25.9% in 2019–2020 (Dinas Koperasi Usaha Kecil dan Menengah, 2021). This relatively high growth rate should be accompanied by MSMEs' ability to achieve optimal performance. In addition, MSMEs in developing regions often face resource constraints. Therefore, it is essential to understand the unique resources that can be leveraged to improve and sustain their performance. This motivation underlies the exploration of the determinants of business performance among MSMEs in Bali, a context representative of a developing region. Furthermore, the findings of this study will enhance management knowledge regarding the strategies required to achieve optimal performance, thereby supporting the sustainability of emerging MSMEs.

According to Hair et al. (2017), the sample size in SEM-PLS has to consider the statistical power and effect size. Therefore, we used the G*Power program to calculate the sample size. The determinants used in calculating the sample size are (1) effect size f^2 , (2) error probability, (3) power, and (4) the number of predictors. We used 0.15 as the medium effect size, 0.05 as the error probability, 0.95 as the power, and one predictor (market orientation). The results showed that the minimum required sample size was 89.

3.2. Data Collection Sources and Methods

The data for this study were obtained from primary sources, namely MSME owners or managers. Questionnaires were distributed in two ways: (1) directly to respondents and (2) electronically via digital media. To ensure that there were no differences between the data obtained through direct and electronic distribution, we conducted Levene's test for homogeneity of variances, followed by an independent samples t-test. The results are presented in the Results section.

3.3. Variable Measurement

MSME business performance is defined as respondents' perceptions of the overall financial benefits the firm has derived from its business activities over the past three years. Business performance was measured using an instrument adapted from Tjahjadi et al. (2022). Market orientation refers to respondents' perceptions of the

firm's ability to understand customers and competitors and to coordinate across departments to create superior value for buyers effectively and efficiently (Narver & Slater, 1990). MO is measured across three dimensions: customer orientation, competitor orientation, and inter-functional coordination. It was assessed using an instrument adapted from Zhang and Duan (2010). Market turbulence refers to changes in consumer preferences for a product or service (Ebrahimi & Mirbargkar, 2017) and was measured using a questionnaire adapted from Zhang and Duan (2010). Technological turbulence refers to rapid and unpredictable technological development and was measured using an instrument adapted from previous research (Zhang & Duan, 2010). The instruments were translated from English into Indonesian with the assistance of professional translators to ensure the linguistic accuracy and clarity of the questionnaire items. Although back-translation and a formal pilot study were not conducted, the measurement scales were adapted from well-established instruments that have demonstrated validity and reliability in prior research.

To further ensure contextual appropriateness, several additional steps were undertaken. The translated questionnaire was reviewed by academics familiar with the local MSME context to ensure conceptual clarity and relevance. The questionnaire was administered anonymously to encourage respondents to provide honest responses. We also implemented procedural control (ex-ante) by developing a questionnaire with clear language and instructions. All respondents received the same questionnaire to minimize response bias. In addition, the instrument's robustness was further assessed by evaluating the measurement model using tests of convergent and discriminant validity and reliability.

Two control variables, age and size, were included. Age and size are important control variables because they are considered to influence a firm's capacity to carry out certain activities (Crisóstomo et al., 2011). One of these is the ability to achieve optimal business performance. Age refers to the firm's age and is categorized into three groups: Category 1 (1–10 years), Category 2 (11–20 years), and Category 3 (over 20 years). Size refers to the size of the firm and is measured by the number of employees, also divided into three categories: Category 1 (1–10 employees), Category 2 (11–20 employees), and Category 3 (over 20 employees).

3.4. Data Analysis

A common method bias (CMB) test was conducted to ensure the research instrument did not introduce bias. Next, the primary data were analyzed using Structural Equation Modelling-Partial Least Squares (SEM-PLS) through SmartPLS. There were two evaluations in SEM-PLS: the measurement model and the structural model evaluation. In the measurement model test, the validity and reliability aspects of the measurement were examined in more detail. Convergent validity requires indicator loadings greater than 0.70 and an average variance extracted (AVE) above 0.50. Discriminant validity, assessed using the HTMT criterion, requires values below 0.90. For reliability, constructs must have Cronbach's alpha and composite reliability values of at least 0.60 (Hair et al., 2011).

In structural model testing, the analysis focuses on the direction, magnitude, and significance of the path coefficients. The structural model was assessed using a bootstrapping procedure with 5,000 resamples. Furthermore, the evaluation of the structural model includes examining the coefficient of determination (R^2) and predictive relevance (Q^2). A robustness check was also conducted to ensure the stability and reliability of the structural model results.

4. Result

4.1. Respondent Characteristics

The unit of analysis was the MSME organization, and the respondents were owners or managers of MSMEs in Bali. MSME data were obtained from the official MSME database published on the provincial and district government websites in Bali. However, due to limitations in accessibility and the completeness of the database, additional respondents were obtained through direct and electronic distribution. A total of 110 questionnaires were returned and deemed suitable for analysis in the main study. We distributed 180 questionnaires directly to respondents, of which 101 were completed and usable, resulting in a response rate of 56.1%. In addition, nine questionnaires were obtained through electronic distribution. The electronic questionnaires were distributed to MSMEs and further disseminated by asking respondents to forward them

to other MSME partners within their networks. Consequently, the response rate for the electronic questionnaires could not be calculated.

Referring to Table 1, the majority of respondents reported total sales of ≤ 300 million. Nineteen percent reported total sales of >300 million to 2.5 billion, and 3% reported total sales of >2.5 billion to 50 billion. In terms of firm age, 81% of MSMEs were 1–10 years old, 8% were 11–20 years old, and 11% were over 20 years old. Most respondents employed 1–10 workers, while 5% each employed 11–20 workers and more than 20 workers.

Characteristics	Information	Amount	Percentage
Total Sales	≤ 300 million	86	78%
	>300 million-2.5 billion	21	19%
	>2.5 billion - 50 billion	3	3%
	Total	110	100%
Firm Age	1-10 years	89	81%
	11-20 years	9	8%
	> 20 years	12	11%
	Total	110	100%
Number of employees	1-10	99	90%
	11-20	6	5%
	>20	5	5%
	Total	110	100%

Table 1. Respondent Characteristics

4.2. Descriptive Statistics

Descriptive statistics are presented in Table 2. For customer orientation, the highest mean score was 4.655 for CUSTO1, indicating that the primary business goal is customer satisfaction. For competitor orientation and interfunctional coordination, the highest mean scores were observed for COMPO4 and IFC5. This suggests that respondents target customers in areas where they can gain competitive advantage and that their teams work collaboratively to solve problems.

For market turbulence, the highest mean score was obtained for MT5, indicating that respondents served many of the same customers as before. Regarding technological turbulence, the highest mean score was found for TT2, suggesting that technological change creates significant opportunities in the respondents' industries. For business performance, the highest mean scores were observed for BP7 and BP8, both at 4.400, indicating that respondents improved the quality of their products and services, acquired new customers, and retained existing ones.

4.3. Independent T-test

This test was conducted to examine whether there were differences between the data obtained through direct and electronic distribution. Before conducting the independent-samples t-test, we tested the homogeneity of variances to assess whether the variances of the two groups were equal. Referring to Table 2, the significance values for MO, MT, and TT were greater than 0.05, indicating that the two data groups for these constructs were homogeneous. Meanwhile, BP had a significance value of 0.029 ($0.029 < 0.05$), indicating that the two data groups for the BP construct were not homogeneous.

We then conducted an independent-samples t-test to determine whether the means differed between the two groups. For MO, MT, and TT, assuming equal variances, the significance values were greater than 0.05. For BP, assuming unequal variances, the significance value was also greater than 0.05. These results indicate that there were no significant differences in the means between the two data groups, despite BP exhibiting heterogeneity of variance. Accordingly, the data were deemed suitable for further analysis.

		Homogeneity of variances		t-test for Equality of Means	
		Lev. Stat	Sig.		Sig. (2-tailed)
MO	Based on Mean	2.698	0.103	Equal variances assumed	0.314
MT	Based on Mean	1.954	0.165	Equal variances assumed	0.578
TT	Based on Mean	0.003	0.955	Equal variances assumed	0.836
BP	Based on Mean	4.904	0.029	Equal variances not assumed	0.061

MO: market orientation; MT: market turbulence; TT: technological turbulence; BP: business performance

Table 2. Independent t-test

4.4. Common Method Bias

Common method bias (CMB) can occur in both dependent and independent variables when they are collected using the same method. CMB may compromise the validity of the instrument and therefore must be controlled (Kock et al., 2021). To control for CMB, we conducted both ex ante and ex post procedures. The ex-ante procedure was conducted by preparing a questionnaire that used clear and easily understandable language. The ex-post procedure was implemented after the questionnaire had been distributed and involved statistical controls. These controls were operationalized through a full collinearity test and Harman's single-factor test. The full collinearity test is a comprehensive assessment of collinearity among independent variables and collinearity arising from the measurement method. When the VIF value is equal to or less than 3.3, the model is considered free from common method bias (Kock, 2017). To provide comprehensive assurance, we also conducted Harman's single-factor test, which is considered a very adequate method for detecting CMB (Fuller et al., 2016). CMB is considered a problem if the first factor can explain more than 50% of the total variance of the indicators (Howard et al., 2024).

As shown in Table 3, all variance inflation factor (VIF) values were below the recommended threshold of 3.3, suggesting that common method bias is unlikely to be a concern. In addition, Harman's single-factor test indicated that the first factor accounted for 42.18% of the total variance, which is below the commonly used threshold of 50%. These results indicate that common method bias is not a concern in this study.

	Full collinearity test	Harman's single-factor test			
	BP	Factor	Total	% of Variance	Cumulative %
BP		1	14.763	42.180	42.180
MO	1.987				
MT	1.920				
TT	1.887				

Table 3. Common Method Bias

4.5. Measurement Model Test

Measurement testing is intended to determine the validity and reliability of the research instrument. Instrument validity can be assessed in terms of both convergent and discriminant validity. This study employs a second-order approach. The first-order stage examines validity and reliability at the dimension level, whereas the second-order stage examines them at the construct level. In the first-order stage, the indicators for customer orientation, competitor orientation, and inter-functional coordination each have values greater than 0.70, as shown in Table 4. All AVE values exceed 0.50. This indicates that the measurement indicators at the dimension level have met the criteria for convergent validity.

Furthermore, discriminant validity at the first-order level, as shown by the Fornell–Larcker criterion in Table 5, indicates that the square root of the AVE for each construct is greater than its correlations with the other constructs. This suggests that each construct captures a distinct phenomenon and therefore meets the criteria for discriminant validity. The reliability of the dimension level is supported by Cronbach's alpha and composite reliability values above 0.60, as shown in Table 4. These results indicate that the dimension-level measurements are reliable.

Indicator	Mean	StDev	Loading factor first order	AVE first order	Cronbach's alpha first order	Composite reliability first order
CUSTO1	4.655	0.836	0.878	0.725	0.923	0.940
CUSTO2	4.291	0.957	0.882			
CUSTO3	4.373	0.952	0.861			
CUSTO4	4.345	0.938	0.896			
CUSTO5	4.036	1.078	0.782			
CUSTO6	4.400	0.946	0.801			
COMPO1	3.809	1.164	0.784	0.627	0.802	0.870
COMPO2	3.427	1.239	0.752			
COMPO3	3.755	1.072	0.846			
COMPO4	4.091	1.032	0.782			
IFC1	3.627	1.264	0.763	0.638	0.856	0.898
IFC2	3.718	1.161	0.710			
IFC3	4.018	1.070	0.878			
IFC4	3.991	1.108	0.873			
IFC5	4.345	1.057	0.756			
MT1	3.618	1.335	–	–	–	–
MT2	3.500	1.373	–	–	–	–
MT3	3.764	1.119	–	–	–	–
MT4	3.945	1.197	–	–	–	–
MT5	4.091	1.116	–	–	–	–
TT1	3.791	1.145	–	–	–	–
TT2	4.000	1.136	–	–	–	–
TT3	3.709	1.275	–	–	–	–
BP1	4.236	0.852	–	–	–	–
BP2	3.991	1.049	–	–	–	–
BP3	4.073	0.970	–	–	–	–
BP4	4.136	1.057	–	–	–	–
BP5	4.036	1.008	–	–	–	–
BP6	4.336	0.887	–	–	–	–
BP7	4.400	0.789	–	–	–	–
BP8	4.400	0.822	–	–	–	–
BP9	4.236	0.914	–	–	–	–
BP10	4.155	1.105	–	–	–	–
BP11	3.809	1.345	–	–	–	–
BP12	4.473	0.951	–	–	–	–

CUSTO: customer orientation; COMPO: competitor orientation; IFC: inter-functional coordination; MT: market turbulence; TT: technological turbulence; BP: business performance

Table 4. Descriptive Statistics

	COMPO	CUSTO	IFC
COMPO	0.792		
CUSTO	0.745	0.851	
IFC	0.798	0.751	0.799

Table 5. Fornell Larcker first order

The second-order stage is presented in Table 6. The factor loadings for MT2, BP2, BP5, BP11, and BP12 were below 0.70 and were therefore eliminated. A second test was then conducted, and the loading for MT1 was also below 0.70; consequently, it was eliminated. In the third test, all indicators exhibited loadings above 0.70. The

indicators were removed as they did not meet the required statistical criteria. However, we also considered that the removed indicators made relatively weak empirical contributions. Through this iterative process, we aimed to improve measurement quality while ensuring that the remaining indicators adequately reflected the constructs being measured. The second-order AVE value was greater than 0.5, thus satisfying the criterion for convergent validity. Cronbach's alpha and composite reliability for all constructs were greater than 0.7, thus satisfying the reliability criterion.

Indicator	Loading factor second-order 1st	Loading factor second-order 2nd	Loading factor. second order 3rd	AVE second order	Cronbach's alpha second order	Composite reliability second order
CUSTO	0.905	0.916	0.909	0.843 (MO)	0.907 (MO)	0.941 (MO)
COMPO	0.918	0.908	0.916			
IFC	0.931	0.930	0.930			
MT1	0.748	0.683	–	0.650 (MT)	0.731 (MT)	0.847 (MT)
MT2	0.693	–	–			
MT3	0.729	0.736	0.750			
MT4	0.800	0.839	0.853			
MT5	0.746	0.784	0.812			
TT1	0.862	0.865	0.865	0.791 (TT)	0.868 (TT)	0.919 (TT)
TT2	0.892	0.889	0.889			
TT3	0.914	0.914	0.914			
BP1	0.754	0.766	0.765	0.598 (BP)	0.904 (BP)	0.922 (BP)
BP2	0.659	–	–			
BP3	0.727	0.730	0.728			
BP4	0.706	0.705	0.705			
BP5	0.628	–	–			
BP6	0.814	0.816	0.817			
BP7	0.747	0.776	0.777			
BP8	0.766	0.806	0.807			
BP9	0.828	0.841	0.841			
BP10	0.754	0.739	0.740			
BP11	0.648	–	–			
BP12	0.663	–	–			

Table 6. Evaluation of the Measurement Model Second Order

Referring to Table 7, the root of the AVE value for each construct is higher than the correlation of the other constructs and therefore meets the discriminant validity requirement. All measurements met the reliability criteria. This is demonstrated by Cronbach's alpha and composite reliability values greater than 0,6, as shown in Table 6. Based on these results, it can be concluded that the measurements met the validity and reliability requirements, allowing for further structural testing.

	BP	MO	MT	TT
BP	0.774			
MO	0.739	0.918		
MT	0.687	0.628	0.806	
TT	0.563	0.594	0.550	0.889

Table 7. Fornell Larcker Second Order

4.6. Structural Model Test

4.6.1. Direct Effect

The coefficient of determination (R^2) for business performance is 0.698, indicating that approximately 69.8% of the variance in business performance is explained by market orientation, while the remaining 30.2% is explained by other factors. Compared with Buli (2017), who reported an R^2 value of 61.9%, this study shows a slightly higher explanatory power, suggesting that market orientation accounts for a greater proportion of the variation in business performance.

The f^2 statistic indicates the extent to which each construct contributes to the R^2 value. Values of 0.02, 0.15, and 0.35 are generally interpreted as small, moderate, and large effects, respectively. Based on Table 8, the f^2 values of firm age and firm size on business performance are 0.001 and 0.000, respectively, indicating negligible effects. The f^2 values of market orientation, market turbulence, and technological turbulence on business performance are 0.349, 0.131, and 0.004, respectively, indicating large, small-to-moderate, and negligible effects. Based on Table 9, the f^2 value for the interaction between market orientation and market turbulence on business performance is 0.151, indicating a moderate effect. By contrast, the f^2 value for the interaction between market orientation and technological turbulence on business performance is 0.034, indicating a small effect on R^2 .

Structural model evaluation focuses on the path coefficients and their significance. As shown in Table 8, the p-value for market orientation is 0.000 ($p < 0.01$); therefore, H1 is supported. The control variables, age and size, are not significantly related to business performance, with p-values of 0.775 ($p > 0.10$) and 0.852 ($p > 0.10$), respectively.

Direct effect	f^2	Original sample	T statistics	P values
AGE -> BP	0.001	0.068	0.286	0.775
SIZE -> BP	0.000	-0.042	0.187	0.852
MO -> BP	0.349	0.457	4.142	0.000***
MT -> BP	0.131	0.276	2.509	0.012**
TT -> BP	0.004	0.050	0.668	0.504

Table 8. Direct Effect

4.6.2. Moderating Effect

As reported in Tables 8 and 9, market turbulence has a positive and significant direct effect on business performance, with a p-value of 0.012 ($p < 0.05$). Furthermore, the interaction term between market orientation and market turbulence is also significant, with a p-value of 0.001 ($p < 0.01$), thus supporting H2. Because both the direct and interaction effects are significant, the results suggest a partial moderating effect. Technological turbulence has an insignificant direct effect on business performance, with a p-value of 0.504 ($p > 0.10$). While the interaction term between market orientation and technological turbulence is weakly significant, with a p-value of 0.075 ($p < 0.10$), it provides only weak evidence of a moderating effect. Given the generally lower statistical power of interaction effects, results at the 10% significance level are reported but interpreted with caution.

Moderating effect	f^2	Original sample	T statistics	P values
MT x MO -> BP	0.151	-0.291	3.462	0.001***
TT x MO -> BP	0.034	0.141	1.783	0.075*

Table 9. Moderation Analysis

4.7. Robustness Check

4.7.1. Non-Linear Effect

To reduce the risk of model misspecification, we ensured that the relationships among the constructs are linear. Sarstedt et al. (2020) revealed that nonlinearity can be identified through the quadratic effect in the relationship between constructs. Referring to Table 10, the p-value of the quadratic effect (QE) between market orientation and business performance is 0.612, which is greater than 0.05. These results indicate that the relationship between market orientation and business performance is linear and, therefore, robust.

Information	Original sample (O)	P values
AGE -> BP	0.063	0.838
SIZE -> BP	-0.232	0.391
MO -> BP	0.817	0.000
QE (MO) -> BP	0.047	0.612

Table 10. Non-linear effect

4.7.2. Endogeneity Test

Endogeneity occurs when a predictor construct is correlated with the error term of the dependent variable. This implies that the predictor not only explains the dependent construct but also its error term. We sought to ensure that endogeneity did not occur in this study. One of the steps taken was to control for firm age and size to determine whether these firm characteristics influenced business performance. This was done to reduce bias due to omitted variables. We also verified the results using the Gaussian copula approach (Sarstedt et al., 2020). When the Gaussian copula value is greater than the p-value, there is no indication of endogeneity. For the single copula, the p-value is 0.806, which is greater than the threshold, indicating that endogeneity is not present, as shown in Table 11.

Information	Original sample (O)	P values
AGE -> BP	0.052	0.864
SIZE -> BP	-0.194	0.489
MO -> BP	0.685	0.028
GC (MO) -> BP	0.067	0.806

Table 11. Endogeneity test

4.8 Additional analysis

In the additional analysis, we examined the role of each dimension of market orientation in business performance. As shown in Table 12, customer orientation ($\beta = 0.387$, $p = 0.014$) and inter-functional coordination ($\beta = 0.465$, $p = 0.000$) are significantly associated with business performance. When market orientation is treated as a single construct, an increase in market orientation is associated with improved business performance. However, when its dimensions are analyzed separately, only customer orientation and inter-functional coordination are found to enhance performance. This finding suggests that implementing customer orientation and inter-functional coordination is the most effective approach for improving business performance among MSMEs in developing regions. It also indicates that these two dimensions largely explain the overall effect of market orientation on business performance.

Competitor orientation does not exhibit a significant relationship with business performance ($\beta = -0.043$, $p = 0.606$). From a dynamic capabilities perspective, the ability to understand competitors contributes to the sensing stage; however, it does not directly enhance performance unless it is accompanied by the ability to exploit opportunities and reconfigure information into strategies that are useful for performance improvement. These findings also have implications for the intangible capital literature, as they suggest that not all components of market orientation contribute equally to performance enhancement. Capabilities related to customer orientation and coordination appear to be more relevant for improving performance than those associated with competitor orientation. The benefits of competitor orientation are relatively indirect. By contrast, customer orientation and inter-functional coordination are easier to implement and provide more immediate benefits for MSMEs.

Information	Original sample (O)	P values
AGE -> BP	-0.132	0.542
SIZE -> BP	-0.032	0.906
COMPO -> BP	-0.043	0.606
CUSTO -> BP	0.387	0.014
IFC -> BP	0.465	0.000

Table 12. Additional analysis

5. Discussion

5.1. Market Orientation and Business Performance

This study aims to examine the role of market orientation in the business performance of MSMEs in developing regions. The findings show that market orientation has a positive and significant effect on business performance ($\beta = 0.457$, $p = 0.000$). An increase in market orientation is likely to improve business performance. From a theoretical perspective, these results support dynamic capability theory, which posits that market orientation, as an intangible resource, enables MSMEs to understand and respond effectively to market needs, thereby facilitating competitive advantage. Market orientation is therefore considered essential, cost-efficient, and relevant to performance improvement. These results align with Lee et al. (2015), which show that market orientation is associated with business performance, both financial and non-financial. On the other hand, Kocak et al. (2017) and Eggers et al. (2017) found that responsive market orientation is not significantly related to performance. This may be because MSMEs and SMEs operate in different environmental conditions. Therefore, the findings of this study should be interpreted in light of several boundary conditions. First, the positive relationship between market orientation and business performance may be more relevant to MSMEs in developing regions, where firms optimize the use of intangible resources. Second, this relationship may be more relevant to MSMEs with relatively high flexibility, as this enables them to respond more effectively to market orientation.

5.2. Market Orientation, Market Turbulence, and Business Performance

The study aims to examine the moderating role of market turbulence in the relationship between market orientation and business performance. The findings show that market turbulence is positively and significantly related to business performance ($\beta = 0.276$, $p = 0.012$), with a moderate effect. Furthermore, market turbulence has a moderate moderating effect on the relationship between market orientation and business performance ($\beta = -0.291$, $p = 0.001$). This suggests that market turbulence acts as a partial moderator. Market turbulence weakens the positive effect of market orientation on business performance.

Market turbulence and competitive intensity may influence the strength of the relationship between market orientation and business performance (Buli, 2017; Jaworski & Kohli, 1993). In highly dynamic market conditions, implementing market orientation is not sufficient to enhance business performance. Information regarding consumer needs and competitor strategies changes rapidly and becomes obsolete and unusable quickly. Firms require complementary capabilities, such as adequate human resource competencies and the acquisition and use of relevant technologies, to remain responsive and competitive in dynamic markets. However, MSMEs in developing regions have limited resources. Market orientation may generate market-related information, but the information produced varies in quantity and type and must be acted upon immediately. According to information processing theory, humans have limited capacity to process information, both in terms of quantity and type (Rao, 2016). Limited human resource capabilities constrain MSMEs' ability to process and respond to the large volume of information they receive, thereby slowing their adaptation processes. The resulting disruption of adaptation hinders strategy implementation, leading to a decline in performance. These findings thus extend dynamic capability theory. In turbulent market conditions, strong performance depends not only on dynamic capabilities but also on sufficient organizational resources. The findings also suggest several boundary conditions. First, the effectiveness of market orientation in improving business performance depends on market turbulence. Second, this relationship under conditions of market turbulence may be more relevant to MSMEs in developing regions.

5.3. Market Orientation, Technological Turbulence, and Business Performance

The purpose of this study is to examine the moderating role of technological turbulence in the relationship between market orientation and business performance. The findings show that the direct relationship between technological turbulence and business performance is insignificant ($\beta = 0.050$, $p = 0.504$). By contrast, technological turbulence exhibits a weak moderating effect on the relationship between market orientation and business performance ($\beta = 0.141$, $p = 0.075$). The study provides limited support for contingency theory and dynamic capability theory. Under conditions of technological turbulence, market orientation, as a dynamic capability of MSMEs, may be relatively effective in enhancing performance.

The strength of the effect of market orientation on business performance remains limited. Market orientation primarily reflects sensing capability (the ability to identify changes). However, under technological turbulence, firms also require strong seizing and transforming capabilities to translate these insights into effective action. Although MSMEs in developing regions may respond to technological change, their responses are often constrained by several factors. As a result, the adaptation process tends to be gradual rather than transformative. MSMEs may adjust to technological changes only to the extent necessary rather than undertaking substantial strategic transformation. Therefore, as technological turbulence increases, market-oriented MSMEs may improve their performance, but only to a limited extent. These findings suggest boundary conditions, indicating that the results are relevant to MSMEs, which tend to respond to technological change with limited intangible resources and responsiveness, resulting in modest effects.

5.4. Control Variables and Business Performance

Firm age and size are not significantly related to business performance. This finding suggests that business performance is determined not by a firm's age or size, but rather by the efforts and strategies it develops. MSMEs in developing regions, particularly Bali, are still in the process of adapting to change, including digitalization and technological adoption. Consequently, even relatively mature or large firms may fail to achieve optimal performance if they are unable to adapt to environmental changes or implement appropriate adaptive strategies. This is consistent with Younis and Sundarakani (2020) who found that firm age was not associated with environmental, economic, social, or operational performance, and that firm size was not related to operational performance.

6. Conclusions, Implications, Limitations, and Future Research

6.1. Conclusion

This study provides incremental empirical evidence that higher market orientation is associated with better business performance. Market turbulence has a moderate effect on business performance. However, market turbulence weakens the positive relationship between market orientation and business performance. Technological turbulence is not significantly related to business performance. Nevertheless, under conditions of technological turbulence, the implementation of market orientation may slightly improve business performance, although the effect is weak. Customer orientation and inter-functional coordination appear sufficient to enable MSMEs in developing regions to perform better. We acknowledge that the sample in this study is limited and was collected only in Bali, one of Indonesia's developing regions. Furthermore, the data were self-reported. These limitations constrain the generalizability of the findings, and any extension to other regions should be made with caution.

6.2. Implications

6.2.1. Theoretical Implications

This study provides empirical evidence on the relationship between market orientation and business performance under conditions of market and technological turbulence among MSMEs in developing regions. These findings further support resource-based view, contingency, and dynamic capability theories, and expand the literature on intangible capital by examining the role of market orientation in enhancing performance. However, market orientation is more effective in improving MSMEs' performance when it emphasizes customer orientation and inter-functional coordination. This finding suggests that the dimensions of market orientation do not operate in the same way, highlighting the context-dependent nature of market orientation, particularly among MSMEs. Market-oriented MSMEs possess distinctive capabilities that help them remain competitive in technologically dynamic environments, thereby improving performance, although the effect is weak. As market turbulence weakens the relationship between market orientation and business performance, this study extends dynamic capabilities theory by demonstrating that environmental turbulence does not uniformly enhance the effectiveness of such capabilities in MSMEs. Research on market orientation has generally focused on larger firms; however, this study examines MSMEs. The results indicate that market orientation, as an intangible asset, plays a moderate role in improving business performance and may have a different impact in larger firms. In this context, market orientation functions not only as a strategic capability but also as an adaptive mechanism that enables MSMEs to respond more quickly to changes in environmental conditions. Therefore, the findings of this

study contribute to the development of dynamic capability theory and highlight the importance of contextual factors that distinguish small firms from large firms.

6.2.2. Practical Implications

Since competitor orientation is not significant, MSMEs in developing regions may place greater emphasis on market orientation and inter-functional coordination. MSMEs need to conduct ongoing, cost-effective research on consumer needs, for example by directly observing in-store customer behavior and recording which products are most frequently requested and which receive the most complaints. In addition, MSMEs may monitor social media to identify products that are currently popular among consumers. In this way, they can obtain up-to-date information and continuously improve the products or services they offer. MSMEs may actively participate in exhibitions, such as business expos, to communicate directly with customers. The information obtained can then be disseminated and coordinated internally to determine appropriate actions and strategies. Market turbulence weakens the positive relationship between market orientation and business performance. In the case of technological turbulence, market orientation may be relatively ineffective in improving business performance. Therefore, to make market orientation effective in enhancing performance in uncertain environments, MSMEs need to consider strengthening ownership and optimizing resources such as human resource capabilities and technological readiness. Sufficient organizational resources play an essential role in enabling firms to respond effectively to information.

6.2.3. Social Implications

By implementing market orientation, MSMEs in developing regions become more aware of consumer needs, enabling them to develop products and services that meet market demand. This, in turn, contributes to increased sales and improved business performance. These conditions affect the sustainability of MSMEs. MSMEs with optimal financial performance and sustainability will contribute positively to income stability and employee welfare, as well as to the welfare of local communities in the region.

6.3. Limitations and Future Research

This study has several limitations. First, the research design is cross-sectional, which limits the ability to draw causal inferences. Therefore, the results were interpreted cautiously using the term “relationship.” In addition, the findings capture conditions at a single point in time and do not reflect changes over time. Given the dynamic nature of environmental turbulence and firm performance, future research should consider using longitudinal designs to better examine causal relationships over time. Second, there are measurement limitations. The research instruments were translated from Indonesian to English by a professional translator. However, back-translation from English to Indonesian was not conducted. This may reduce confidence in the validity of the constructs. This study also did not conduct a pilot test because the instruments were adapted from previous research, which we assumed had been well established and therefore provided reliable and valid measures. Nevertheless, during the evaluation of the measurement model, several indicators were removed for failing to meet the criteria for convergent validity. This may reflect differences in respondents’ interpretations across research contexts, which underscores the limitation of not conducting a pilot test. Consequently, the validity of the adapted instruments cannot be fully assured, and the results should be interpreted with caution. Future research should consider using a forward-backward translation procedure to improve the validity of translated instruments. In addition, future studies are encouraged to conduct pilot tests to ensure that the instruments are valid across different research contexts and regions.

Third, this study used two data collection methods: questionnaires distributed directly to respondents and questionnaires administered electronically. This approach may weaken internal validity and limit our ability to determine the overall response rate. However, a homogeneity of variance test and an independent-samples t-test were conducted to ensure that there were no differences in mean scores between the groups. Fourth, there are contextual limitations. This study was conducted in Bali, one of Indonesia’s developing regions, whose economic structure relies heavily on the tourism sector. As a result, the generalizability of the findings is limited, particularly with respect to regions that have different economic structures or are more developed. Future studies should be conducted in other locations to enhance generalizability. Based on these findings and contextual

limitations, several important directions for future research emerge. First, to extend dynamic capabilities theory, future studies should examine why market turbulence weakens the relationship between market orientation and business performance. Second, further research is needed to explain why technological turbulence has only a weak moderating effect on the relationship between market orientation and business performance. Future studies should also investigate the role of organizational resources in improving performance under environmental uncertainty. Third, given the insignificant relationship between competitor orientation and business performance, future research should examine the role of competitive intensity.

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Authors' contributions

Ni Nyoman Sri Rahayu Damayanti: Conceptualization, methodology, data processing, and writing the original draft.

I Dewa Ayu Kristiantari: Conceptualization, data collection, formal analysis, review and editing.

I Gde Agung Wira Pertama: Data processing, data collection, and funding acquisition.

Data availability

Data available upon request

Use of Artificial Intelligence

The authors declare that no part of this manuscript was generated or developed using Artificial Intelligence.

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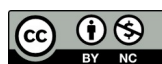
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