Digital capability and strategic agility effects on SME financial performance through operational efficiency

Ainorrofiqie*, Fuji Santoso, Dedy Ahmadi

Department of Economy, Universitas KH. Bahaudin Mudhary, Madura, Indonesia

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Abstract

This study examines the influence of digital capability and strategic agility on MSME financial performance, with operational efficiency as a mediating variable under digital transformation pressure. A quantitative explanatory design was employed using survey data collected from 250 digitally adopted MSMEs through purposive sampling. Data were analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with SmartPLS 4 to examine direct and indirect relationships among variables. The findings reveal that digital capability and strategic agility positively and significantly affect operational efficiency and financial performance. Furthermore, operational efficiency significantly mediates the relationship between digital capability, strategic agility, and MSME financial performance. These results indicate that successful digital transformation depends not only on technology adoption but also on firms' ability to respond strategically to market changes and optimize operational processes. Theoretically, this study extends Dynamic Capability Theory by highlighting operational efficiency as a key mechanism linking organizational capabilities to financial outcomes. Practically, the findings offer implications for MSMEs and policymakers to enhance digital integration, strategic agility, and operational efficiency, thereby improving competitiveness in the digital transformation era.

Keywords: *digital capability, strategic agility, operational efficiency, financial performance*.

Introduction

Digital transformation has become a global phenomenon, fundamentally changing the business landscape, particularly in the Small and Medium Enterprises (SMEs) sector. Developments in digital technologies, such as cloud computing, artificial intelligence, big data analytics, and digital platforms, have driven changes in business processes, consumption patterns, and mechanisms for organizational value creation (Goertler et al., 2025). In a global context, digitalization is seen as a key strategy to increase business efficiency, innovation, and competitiveness, particularly for SMEs operating in dynamic, uncertain environments (Abu et al., 2025). Recent reports show that SMEs with stronger digital capabilities tend to have better business resilience and financial performance than companies that are slow to adapt to technological change (OECD, 2023; World Bank, 2024). However, the success of digital transformation is determined not only by technology adoption but also by an organization's ability to respond adaptively to market changes.

Despite the rapid pace of digital transformation, many SMEs face significant challenges in translating digital investments into improved financial performance. Various studies show that the failure rate of digital transformation in SMEs remains relatively high due to limited resources, low technological capabilities, and weak strategic responses to changes

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Corresponding author: Ainorrofiqie, afiazizie@gmail.com

in the business environment (Troise et al., 2022; Verhoef et al., 2021). In practice, many SMEs have adopted digital platforms but have not experienced significant increases in revenue, profitability, or productivity. This situation demonstrates the digitalization paradox, in which technology investments do not always yield optimal financial returns. One of the main causes is the inability of organizations to integrate digital capabilities with strategic flexibility and operational efficiency.

Several previous studies have examined the relationship between digital capability, strategic agility, and financial performance, but the results remain inconsistent. Some studies found that digital capability significantly impacts organizational performance by increasing efficiency and innovation (Queiroz et al., 2021; Rialti et al., 2022), whereas others found weak or insignificant effects, particularly in SMEs in resource-constrained developing countries (Ciampi et al., 2023). Similarly, research on strategic agility has yielded mixed results. Some studies suggest that strategic agility can enhance organizational competitiveness and performance, while others suggest that this effect is highly contextual and influenced by internal organizational factors (Shams et al., 2022). Furthermore, most previous studies have examined these variables separately and have not presented an integrative model that explains how digital capability and strategic agility simultaneously improve financial performance through specific mechanisms.

From a theoretical perspective, most previous research remains dominated by the Resource-Based View (RBV), which emphasizes the importance of strategic resource ownership as the basis for competitive advantage. However, the RBV has limitations in explaining how organizations maintain their competitive advantage in rapidly changing, uncertain business environments. In the context of highly dynamic digital transformation, the Dynamic Capability Theory approach becomes increasingly relevant, as it emphasizes an organization's ability to integrate, build, and reconfigure resources adaptively to respond to environmental changes (Teece et al., 2022). Therefore, the relationship between digital capability and strategic agility should be understood as a dynamic capability that drives improved financial performance, especially when operational efficiency serves as a mediating mechanism.

Based on these empirical and theoretical gaps, this study offers contributions in several aspects. First, this study develops an integrative model linking digital capability and strategic agility to financial performance via the mediating role of operational efficiency, a relatively under-researched area in prior literature. Second, this study strengthens the Dynamic Capability Theory perspective in explaining the value-creation mechanisms of SMEs amid digital transformation pressures. Third, this study was conducted in the context of an emerging economy, namely Indonesia, which has different institutional characteristics, levels of technology adoption, and digital transformation challenges compared to developed countries. Thus, this study is expected not only to make theoretical contributions to the development of the strategic and financial management literature but also to offer practical implications for SMEs and policymakers in designing more effective and sustainable digital transformation strategies.

Digital capability is an organization's ability to utilize digital technology to support business processes, decision-making, and value creation. From the perspective of Dynamic Capability Theory, digital capabilities allow companies to identify opportunities (sensing), take advantage of these opportunities (seizing), and reconfigure resources (reconfiguring)

to increase operational effectiveness (Teece, 2018). Through the use of digital technology, MSMEs can automate various business activities, reduce operational costs, improve information accuracy, and accelerate the flow of work processes. As a result, the company's operational efficiency has become better. Previous research has shown that digital capabilities contribute to improving operational efficiency through the integration of technology-based business processes and optimization of resource use (Verhoef et al., 2021; Troise et al., 2022). In the context of Indonesian MSMEs that are facing an acceleration of digital transformation, the ability to effectively utilize technology is an important factor in improving operational efficiency.

H1: Digital capability has a positive effect on operational efficiency.

Strategic agility describes an organization's ability to respond quickly and flexibly to changes in the business environment through adjustments to strategies, organizational structures, and business processes. Organizations that have a high level of agility tend to be more responsive to changing customer needs, technological developments, and market competition dynamics. These capabilities allow companies to allocate resources more effectively and reduce inefficiencies in business operations. According to Dynamic Capability Theory, strategic agility is a form of dynamic capability that allows companies to adapt to environmental changes in a sustainable manner (Teece et al., 2016). Research by Doz and Kosonen (2010) and Queiroz et al. (2021) found that an agile organization is able to improve operational efficiency through accelerating decision-making processes and increasing organizational flexibility. Therefore, strategic agility is expected to be able to improve the operational efficiency of MSMEs.

H2: Strategic agility has a positive effect on operational efficiency.

Digital capabilities not only help organizations improve the efficiency of business processes, but also contribute to improved financial performance. Through the use of digital technology, companies can expand market access, improve the quality of customer service, accelerate business transactions, and create new revenue opportunities. In the perspective of the Resource-Based View (RBV), digital capability is a strategic resource that can create a sustainable competitive advantage (Barney, 1991). Previous research has shown that companies with a high level of digital capabilities tend to have better financial performance than companies that are less able to utilize digital technology (Ciampi et al., 2023; Verhoef et al., 2021). In Indonesian MSMEs, digital capability is becoming increasingly important because digital transformation has changed the pattern of interaction between business actors and consumers.

H3: Digital capability has a positive effect on financial performance.

In a dynamic business environment, an organization's ability to adapt quickly is an important factor in maintaining and improving financial performance. Strategic agility allows companies to identify market changes early, respond quickly to customer needs, and innovate relevant to the business environment. Thus, the company has a greater chance of increasing revenue and maintaining profitability. Previous research has shown that strategic agility has a positive relationship with organizational performance because it allows companies to act faster than competitors in taking advantage of business

opportunities (Shams et al., 2022). In the context of Indonesian MSMEs that face the pressure of digital transformation and increasingly fierce competition, strategic agility is an important ability to support the achievement of better financial performance.
H4: Strategic agility has a positive effect on financial performance.

Operational efficiency reflects an organization's ability to optimally manage resources to produce maximum output at minimal cost. Organizations that are able to improve operational efficiency tend to have lower production costs, higher productivity, and better service quality. This condition will ultimately increase the company's profitability and financial performance. Research by Yu et al. (2022) shows that operational efficiency is one of the main factors that affect a company's success in improving financial performance. In MSMEs, the ability to effectively manage costs and resources is a crucial factor in creating a competitive advantage and maintaining business sustainability.
H5: Operational efficiency has a positive effect on financial performance.

Dynamic Capability Theory explains that organizational capabilities often do not have a direct impact on performance, but rather through internal mechanisms that transform these capabilities into economically valuable outcomes. In this study, *digital* capability allows companies to improve the efficiency of business processes through automation, information system integration, and more effective use of data. Increased operational efficiency then contributes to the improvement of the company's financial performance. Research by Rialti et al. (2022) and Ciampi et al. (2023) shows that the benefits of digitalization on organizational performance are often mediated by increased effectiveness and operational efficiency. Thus, operational efficiency is expected to be a mechanism that explains the relationship between digital capability and financial performance in MSMEs.
H6: Operational efficiency mediates the influence of digital capabilities on financial performance.

Strategic agility allows companies to quickly adjust business strategies and processes to changes in the external environment. These capabilities can increase operational effectiveness through more appropriate use of resources, reduction of unproductive activities, and increased organizational flexibility. Higher operational efficiency will then have an impact on improving the company's financial performance. Previous research has shown that agile organizations are able to achieve better performance because they are supported by more effective and efficient operational processes (Queiroz et al., 2021; Shams et al., 2022). Therefore, operational efficiency is estimated to be a mediating variable that explains how strategic agility translates into an increase in financial performance in MSMEs.
H7: Operational efficiency mediates the influence of strategic agility on financial performance.

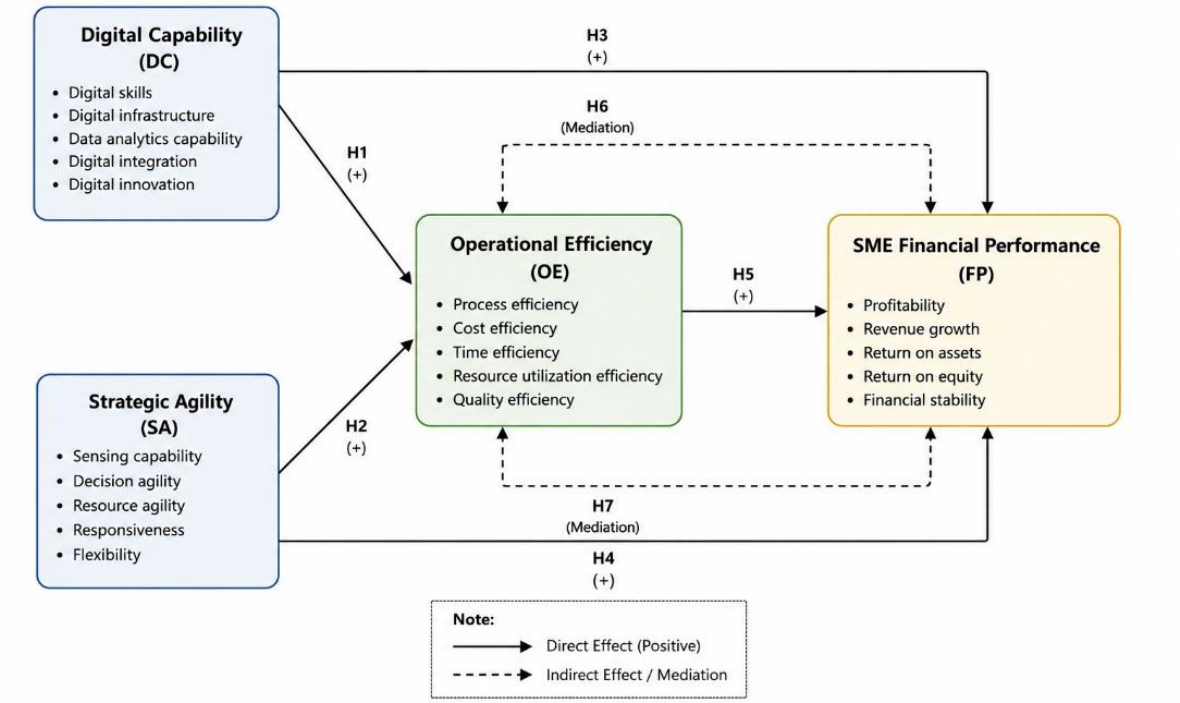


Figure 1. Conceptual Framework

Research Methods

This study uses a quantitative, explanatory research design to analyze the causal relationships among digital capability, strategic agility, operational efficiency, and the financial performance of MSMEs. This approach was chosen because it can explain the direct and indirect influences between variables through a complex structural model. Data analysis was performed using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) method with SmartPLS 4. The SEM-PLS method was chosen because it is suitable for predictive research with complex latent models, does not require strict normality assumptions, and can test mediation relationships simultaneously (Hair et al., 2022).

The population of this study includes all MSMEs that have adopted digital technology in their business operations, such as using marketplaces, social media, digital payment systems, financial recording applications, and digital-based business management platforms. Because the population size cannot be precisely identified (an unknown population), this study used a purposive sampling technique, a method based on characteristics relevant to the research objectives.

The respondent criteria that were determined include:

1. MSME actors who have used digital technology in business activities;
2. The business has been running for at least two years to reflect operational stability;
3. Business owners or managers are directly involved in strategic decision-making;
4. Have financial activities running actively.

The sample size for this study was set at 250 respondents. This sample size was determined based on several methodological considerations to ensure sufficient statistical power and the stability of the SEM-PLS model. First, based on the G Power analysis with an effect size parameter of 0.15 (medium effect), a significance level (α) of 0.05, and a statistical power of 0.95, the minimum sample requirement is approximately 138 respondents for a

model with three maximum predictors on the endogenous construct. Thus, the use of 250 respondents has exceeded the minimum limit and increased the accuracy of the model estimation.

Second, based on the minimum rule in PLS-SEM (10-times rule), the minimum sample size is determined as 10 times the number of the largest structural paths to the endogenous variable. In this study, the financial performance variable has three structural relationships (digital capability, strategic agility, and operational efficiency), so the minimum sample size required is 30 respondents. Therefore, 250 respondents are considered sufficient for a SEM-PLS analysis (Sarstedt, M., Ringle, C.M., & Hair, J.F., 2021).

Third, in line with the latest methodological recommendations, a sample size of 200–400 respondents is considered ideal for SEM-PLS research involving latent constructs and mediation models, as it can improve parameter reliability, model validity, and the generalizability of research results (Hair et al., 2022). Therefore, 250 respondents are considered sufficient to produce a stronger, more robust empirical model.

Respondent characteristics were analyzed to provide a general overview of the MSMEs studied. The distribution of respondents by gender, age, business length, business sector, annual turnover, and number of employees is presented in the following table.

Table 1. Respondent Characteristics

Characteristics	Category	Frequency	Percentage
Gender	Man	136	54.4%
	Woman	114	45.6%
Age	<30 Years	52	20.8%
	31–40 Years	97	38.8%
	>40 Years	101	40.4%
Length of Business	<5 Years	71	28.4%
	5–10 Years	106	42.4%
	>10 Years	73	29.2%
Business Sector	Trading	86	34.4%
	Culinary	67	26.8%
	Service	54	21.6%
	Manufacturing	43	17.2%
Turnover per Year	<100 million	78	31.2%
	100–500 million	109	43.6%
	>500 million	63	25.2%
Number of Workers	<5 People	114	45.6%
	5–10 People	82	32.8%
	>10 People	54	21.6%

The research instrument was adapted from a validated scale used in previous studies and measured on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The instrument was translated using a back-translation procedure to maintain equivalence of meaning. Construct validity was assessed through convergent validity (factor loadings >0.70 and AVE >0.50), while reliability was assessed using Composite Reliability and Cronbach's Alpha (>0.70).

Since the data were collected through a self-reported questionnaire, this study tested for potential Common Method Bias (CMB) using Harman's Single Factor Test. The test results showed that the single-factor variance was 32.8%, below the 50% threshold, indicating no

common method bias. To minimize response bias, this study also implemented respondent anonymity, item randomization, and separation of conceptual constructs.

Table 2. Operationalization of Variables

Variables	Scale Source	Number of Items	Sample Items
Digital Capability	Warner & Wäger (2019)	8	"Our company leverages digital technology in business decision-making."
Strategic Agility	Doz & Kosonen (2010)	8	"Our company is quick to respond to market changes."
Operational Efficiency	Yu et al. (2022)	7	"Our business operations are running efficiently."
Financial Performance	Ciampi et al. (2023)	8	"Business revenue has increased in the last three years."

Full Collinearity Variance Inflation Factor (VIF) testing was conducted to detect potential multicollinearity and common method bias (Kock, 2020). The results showed that all variables had VIF values below 3.3, indicating the model was free of collinearity problems.

Table 3. Full Collinearity VIF

Variables	VIF	Information
Digital Capability	2.28	No collinearity occurs
Strategic Agility	2.41	No collinearity occurs
Operational Efficiency	2.16	No collinearity occurs
Financial Performance	2.69	No collinearity occurs

Model fit evaluation was conducted to ensure the suitability of the research model. The model met the goodness-of-fit criteria.

Table 4. Model Fit Indices

Indicator	Mark	Cut-off	Information
SRMR	0.061	<0.08	Good Fit
NFI	0.918	>0.90	Good Fit
RMS Theta	0.094	<0.12	Good Fit

An SRMR value below 0.08 indicates a low level of model residuals, while an NFI above 0.90 indicates a good level of fit. Furthermore, an RMS Theta value below 0.12 indicates adequate measurement model quality. Thus, the research model is deemed suitable for further hypothesis testing.

Results and Discussion

Data analysis in this study used the Structural Equation Modeling–Partial Least Squares (SEM-PLS) method with SmartPLS 4. Model evaluation was conducted by testing the outer and inner models to assess validity, reliability, predictive relevance, and the strength of the relationships among the variables in the research model. The research model consists of digital capability as the first exogenous variable, strategic agility as the second exogenous variable, operational efficiency as the mediating variable, and financial performance as the endogenous variable.

Respondent characteristics revealed that the majority of MSMEs are managed by male

entrepreneurs (54.4%), predominantly aged 31 or older, indicating a relatively mature level of business experience. Most businesses have been operating for 5–10 years and are predominantly in the trade and culinary sectors, indicating a high level of digital adoption in these sectors. Convergent validity was assessed by evaluating the factor loadings and Average Variance Extracted (AVE) values. The test results showed that all indicators had loading factor values above 0.70, thus meeting the convergent validity criteria. Furthermore, all variables had AVEs above 0.50, indicating that each construct explained more than 50% of its indicators' variance.

Table 5. AVE Value

Variables	AVE	Information
Digital Capability (X1)	0.71	Valid
Strategic Agility (X2)	0.73	Valid
Operational Efficiency (Z)	0.69	Valid
Financial Performance (Y)	0.74	Valid

An AVE value exceeding the minimum limit of 0.50 indicates that all research constructs have met the convergent validity criteria and are suitable for use in further analysis. The data analysis in this study used the SEM-PLS approach because it can simultaneously test relationships among latent variables and is suitable for predictive research models with moderate sample sizes. Furthermore, this method is effective for examining both direct and indirect relationships among variables through mediating mechanisms.

In this study, operational efficiency acts as a mediating variable, estimated to mediate the influence of digital capability and strategic agility on MSME financial performance. Mediation testing was conducted using the bootstrapping procedure in SEM-PLS to determine the significance of the direct and indirect effects between the variables.

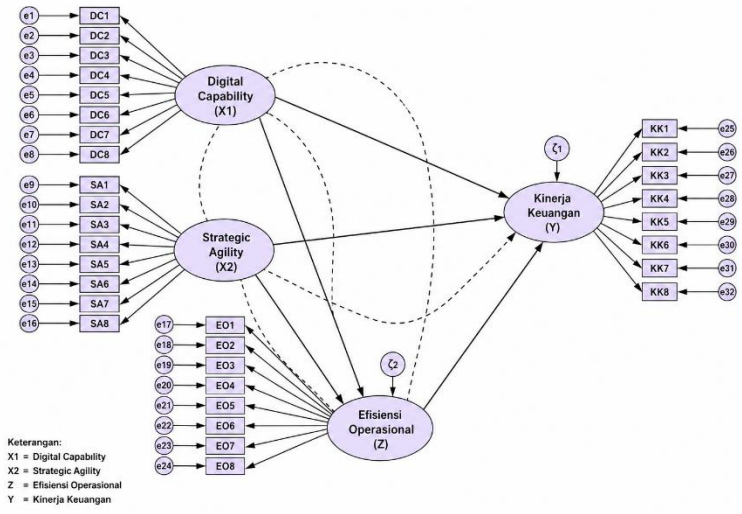


Figure 2. Research Model

This research model describes the relationship between digital capability and strategic agility as exogenous variables, operational efficiency as a mediating variable, and financial performance as an endogenous variable, and analyzes them simultaneously using the SEM-PLS approach. Reliability testing was conducted using Composite Reliability (CR) and Cronbach's Alpha. The test results showed that all variables had values above 0.70,

indicating that the construct is reliable.

Table 6. Reliability Test

Variables	Composite Reliability	Cronbach's Alpha	Information
Digital Capability (X1)	0.93	0.91	Reliable
Strategic Agility (X2)	0.92	0.90	Reliable
Operational Efficiency (Z)	0.91	0.89	Reliable
Financial Performance (Y)	0.94	0.92	Reliable

These results indicate that all research instruments exhibit high internal consistency, allowing them to accurately measure research constructs. Discriminant validity testing was conducted using the Heterotrait-Monotrait Ratio (HTMT) method. An HTMT value below 0.90 indicates that each construct has good discriminant validity.

Table 7. HTMT Results

Variables	X1	X2	Z	Y
Digital Capability (X1)	-			
Strategic Agility (X2)	0.83	-		
Operational Efficiency (Z)	0.79	0.85	-	
Financial Performance (Y)	0.77	0.82	0.86	-

All HTMT values are below the 0.90 threshold, indicating that the model meets the discriminant validity criteria. Inner model evaluation is used to assess the ability of independent variables to explain the dependent variables.

Table 8. R-Square Value

Dependent Variable	R-Square	Information
Operational Efficiency (Z)	0.67	Moderate-Strong
Financial Performance (Y)	0.72	Strong

The R^2 value of 0.72 indicates that 72% of the variation in financial performance is explained by digital capability, strategic agility, and operational efficiency, while the remaining 28% is explained by factors outside the research model. Predictive relevance testing was performed using a blindfolding procedure. A Q^2 value > 0 indicates that the model has good predictive ability.

Table 9. Q^2 Value

Endogenous Variables	Q^2	Information
Operational Efficiency (Z)	0.46	Predictive relevance
Financial Performance (Y)	0.51	Predictive relevance

This value indicates that the research model has strong predictive ability for endogenous variables.

Table 10. Full Collinearity VIF

Variables	VIF	Information
Digital Capability	2.28	No collinearity occurs
Strategic Agility	2.41	No collinearity occurs
Operational Efficiency	2.16	No collinearity occurs
Financial Performance	2.69	No collinearity occurs

All VIF values are below 3.3, so the model is free of multicollinearity and common-method bias.

Table 11. Fit Model

Indicator	Mark	Cut-off	Information
SRMR	0.061	<0.08	Good Fit
NFI	0.918	>0.90	Good Fit
RMS Theta	0.094	<0.12	Good Fit

The results show that the research model has a good level of fit and is suitable for hypothesis testing. Research findings indicate that digital capability has a positive impact on the operational efficiency and financial performance of MSMEs. However, this influence cannot be understood solely as a direct consequence of technology adoption, but rather as a result of an organization's ability to strategically integrate technology into business processes. In the context of MSMEs, digital capability enables companies to increase efficiency through process automation, reduced transaction costs, improved information accuracy, and accelerated data-driven decision-making. Thus, improved financial performance results not solely from the use of technology but also from the organization's ability to transform it into a source of economic value.

From the perspective of Dynamic Capability Theory, this influence can be explained through the sensing, seizing, and reconfiguring mechanisms. In the sensing stage, MSMEs identify digital opportunities such as market expansion through marketplaces and social media. The seizing stage occurs when technology is utilized to improve operational effectiveness and expand the customer base. Furthermore, the reconfiguring stage reflects MSMEs' ability to continuously adapt business models and operational processes. Thus, digital capability functions not only as a technological resource but also as a dynamic capability that helps organizations adapt to a rapidly changing business environment.

These findings also help explain why some MSMEs fail to reap the financial benefits of digitalization. Many small businesses adopt technology instrumentally without changing their business strategy and organizational capacity. Therefore, digital investments do not automatically increase profitability if they are not accompanied by operational integration and adaptive capabilities. These findings expand on previous research, which suggests that the influence of digital capability on company performance is often indirect and dependent on internal organizational capabilities (Rialti et al., 2022; Ciampi et al., 2023).

On the other hand, this study's results also indicate the presence of boundary conditions, namely conditions that influence the strength of the relationship between variables. The influence of digital capability on financial performance tends to be stronger in MSMEs with high technological readiness, adequate managerial support, and the ability to manage digital information effectively. Conversely, in MSMEs with limited digital literacy and organizational resources, the impact is relatively weak.

This research shows that strategic agility plays a crucial role in improving the operational efficiency and financial performance of MSMEs. These findings can be interpreted as indicating that an organization's ability to respond quickly to market changes is a key factor in business success amid economic uncertainty and accelerating digital transformation. In the MSME context, strategic agility is reflected in the ability to adapt marketing strategies, change business models, respond to changing consumer preferences,

and flexibly manage business risks.

Theoretically, these results extend Dynamic Capability Theory by demonstrating that strategic agility serves as an implementation mechanism for an organization's dynamic capabilities. In the context of sensing–seizing–reconfiguring, strategic agility helps organizations detect market changes (sensing), make strategic decisions quickly (seizing), and adjust business resource configurations (reconfiguring). In other words, strategic agility functions as an organization's ability to translate environmental changes into strategic actions that generate economic value.

These results are consistent with previous research that found that more agile companies tend to perform better in turbulent business environments (Shams et al., 2022). However, this study provides an additional contribution by showing that this effect is even more pronounced in the context of MSMEs in developing countries, where organizational flexibility often serves as a substitute for resource constraints.

The most important finding of this study is the mediating role of operational efficiency between digital capability, strategic agility, and financial performance. This suggests that the influence of these two variables on financial performance does not occur automatically, but rather through an organization's ability to improve the effectiveness of its business processes.

Interpretatively, these results demonstrate that digital technology and strategic agility will only yield financial benefits if they translate into operational efficiencies, such as cost reductions, increased productivity, workforce optimization, and accelerated customer service. Thus, operational efficiency is a "missing mechanism" that has received little attention in previous studies.

This finding also addresses the inconsistency of previous research, where some studies found a direct effect of digitalization on performance, while others showed weak or insignificant results. This research suggests that this inconsistency is likely due to the absence of mediating variables that explain the mechanisms of the relationship between the constructs.

Conclusion

This study concludes that digital capability and strategic agility are important determinants of improved financial performance for MSMEs. Both variables have been shown to have a positive and significant impact, both directly and indirectly through operational efficiency. These findings indicate that MSMEs' ability to leverage digital technology and respond quickly and flexibly to changes in the business environment can enhance operational effectiveness and ultimately improve financial performance.

Furthermore, operational efficiency has been shown to mediate the relationship between digital capability and strategic agility in financial performance. This indicates that the success of digital transformation and the implementation of adaptive strategies depends not only on technology adoption or speed of response, but also on the organization's ability to efficiently manage resources. Therefore, integrating digital capability, strategic agility, and operational efficiency is key to driving sustainable financial performance for MSMEs in the digital era.

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