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The Influence of Technological and Marketing Capabilities on MSME Performance with Organizational Learning as a Mediating Variable

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Abstract

Micro, Small, and Medium Enterprises (MSMEs) are key contributors to economic development, especially in emerging markets. However, MSMEs often struggle to sustain and improve their performance amid dynamic market conditions and increasing global competition. This study investigates the integrated effects of organizational learning, marketing capability, and technological capability on MSME performance in Indonesia, a context where prior research has typically examined these factors in isolation. Guided by the dynamic capabilities framework, this study aims to fill the gap by analysing the synergy among these three capabilities. A quantitative approach was employed, with data collected from 100 MSME actors through an online survey using a structured questionnaire measured on a five-point Likert scale. Structural Equation Modelling (SEM) using SmartPLS 3.2 was used to analyse the data. The results show that organizational learning significantly influences both marketing and technological capabilities. Moreover, technological capability positively affects MSME performance, whereas marketing capability does not have a statistically significant impact on performance. These findings highlight the crucial role of organizational learning as a foundation for capability development and suggest that technological adoption is a key driver of competitive performance in the digital era. The study offers practical insights for MSMEs aiming to improve long-term sustainability through integrated strategic capability development.

Keywords Technological; Marketing Capabilities; MSME Performance

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1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in supporting the global economy, particularly in developing countries, through their contributions to economic growth, job creation, and social welfare (Larios-Francia & Ferasso, 2023). Nevertheless, MSMEs face various structural and operational challenges in sustaining and improving their performance amid competitive pressures and dynamic market conditions (Baral et al., 2023; Singh, 2019; Upadhye et al., 2010). These challenges stem from several key factors, including limitations in marketing capabilities (Liang & Gao, 2020), technological capabilities (Singh, 2019), and levels of organizational learning (Beltramino et al., 2023; Taroreh & Manongko, 2019). Thus, there is an urgent need to develop strategies that strengthen competitiveness and support the long-term sustainability of MSMEs.

One of the key dimensions that can enhance MSME performance is marketing capability, which reflects a firm's capacity to manage marketing resources to generate sustainable competitive advantage (Feng et al., 2017; Mishra & Modi, 2016; Narasimhan et al., 2006). This capability plays a vital role in understanding customer needs, creating superior value, and designing relevant sales strategies (Purwanti et al., 2022; Ulum et al., 2023). Previous studies have shown that MSMEs with strong marketing capabilities are able to leverage promotion, set competitive pricing, choose appropriate distribution channels (Lailla & Sriminarti, 2022), and optimize the use of e-commerce (Wirasmara Kusuma & Azizi, 2023). Accordingly, strong marketing capabilities contribute to MSMEs' ability to adapt to evolving consumer preferences in the digital era (Rusdana et al., 2022), while ensuring business continuity.

Technological capability, on the other hand, has become increasingly important in the era of digital transformation, where technology functions not only as a production tool but also as an enabler of innovation and operational efficiency (Cassia et al., 2020; Wang & Li, 2023). Technology enables MSMEs to expand market reach, integrate production processes, and continuously create product and service innovations (Triwahyono et al., 2023). In the era of Industry 4.0, technology adoption has emerged as a key differentiator of MSME success (Khurana et al., 2019; Loo et al., 2023). Therefore, enhancing technological capabilities is a critical prerequisite for MSMEs to remain relevant in highly competitive global markets.

Moreover, organizational learning also plays a central role in strengthening the marketing and technological capabilities of MSMEs (Argote & Hora, 2017; Sanzo et al., 2012). Organizational learning refers to the processes of acquiring, developing, and disseminating collective knowledge to improve business practices (Dibella et al., 1996; Fiol & Lyles, 1985). Through continuous learning, MSMEs can adapt more rapidly to market changes, respond to consumer demand, and adopt new technologies to enhance performance and innovation (Nurcholis, 2019; Proença et al., 2024; Tian et al., 2021). The synergy between marketing capability, technological capability, and organizational learning fosters strategic flexibility and strengthens MSME resilience against external shocks (Storbacka & Nenonen, 2015; Tortorella et al., 2020).

Although these three capabilities have individually been recognized as determinants of MSME performance, research gaps remain in understanding their interactions and synergistic effects, particularly in developing countries. Previous studies have tended to analyze these factors separately without uncovering the dynamics of their interdependence in enhancing MSME performance. Therefore, this study aims to address the following research questions:

1. What is the impact of organizational learning on marketing and technological capabilities?
2. What is the impact of marketing and technological capabilities on MSME performance in the digital era?

This study contributes theoretically by developing an integrative model that combines marketing capability, technological capability, and organizational learning to enhance MSME performance. From a managerial perspective, the findings will provide strategic guidance for MSME practitioners and

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stakeholders in designing capacity-building policies that are adaptive to technological changes and market behavior.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Dynamic Capability

Dynamic capability refers to a firm's ability to reconfigure internal and external resources and competencies in response to business changes. This capability involves not only routines and analysis but often stems from managerial creativity. Firms possessing this capability can quickly realign their assets to maximize market advantage. Dynamic capability includes organizational processes such as forming alliances and product development to create value. Although unique to each firm, dynamic capabilities reflect best practices across organizations and evolve depending on market dynamics through learning mechanisms (Eisenhardt, K. M., & Martin, J. A., 2000). Rapidly changing market dynamics ranging from shifting consumer preferences, political instability to crises like the COVID-19 pandemic present major challenges for businesses including MSMEs. This aligns with research (Farida & Setiawan, 2022) which notes that changes in customer needs and a dynamic business environment require firms to continuously innovate to stay competitive. Innovation here is not limited to products but also includes shifts in organizational attitudes and processes. Organizations must be able to adopt new ideas, products, or services in order to survive.

Another study found that dynamic capabilities significantly enhance store performance and that knowledge resources and learning mechanisms positively influence dynamic capability (Chien & Tsai, 2012). In today's digital era, MSMEs must also master technological tools to reach wider audiences. Furthermore, internal capabilities such as organizational learning are essential to achieving optimal business performance. One of the ways to elevate firm performance is for MSMEs to develop marketing capabilities either from experience or by learning from competitors.

2.2 MSME Performance

In general, performance refers to what an organization expects from individuals and the quality of their achievements. At the organizational level, performance is defined as the outcomes achieved within a given period compared to predetermined benchmarks. MSMEs also require a clear pathway to achieve their objectives, which are typically influenced by organizational learning, technological capabilities, and market access (Hendrawan et al., 2024).

Digital technology presents significant opportunities for MSMEs, although shifts in consumer behavior pose considerable challenges (Fuadi et al., 2021). The COVID-19 pandemic compelled MSMEs to adapt rapidly, highlighting that performance is dynamic and subject to change through learning processes and environmental conditions. Accordingly, the dynamics experienced during and after the pandemic have provided new learning opportunities for MSMEs, suggesting that organizational learning has a significant influence on their performance.

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2.3 Organizational Learning

Bate and Khasawneh (2005), as cited in Hanaysha (2016) define organizational learning as a phenomenon that supports information acquisition, distribution, and sharing ultimately reinforcing continuous learning and its application to organizational improvement. In practice, we believe MSMEs can achieve optimal outcomes if they continuously engage in learning, transforming experience into valuable insights to face both current and future challenges.

The increasing competition among MSMEs also requires managers to play an active role in supporting learning processes. A study Lara & Salas-Vallina (2017) examined the mediating role of organizational learning in the relationship between managerial competence and managerial engagement. It confirmed a direct and positive influence of managerial competence on engagement, mediated by organizational learning.

Additionally, another study Hanaysha (2016) found that organizational learning positively influences organizational commitment, and that employee involvement and the work environment also play a significant role. In a changing environment, research on sustainable organizational performance (Inthavong et al., 2023) confirms that organizational learning is crucial. External conditions such as market demands for sustainability, pandemics, and other social sentiments can provide valuable lessons for MSMEs. At the same time, internal factors such as management commitment and competence remain critical. Based on these insights, we propose:

H1: Organizational learning has a positive and significant effect on MSME marketing capabilities.

H2: Organizational learning has a positive and significant effect on MSME technological capabilities.

2.4 Technological Capability

The relationship between technological capability and firm performance is more complex than generally assumed. Previous research has yet to consistently provide empirical support for a straightforward connection between the two (Coombs & Bierly, 2006). Technological capability refers to an organization's ability to develop and utilize substantial technological resources.

Research in developing countries indicates that technological capability positively contributes to firm performance, underscoring the role of technology as a vital instrument for narrowing the gap with advanced economies. For MSMEs, technological capability encompasses the utilization of digital tools, automation, and product innovation, which enable them to enhance operational efficiency and respond more effectively to consumer needs. Chantanaphant et al. (2013) emphasize that such capability is a fundamental requirement for MSMEs to remain competitive in an increasingly dynamic global market. By leveraging technology, MSMEs can reduce costs, expand market reach, and improve both product and service quality. Thus, technological capability not only supports business sustainability but also serves as a key driver in enhancing the performance of MSMEs in Indonesia. Based on this, we

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propose:

H3: Technological capabilities positively affect MSME performance.

2.5 Marketing Capability

Marketing capability is an integrated process of developing and implementing strategies to promote products or services by leveraging a company's knowledge, skills, and resources to build a brand, create value, and increase revenue. It involves building brand awareness and generating revenue.

Research on the post-pandemic recovery of SMEs by Zahara et al. (2023) shows that entrepreneurial marketing enhances marketing performance while simultaneously strengthening digital marketing capabilities. Both aspects directly contribute to achieving better marketing outcomes. In the digital context, an e-commerce study in China revealed that marketing capability, along with product technology support, strengthens a firm's position within digital platform networks, ultimately having a positive impact on company performance. Furthermore, Hanaysha and Al-Shaikh (2024) emphasize that marketing capability not only plays a role in short-term improvements but also helps shape business sustainability and reputation, which are crucial factors for SME performance continuity. Thus, marketing capability can be viewed as a strategic asset that enables SMEs to overcome post-pandemic challenges while enhancing competitive advantage. Based on this, we propose:

H4: Marketing capabilities positively affect MSME performance.

3. RESEARCH METHOD

This study employs a quantitative approach to test the proposed hypotheses. Data were collected through the distribution of questionnaires to randomly selected respondents, utilizing the Kudata.id survey platform to reach the appropriate target population. In this research, organizational learning, marketing capability, and technology serve as independent variables, while SME performance functions as the dependent variable. Although this study examines the influence of organizational learning on marketing capability and technology, it does not test the mediating effects of these two variables. The questionnaire was designed to measure variables relevant to the research objectives, using a five-point Likert scale to evaluate respondents' perceptions. The sample size was determined using the formula of (Lemeshow & David, 1997), since the population size was unknown.

$$n = z^2 p(1-p)/d^2$$

Where:

n = Sample size
z = Standard value = 1.96
p = Maximum estimate = 50% = 0.5
d = Alpha (0.10) or sampling error = 10%

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Based on this calculation, the minimum required sample is 96, which was rounded to 100. The research sample consists of micro, small, and medium-sized enterprises (MSMEs) in Indonesia. According to Sugiyono (2013), a population is defined as an abstract area encompassing elements or subjects with specific qualities and characteristics determined by the researcher to be studied and concluded. Accordingly, the population in this study includes MSME actors who completed the survey through Kudata.id. Data analysis technique using purposive sampling. To analyze the collected data, this study employed SmartPLS version 3.2 using the Structural Equation Modeling (SEM) technique. SEM is a multivariate statistical method that integrates regression and path analysis, used to examine causal relationships within a multiple regression framework. It allows researchers to assess both direct and indirect effects of independent variables on dependent variables. Moreover, SEM is deemed appropriate for this study, as it is suitable for analysis with relatively small samples (Hair et al., 2022).

This section outlines the materials, methods, survey, and instruments used in the research. The research design adopted here is survey-based, with data collected through structured questionnaires. The software used for data analysis is SmartPLS 3.2, running on standard desktop hardware. All assumptions made in this study are grounded in established theories related to dynamic capabilities, organizational learning, technological capability, marketing capability, and SME performance. The constructs were developed based on previously validated instruments cited in relevant literature to ensure validity and reliability.

4. RESULTS AND DISCUSSIONS

4.1 Respondent Characteristics Based on Gender

Table 1 presents the frequency distribution based on gender, divided into two categories: male and female. Out of a total of 100 respondents, 23 were male (23%) and 77 were female (77%). These results indicate that the majority of respondents were female representing a significantly larger proportion compared to male respondents.

Table 1. Respondent Characteristics Based on Gender

Gender	Frequency	Percent
Laki - Laki	23	23%
Perempuan	77	77%
Total	100	100%

Source: Author (2025)

4.2 Respondent Characteristics Based on Job Position

Table 2 displays the frequency distribution based on job position which includes three categories: Owner, Owner and Manager, and Manager. From the 100 respondents, 16 were identified as Owners (16%), 20 as both Owners and Managers (20%), and the majority 64 respondents held the position of Manager (64%).

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Table 2. Respondent Characteristics Based on Job Position

Job Position	Frequency	Percent
Owner	16	16.0%
Owner and Manager	20	20.0%
Manager	64	64.0%
Total	100	100.0%

Source: Author (2025)

4.3 Respondent Characteristics Based on Education Level

Table 3 illustrates the frequency distribution of respondents by their education level. Among the 100 respondents,62 respondent (62%) held a bachelor's degree (S1), 7 respondents (7%) held a master's degree (S2), Additionally, 31 respondents (31%) had completed Secondary School.

Table 3. Respondent Characteristics Based on Education Level

Pendidikan	Frequency	Percent
Bachelor's Degree	62	62.0%
Master's Degree	7	7.0%
Senior High School	31	31.0%
Total	100	100.0%

Source: Author (2025)

4.2 Convergent Validity

Table 4 presents the results of the convergent validity analysis for the study constructs, including Marketing Capability, MSME Performance, Organizational Learning, and Technological factors. Convergent validity was assessed using factor loadings generated through Smart PLS 3 (2025), with higher values indicating stronger associations between observed indicators and their respective latent constructs

Table 4. Convergent Validity

Construct	Marketing Capability	MSME Performance	Organizational Learning	Technological
X1.1			0,679	
X1.2			0,557	
X1.3			0,699	
X1.4			0,734	
X1.5			0,325	
X1.6			0,798	
X1.7			0,808	
X1.8			0,642	
X1.9			0,780	
Y1.1		0,907		
Y1.2		0,857		
Y1.3		0,853		
Z1.1	0,810			
Z1.2	0,818			
Z1.3	0,783			
Z2.1				0,742
Z2.2				0,804
Z2.3				0,762

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Z2.4	0,678
Z2.5	0,655

Source: Smart PLS 3 (2025)

Table 5 displays the modified convergent validity results for the study constructs, including Marketing Capability, MSME Performance, Organizational Learning, and Technological factors. Following initial assessment, certain indicators were adjusted to improve factor loadings and strengthen the measurement model.

Table 5. Modification Convergent Validity

Construct	Marketing Capability	MSME Performance	Organizational Learning	Technological
X1.1			0,632	
X1.3			0,717	
X1.4			0,780	
X1.6			0,799	
X1.7			0,837	
X1.8			0,674	
X1.9			0,792	
Y1.1		0,908		
Y1.2		0,856		
Y1.3		0,853		
Z1.1	0,798			
Z1.2	0,827			
Z1.3	0,785			
Z2.1				0,759
Z2.2				0,802
Z2.3				0,758
Z2.4				0,679
Z2.5				0,633

Source: Smart PLS 3 (2025)

Table 6 presents the results of the Average Variance Extracted (AVE), Composite Reliability, and Cronbach's Alpha for the study constructs: Marketing Capability, MSME Performance, Organizational Learning, and Technological factors. The AVE values exceed the recommended threshold of 0.50, indicating satisfactory convergent validity, while both Composite Reliability and Cronbach's Alpha values are above 0.70, demonstrating strong internal consistency and reliability of the measurement model (Smart PLS 3, 2025).

Table 6. Test Result of AVE, Composite Reliability and Cronbach's Alpha

Variable	AVE	Composite Reliability	Cronbach's Alpha
Marketing Capability	0,646	0,845	0,728
MSME Performance	0,761	0,905	0,845
Organizational Learning	0,563	0,900	0,869
Technological	0,531	0,849	0,781

Source: Smart PLS 3 (2025)

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Table 7. Hypothesis Testing

Hypothesis	*Original Sample*	*T Statistics*	*P Values*
Marketing Capability -> MSME Performance	0,213	1,363	0,173
Organizational Learning -> Marketing Capability	0,818	24,047	0,000
Organizational Learning -> Technological	0,813	23,393	0,000
Technological -> MSME Performance	0,453	3,118	0,002

Source: Smart PLS 3 (2025)

Based on the data above, the results indicate that organizational learning significantly influences both MSMEs' marketing and technological capabilities, as evidenced by p-values of 0.000, which are less than the 0.05 significance threshold. In contrast, marketing capabilities do not have a significant effect on MSME performance, with a p-value of 0.173, which exceeds 0.05, leading to the rejection of this hypothesis. Finally, technological capabilities are found to have a significant impact on MSME performance, supported by a p-value of 0.002, which is below the 0.05 threshold.

Table 8. Model Fit

	Saturated Model	Estimated Model
d_ULS	2,409	2,623
d_G	1,093	1,158

Source: Smart PLS 3 (2025)

The d_ULS value must be above 2.000, indicating that the model fits the data. For the GFI value, it must be above 0.900, which indicates that the descriptive measure of model fit is acceptable. Thus, it can be concluded that model alignment or the criteria for relationships between constructs can be tested.

4.3 Discussions

4.3.1 The Influence of Organizational Learning on MSME Marketing Capabilities

Organizational learning is defined as the process of enhancing intellectual capacity and productivity achieved through commitment and opportunities for continuous improvement within an organization. Marketing capabilities are the result of a continuous learning process. Every company requires time to absorb new knowledge and skills and to apply them directly to business practices. This process is known as organizational learning, which involves collective learning and requires contributions from all elements within the company, from owners to employees (Desta Setiawan, 2022). This learning process not only aims to improve individual competencies but also drives the development of organizational capabilities as a whole. Therefore, the organizational structure must be designed with sufficient flexibility to adapt to environmental changes and to utilize new knowledge more effectively. Its confirmed previous research by Mawardi (2025) that organizational learning can increase the marketing capability of non- high-tech SMEs.

4.3.2 The Influence of Organizational Learning on MSME Technological Capabilities

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Organizational learning reflects a new level of capability for organizations to adapt and grow. In the modern business era, more and more companies are recognizing the crucial role of information technology capabilities as a core element in supporting their overall business strategies. Information technology is no longer seen merely as a support tool but as a driver of innovation and efficiency. In this regard, its confirmed previous research by Amrul (2022) reveals that organizational learning has a significant impact on an organization's ability to effectively utilize information technology. This capability enables companies to innovate, respond to market changes more quickly and optimize business processes that support competitive advantage amid increasing competition.

4.3.3. *The Influence of Marketing Capabilities on MSME Performance*

Overall, the influence of marketing capabilities on MSME performance was found to be insignificant. Although strong marketing capabilities enable businesses to engage consumers more personally and relevantly through advanced data and analytics, they do not always directly contribute to improved MSME performance. Enhanced marketing capabilities do provide opportunities for MSMEs to better understand consumer preferences and behaviors, allowing for more targeted marketing messages. However, these efforts often fail to deliver the expected impact on business performance, especially in the context of MSMEs. The presence of various digital channels such as social media, email marketing, and paid advertising plays a role in increasing brand awareness and strengthening brand image, but this increase does not necessarily translate into customer loyalty or significant growth for MSMEs. In an increasingly competitive business ecosystem, marketing capabilities are indeed important for building competitive advantage, yet in practice, the optimization of marketing strategies often does not yield consistent effects on MSME performance (Sudirjo, 2022). Its contradictory previous research by Chinakidzwa and Phiri (2020) have proven that digital marketing capabilities can improve the performance of MSMEs.

4.3.4. *The Influence of Technological Capabilities on MSME Performance*

Information technology capabilities are crucial for companies to enhance competitiveness and achieve sustainable competitive advantage in the global market era. Companies with strong competitiveness and advantage can use this as a foundation to create economic value and achieve superior business performance. Technological capabilities refer to a company's ability to utilize technology to manage both internal and external information, transforming it into resources that provide economic benefits. The Resource-Based View (RBV) theory proposed by Barney on 1991 emphasizes that information technology is a mediating resource that can be used by companies to strengthen their competitive advantage. By effectively integrating information technology, companies can optimize data and information management, which in turn can become a key driver in achieving long-term competitive advantage (Sidiq, 2017). This study confirms previous research by Nurcaya et al. (2022) that innovation and technology have an influence on MSME performance.

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5. Conclusion

This study tested four hypotheses related to organizational learning, marketing capability, technological capability, and MSME performance. The findings reveal that organizational learning significantly influences both marketing capabilities and technological capabilities of MSMEs. However, marketing capability was found to have no significant effect on MSME performance, while technological capability demonstrated a significant positive influence on MSME performance. From a theoretical perspective, this research highlights the central role of organizational learning in shaping both marketing and technological capabilities supporting the view that continuous learning fosters competitive advantage. Furthermore, the findings indicate that technological capability has a stronger and more direct impact on MSME performance compared to marketing capability which challenges the assumption that marketing alone drives growth. Practically, these results suggest that MSME managers should prioritize investments in technological adaptation and digital transformation while integrating organizational learning practices to ensure sustained growth and resilience.

This study is not without limitations. The research was conducted with a relatively small sample size and focused specifically on MSMEs in Indonesia. These contextual and sample-related limitations may reduce the generalizability of the findings to other countries or larger-scale enterprises. Future research could explore broader samples across different regions and industries to enhance the external validity of the findings. Longitudinal studies may also provide deeper insights into how organizational learning, marketing capability, and technological capability evolve over time to influence MSME performance. Additionally, researchers may examine mediating or moderating variables such as innovation, digital readiness, or external environmental factors that could further explain the dynamics between capabilities and performance.

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