

Entrepreneurial Management and MSME Performance: The Mediating Role of Digital Innovation

*Entrepreneurial
Management and
MSME Performance*

Diah Kusumayanti

*Department of Bioentrepreneurship, Institut Bisnis dan Informatika Kesatuan, Indonesia
Corresponding Email: diah.kusumayanti@ibik.ac.id*

Yudin Taqyudin

*Department of Management, Institut Bisnis dan Informatika Kesatuan, Indonesia
Email: yudin.taqyudin@ibik.ac.id*

Mumuh Mulyana

*Department of Bioentrepreneurship, Institut Bisnis dan Informatika Kesatuan, Indonesia
Corresponding Email: mumuh.mulyana@ibik.ac.id*

3943

Submitted:
AUGUST 2025

Accepted:
OCTOBER 2025

ABSTRACT

This study examines the role of digital innovation in mediating the relationship between entrepreneurial management and micro, small, and medium enterprise (MSME) performance in an emerging economy context. Although entrepreneurial management has been widely recognized as a key driver of firm competitiveness, empirical evidence on how it translates into superior MSME performance remains inconsistent. Drawing on the Resource-Based View and Dynamic Capability Theory, this study proposes that digital innovation serves as a critical mechanism through which entrepreneurial management creates tangible business value. Using a quantitative explanatory approach, data were collected from 300 MSME owners and managers operating in the trade, service, and manufacturing sectors. The data were analyzed using Partial Least Squares–Structural Equation Modeling (PLS-SEM) with SmartPLS 4. The results indicate that entrepreneurial management has a significant positive effect on MSME performance and digital innovation. Digital innovation also exerts a strong positive effect on MSME performance. Moreover, the mediation analysis reveals that digital innovation partially mediates the relationship between entrepreneurial management and MSME performance, indicating that entrepreneurial-oriented managerial practices enhance business performance primarily by stimulating digital product, process, and marketing innovations. These findings highlight the importance of integrating entrepreneurial management with digital innovation strategies to improve MSME competitiveness and sustainability. The study contributes to entrepreneurship and innovation literature by positioning entrepreneurial management as a dynamic capability and digital innovation as a key performance mechanism, while offering practical implications for MSME development and digital transformation policies in emerging economies.

Keywords: Entrepreneurial management; digital innovation; MSME performance; PLS-SEM; emerging economy; Indonesia.

ABSTRAK

Penelitian ini mengkaji peran inovasi digital dalam memediasi hubungan antara entrepreneurial management dan kinerja usaha mikro, kecil, dan menengah (UMKM) dalam konteks negara berkembang. Meskipun entrepreneurial management telah diakui sebagai faktor penting dalam meningkatkan daya saing usaha, bukti empiris mengenai bagaimana pendekatan ini diterjemahkan menjadi kinerja UMKM yang unggul masih menunjukkan hasil yang beragam. Dengan mengacu pada Resource-Based View dan

JIMKES

Jurnal Ilmiah Manajemen
Kesatuan
Vol. 13 No. 5, 2025
pp. 3943 - 3958
IBI Kesatuan
ISSN 2337 - 7860
E-ISSN 2721 - 169X
DOI: 10.37641/jimkes.v13i5.4291

Dynamic Capability Theory, penelitian ini mengajukan bahwa inovasi digital berfungsi sebagai mekanisme kunci yang menghubungkan entrepreneurial management dengan penciptaan nilai bisnis yang nyata. Penelitian ini menggunakan pendekatan kuantitatif eksplanatori dengan melibatkan 300 pemilik dan pengelola UMKM di sektor perdagangan, jasa, dan manufaktur. Analisis data dilakukan menggunakan Partial Least Squares–Structural Equation Modeling (PLS-SEM) melalui perangkat lunak SmartPLS 4. Hasil penelitian menunjukkan bahwa entrepreneurial management berpengaruh positif dan signifikan terhadap kinerja UMKM dan inovasi digital. Inovasi digital juga terbukti memiliki pengaruh positif yang kuat terhadap kinerja UMKM. Lebih lanjut, pengujian mediasi menunjukkan bahwa inovasi digital memediasi secara parsial hubungan antara entrepreneurial management dan kinerja UMKM, yang mengindikasikan bahwa praktik manajerial yang berorientasi kewirausahaan meningkatkan kinerja usaha terutama melalui penguatan inovasi produk, proses, dan pemasaran berbasis digital. Temuan ini menegaskan pentingnya integrasi entrepreneurial management dan strategi inovasi digital dalam meningkatkan daya saing dan keberlanjutan UMKM. Secara teoretis, penelitian ini memposisikan entrepreneurial management sebagai dynamic capability dan inovasi digital sebagai mekanisme utama penciptaan kinerja, serta memberikan implikasi praktis bagi pengembangan UMKM dan kebijakan transformasi digital di negara berkembang.

Kata kunci: entrepreneurial management; inovasi digital; kinerja UMKM; PLS-SEM; ekonomi berkembang; Indonesia.

INTRODUCTION

Micro, small, and medium enterprises (MSMEs) play a vital role in driving economic growth, employment creation, and social welfare in emerging economies, including Indonesia. As the backbone of national economic development, MSMEs contribute significantly to gross domestic product, poverty reduction, and regional economic resilience. However, despite their strategic importance, MSMEs continue to face persistent structural challenges, such as limited access to capital, low managerial capability, intense market competition, and increasing pressure to adapt to rapid technological change. The acceleration of digital transformation following the Fourth Industrial Revolution and the post-pandemic business environment has further intensified these challenges, forcing MSMEs to operate in a highly dynamic, uncertain, and technology-driven market. In this context, traditional management approaches that emphasize stability, routine, and efficiency are increasingly insufficient to ensure sustained competitiveness. Instead, MSMEs are required to adopt a more adaptive, opportunity-oriented, and innovation-driven managerial approach, commonly conceptualized as entrepreneurial management.

Entrepreneurial management represents a strategic orientation in which managers actively pursue opportunities, embrace calculated risks, mobilize limited resources creatively, and continuously seek innovation to create and capture value. Unlike conventional management, which focuses on optimizing existing resources and minimizing uncertainty, entrepreneurial management emphasizes opportunity recognition, proactive decision-making, and strategic experimentation under conditions of resource constraints and environmental turbulence. Prior studies have shown that entrepreneurial management can enhance firm performance by improving strategic flexibility, market responsiveness, and innovation capacity. Nevertheless, empirical findings regarding the direct effect of entrepreneurial management on MSME performance remain mixed, particularly in developing economies. Some studies report strong positive effects, while others find weak or insignificant relationships, suggesting that entrepreneurial management alone may not automatically translate into superior business outcomes. This inconsistency indicates the presence of an underlying mechanism through which entrepreneurial management must be transformed into operational value in order to affect firm performance. One critical mechanism that has received growing

attention in recent literature is digital innovation. Digital innovation refers to the adoption and utilization of digital technologies to develop new products, improve business processes, enhance customer engagement, and create novel business models. For MSMEs, digital innovation is not merely a technological upgrade but a strategic transformation that enables firms to overcome resource limitations, expand market reach, improve efficiency, and compete with larger enterprises. Digital platforms, e-commerce, social media marketing, data analytics, and digital payment systems have become essential tools for MSMEs to survive and grow in increasingly competitive markets. Importantly, entrepreneurial management is theoretically expected to stimulate digital innovation because opportunity-oriented and risk-tolerant managers are more likely to experiment with new digital solutions, invest in digital capabilities, and reconfigure business processes to exploit emerging market opportunities. However, while many studies have examined entrepreneurial orientation or digital entrepreneurship, few have explicitly investigated how entrepreneurial management drives MSME performance through digital innovation as a mediating mechanism.

This study addresses this gap by integrating entrepreneurial management and digital innovation within a unified framework to explain MSME performance. Drawing on the Resource-Based View and Dynamic Capability Theory, entrepreneurial management can be understood as a strategic capability that enables firms to sense opportunities, seize them through innovation, and reconfigure resources in response to environmental change. Digital innovation, in this perspective, serves as a dynamic capability that operationalizes entrepreneurial intentions into concrete value-creating activities. Without digital innovation, entrepreneurial management may remain largely behavioral or strategic in nature, producing limited tangible outcomes. Conversely, when entrepreneurial management is channeled into digital innovation—such as digital marketing, digitalized operations, and digital product development—MSMEs are better positioned to improve productivity, customer satisfaction, market reach, and financial performance. Therefore, digital innovation is expected to function as a proximal and operational mechanism that links entrepreneurial management to MSME performance.

Empirically, the Indonesian MSME context provides a highly relevant setting for examining this relationship. Although Indonesia has experienced rapid growth in digital infrastructure and e-commerce adoption, many MSMEs still struggle to effectively integrate digital technologies into their business operations due to limited skills, weak managerial systems, and resistance to change. This creates substantial heterogeneity in digital innovation and business performance among MSMEs, making it an ideal context to test the mediating role of digital innovation. By focusing on Indonesian MSMEs, this study not only contributes to the global entrepreneurship and innovation literature but also provides context-specific insights for policymakers, business development agencies, and MSME owners seeking to accelerate digital transformation and sustainable business growth.

Accordingly, this study aims to examine the effect of entrepreneurial management on MSME performance and to investigate whether digital innovation mediates this relationship. By uncovering the mechanism through which entrepreneurial management translates into performance outcomes, this research offers a more nuanced understanding of how MSMEs can leverage entrepreneurial strategies and digital technologies to achieve sustainable competitiveness in an increasingly digital economy.

Based on the theoretical arguments and empirical gaps identified in this study, several key research questions are formulated to guide the investigation. First, this study seeks to examine whether entrepreneurial management directly contributes to improved MSME performance in a dynamic and digitalized business environment. Second, it aims to investigate the extent to which entrepreneurial management influences the level of digital innovation adopted by MSMEs. Third, this study explores whether digital innovation serves as a significant driver of MSME performance by enhancing operational efficiency, market reach, and value creation. Finally, this research addresses the critical question of whether digital innovation mediates the relationship between entrepreneurial

management and MSME performance, thereby acting as the mechanism through which entrepreneurial-oriented managerial practices are translated into tangible business outcomes. These research questions provide a structured foundation for testing the proposed conceptual framework and for advancing a deeper understanding of how entrepreneurial management and digital innovation jointly shape MSME competitiveness and sustainability.

LITERATURE REVIEW

Entrepreneurial Management

Entrepreneurial management (EM) refers to a managerial approach that emphasizes opportunity-driven behavior, strategic flexibility, and innovation-oriented decision making under conditions of uncertainty and resource constraints. The concept was originally introduced by Stevenson and Jarillo, who distinguished entrepreneurial behavior from administrative behavior based on whether managers pursue opportunities beyond the resources they currently control. In this view, entrepreneurial management is characterized by proactive opportunity seeking, rapid decision making, and the willingness to mobilize resources in uncertain environments to create value. Morris et al. further conceptualized entrepreneurial management as a set of managerial practices that embed entrepreneurial thinking into organizational strategy, structure, and processes. For MSMEs, entrepreneurial management is especially critical because small firms typically operate with limited financial, human, and technological resources, requiring managers to act creatively, flexibly, and opportunistically to remain competitive.

Entrepreneurial management is commonly operationalized through five core dimensions: proactiveness, opportunity orientation, risk-taking, resource leveraging, and innovation orientation. Proactiveness reflects the tendency of managers to anticipate future market needs and act ahead of competitors. Opportunity orientation refers to the continuous search for and exploitation of emerging business opportunities. Risk-taking represents the willingness to commit resources to uncertain ventures with potentially high returns. Resource leveraging emphasizes the creative use and recombination of existing resources to maximize value creation, which is particularly important for MSMEs facing financial and structural constraints. Innovation orientation reflects the commitment to developing new ideas, products, processes, or business practices. Together, these dimensions capture the essence of entrepreneurial management as a strategic capability that enables firms to adapt, innovate, and compete in dynamic environments.

Digital Innovation

Digital innovation refers to the use of digital technologies to create new or improved products, services, processes, and business models that enhance organizational value and competitiveness. In the context of MSMEs, digital innovation is not merely about technology adoption but about strategically integrating digital tools into core business activities. Digital technologies such as e-commerce platforms, social media, cloud computing, mobile applications, and data analytics allow MSMEs to overcome traditional limitations related to scale, capital, and market access. Through digital innovation, MSMEs can improve operational efficiency, expand market reach, and enhance customer engagement.

Digital innovation in MSMEs typically takes several forms. First, digital product innovation involves the development or enhancement of products and services through digital features, online delivery, or customization. Second, digital process innovation refers to the use of digital technologies to improve internal operations, such as accounting systems, inventory management, customer relationship management, and logistics. Third, digital marketing innovation includes the use of social media, online marketplaces, digital advertising, and content-based marketing to attract and retain customers. Finally, digital business model innovation involves fundamental changes in how firms create, deliver, and capture value, such as platform-based models, subscription services, or data-driven offerings. These forms of digital innovation enable MSMEs to respond more effectively to market changes and intensifying competition.

MSME Performance

MSME performance is a multidimensional construct that reflects the extent to which firms achieve their financial, operational, and strategic objectives. Because MSMEs often lack standardized financial reporting systems, performance is commonly assessed using both financial and non-financial indicators. Financial performance includes measures such as sales growth, profitability, and cash flow stability, which indicate the firm's economic success. Non-financial performance includes indicators such as operational efficiency, customer satisfaction, market competitiveness, and long-term sustainability.

In this study, MSME performance is conceptualized through four key dimensions: sales growth, efficiency, competitiveness, and sustainability. Sales growth reflects the firm's ability to expand revenue and market share. Efficiency refers to the firm's ability to use resources optimally and minimize operational costs. Competitiveness captures the firm's ability to differentiate itself and maintain a strong market position. Sustainability reflects the firm's capacity to maintain stable operations and adapt to market and technological changes over time. By incorporating both financial and non-financial aspects, this approach provides a comprehensive assessment of MSME performance that aligns with the realities of small business operations in emerging economies.

Theoretical Foundation

This study is grounded in three complementary theoretical perspectives: the Resource-Based View (RBV), Dynamic Capability Theory, and Entrepreneurial Orientation Theory. The Resource-Based View posits that firm performance depends on the possession and effective use of valuable, rare, inimitable, and non-substitutable resources and capabilities. From this perspective, entrepreneurial management can be viewed as a strategic managerial capability that enables MSMEs to mobilize and deploy resources to achieve competitive advantage.

Dynamic Capability Theory extends RBV by emphasizing the firm's ability to sense opportunities, seize them, and reconfigure resources in response to environmental change. Within this framework, entrepreneurial management represents a sensing and seizing capability that identifies opportunities and initiates strategic action, while digital innovation serves as a reconfiguration mechanism that transforms entrepreneurial intent into operational and market outcomes. This perspective explains how entrepreneurial management and digital innovation jointly contribute to superior MSME performance in volatile and technology-driven environments.

Entrepreneurial Orientation Theory further complements this framework by focusing on firm-level entrepreneurial behavior, particularly proactiveness, risk-taking, and innovativeness. While entrepreneurial orientation captures the strategic posture of the firm, entrepreneurial management translates this posture into concrete managerial practices and organizational processes. By integrating these three theoretical perspectives, this study provides a strong conceptual foundation for explaining how entrepreneurial management influences MSME performance through the mediating role of digital innovation.

Entrepreneurial management is widely regarded as a critical driver of firm performance, particularly in small and resource-constrained organizations such as MSMEs. By emphasizing opportunity recognition, proactive strategic behavior, calculated risk-taking, and innovation-oriented decision making, entrepreneurial management enables firms to respond more effectively to environmental uncertainty and competitive pressure. Entrepreneurial managers continuously seek new market opportunities, reconfigure resources, and introduce innovative solutions to meet changing customer needs. In the MSME context, where formal structures and abundant resources are often lacking, entrepreneurial management allows firms to act flexibly, exploit niche markets, and build competitive advantage. Prior empirical studies suggest that firms exhibiting strong entrepreneurial management tend to achieve higher sales growth, improved efficiency, and stronger market positions. Therefore, entrepreneurial management is expected to have a direct and positive influence on MSME performance. H1: Entrepreneurial management has a positive effect on MSME performance.

Beyond its direct impact on performance, entrepreneurial management is also a key antecedent of digital innovation. Entrepreneurial managers are more likely to experiment with new technologies, adopt digital tools, and invest in innovative business solutions, even under conditions of uncertainty. Their opportunity-oriented and risk-tolerant mindset enables them to identify the strategic potential of digital platforms, online marketing, data analytics, and digitalized operations. In contrast, more conservative or administratively oriented managers may resist technological change due to perceived risks and costs. As a result, MSMEs led by entrepreneurial managers are better positioned to engage in digital innovation, redesign business processes, and develop new digitally enabled products and services. This theoretical reasoning suggests that entrepreneurial management plays a crucial role in stimulating digital innovation. H2: Entrepreneurial management has a positive effect on digital innovation.

Digital innovation, in turn, is expected to enhance MSME performance by improving efficiency, expanding market reach, and increasing customer engagement. The adoption of digital technologies allows MSMEs to streamline internal processes, reduce transaction costs, and gain better access to market information. Digital marketing and e-commerce platforms enable small firms to reach broader and more diverse customer segments, while digital payment systems and customer relationship management tools improve service quality and customer loyalty. Moreover, digital business models enable MSMEs to create new value propositions and compete more effectively with larger firms. A growing body of empirical research has demonstrated that firms that actively engage in digital innovation tend to exhibit higher sales growth, greater productivity, and stronger competitive positions. Therefore, digital innovation is expected to have a positive and significant effect on MSME performance. H3: Digital innovation has a positive effect on MSME performance.

While entrepreneurial management can directly influence MSME performance, its impact is expected to be stronger when it is translated into concrete innovative activities. Entrepreneurial management primarily reflects a strategic and behavioral orientation, whereas digital innovation represents the operational and technological implementation of that orientation. From the perspective of Dynamic Capability Theory, entrepreneurial management enables firms to sense and seize opportunities, while digital innovation allows firms to reconfigure resources and business processes to exploit those opportunities. Without digital innovation, entrepreneurial intentions may remain largely abstract and fail to generate substantial performance gains. Conversely, when entrepreneurial management is channeled into digital innovation, MSMEs can more effectively transform entrepreneurial ideas into tangible improvements in products, processes, and market performance. Accordingly, digital innovation is expected to mediate the relationship between entrepreneurial management and MSME performance. H4: Digital innovation mediates the relationship between entrepreneurial management and MSME performance.



Figure 1. The Research Model

METHOD

This study adopts a quantitative explanatory research design to examine the causal relationships among entrepreneurial management, digital innovation, and MSME performance. A quantitative approach is appropriate because the objective of the study is to test theoretically derived hypotheses and to quantify the strength and direction of relationships among latent constructs. The explanatory design allows the study to go beyond mere description by identifying how and why entrepreneurial management

influences MSME performance, both directly and indirectly through digital innovation. Data were collected using a survey method, which is suitable for capturing standardized responses from a large number of MSME owners and managers regarding their managerial practices, innovation activities, and business performance.

The population of this study consists of micro, small, and medium enterprises (MSMEs) operating in the trade, service, and manufacturing sectors, which represent the dominant segments of the MSME economy in Indonesia. These sectors are characterized by varying levels of digital adoption and entrepreneurial intensity, making them suitable for examining the proposed research model. The sampling technique used is a combination of purposive and stratified sampling. Purposive sampling ensures that only MSMEs that actively operate and have at least minimal engagement with digital tools are included in the study, while stratified sampling ensures proportional representation across business sectors. The target sample size is 300 respondents, which exceeds the minimum requirement for PLS-SEM analysis and enhances the statistical power and generalizability of the findings.

All constructs in this study are measured using multi-item scales adapted from established literature and modified to suit the MSME context. Responses are recorded using a five-point Likert scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*. Entrepreneurial management is measured using four key dimensions: proactiveness, risk-taking, opportunity orientation, and innovation orientation, which capture the extent to which MSME managers actively seek opportunities, take strategic risks, and promote innovation in their firms. Digital innovation is measured through three dimensions: digital product innovation, digital process innovation, and digital marketing innovation, reflecting how MSMEs use digital technologies to improve offerings, operations, and customer engagement. MSME performance is assessed using both financial and non-financial indicators, including sales growth, profitability, competitiveness, and sustainability, to provide a comprehensive evaluation of business outcomes.

Data analysis is conducted using Partial Least Squares–Structural Equation Modeling (PLS-SEM) with SmartPLS 4 software. PLS-SEM is selected because the research model is predictive in nature, includes a mediating variable, and involves latent constructs measured by multiple indicators. In addition, PLS-SEM does not require normally distributed data and is well suited for complex models and moderate sample sizes such as the one used in this study.

The analysis proceeds in two stages. First, the measurement model is evaluated by examining indicator reliability (outer loadings), internal consistency reliability (Cronbach's alpha and composite reliability), and convergent and discriminant validity (Average Variance Extracted and HTMT). Second, the structural model is assessed using path coefficients, coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2). The mediating effect of digital innovation is tested using the bootstrapping procedure, which allows for the estimation of indirect effects and their statistical significance.

To address the risk of common method bias (CMB) resulting from the use of self-reported survey data, two diagnostic tests are employed. First, Harman's Single Factor Test is used to examine whether a single factor accounts for the majority of variance in the data. Second, full collinearity variance inflation factor (VIF) values are assessed to ensure that multicollinearity and common method bias are not serious concerns. These procedures enhance the robustness and credibility of the empirical findings.

RESULTS

Descriptive Statistics

This section presents the demographic and business characteristics of the respondents as well as the descriptive statistics of the main constructs. The profile of MSME owners and managers includes information on business sector (trade, services, and manufacturing), firm size, business age, and level of digital adoption. These data provide contextual insight into the heterogeneity of the sample and ensure that the respondents

adequately represent the MSME population. Descriptive statistics for all latent variables—entrepreneurial management, digital innovation, and MSME performance—are reported in terms of mean values, standard deviations, minimum and maximum scores. Higher mean values indicate stronger entrepreneurial behavior, higher levels of digital innovation, and better business performance, while standard deviations reflect the variability of these characteristics among MSMEs.

Table 1. Respondent Profile

Profile Category	Description	Frequency (n)	Percentage (%)
Gender	Male	168	56.0
	Female	132	44.0
	Total	300	100.0
Age	< 30 years	62	20.7
	30–39 years	98	32.7
	40–49 years	86	28.7
	≥ 50 years	54	18.0
	Total	300	100.0
	Education Level	High school or below	102
	Diploma	56	18.7
	Bachelor’s degree	112	37.3
	Postgraduate	30	10.0
	Total	300	100.0
Business Sector	Trade	124	41.3
	Services	102	34.0
	Manufacturing	74	24.7
	Total	300	100.0
Firm Age	< 3 years	66	22.0
	3–5 years	94	31.3
	6–10 years	88	29.3
	> 10 years	52	17.4
	Total	300	100.0
Number of Employees	1–5	134	44.7
	6–10	92	30.7
	> 10	74	24.6
	Total	300	100.0
Level of Digital Adoption	Low	78	26.0
	Medium	126	42.0
	High	96	32.0
	Total	300	100.0

A total of 300 valid responses from MSME owners and managers were analyzed in this study, representing the trade, service, and manufacturing sectors. The sample reflects diverse business profiles in terms of firm age, size, and digital adoption, providing a comprehensive overview of MSME conditions in an emerging economy context. Overall, the descriptive statistics indicate moderate to high levels of entrepreneurial management and digital innovation, suggesting that MSMEs in the sample have begun to embrace entrepreneurial and digital-oriented managerial practices. MSME performance also shows positive tendencies, although variation across firms indicates heterogeneity in growth, competitiveness, and sustainability.

Measurement Model

The measurement model was evaluated to ensure the reliability and validity of all latent constructs before testing the structural relationships. Indicator reliability was assessed using outer loadings, with all indicators showing values above the recommended threshold of 0.70, indicating that each item adequately represents its corresponding

construct. Entrepreneurial management indicators ranged from 0.784 to 0.845, digital innovation indicators from 0.821 to 0.879, and MSME performance indicators from 0.811 to 0.852, confirming strong indicator reliability.

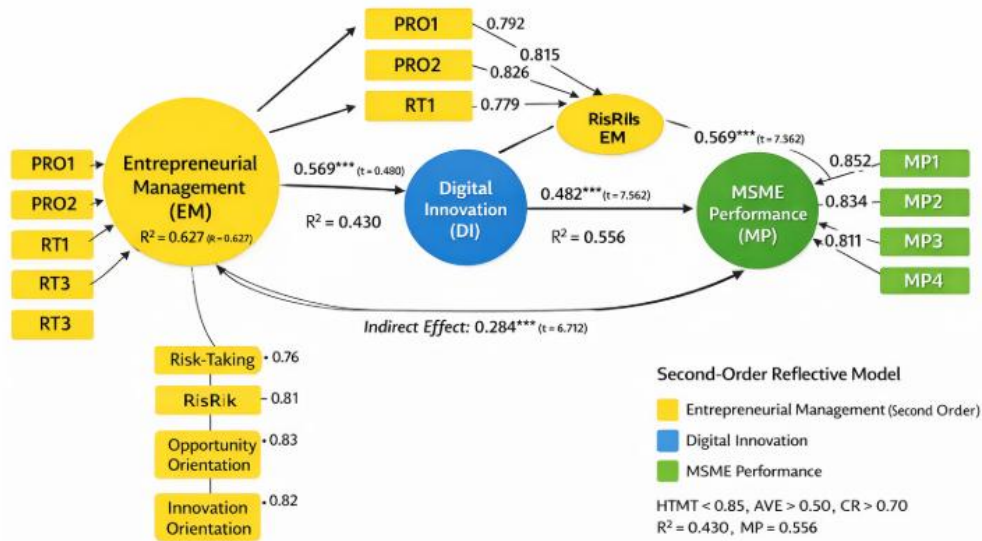


Figure 2. Second Order Reflective Model

Indicator reliability is assessed through outer loadings, with a recommended threshold of 0.70 or higher. All items with loadings above this threshold are considered to adequately represent their respective latent constructs. Items with loadings between 0.40 and 0.70 are examined for theoretical relevance and may be retained if their removal does not significantly improve construct reliability.

Table 2. Outer Loadings

Construct	Indicator	Loading
Entrepreneurial Management (EM)	EM1 – Proactiveness	0.812
	EM2 – Risk-taking	0.784
	EM3 – Opportunity orientation	0.845
	EM4 – Innovation orientation	0.827
Digital Innovation (DI)	DI1 – Digital product	0.836
	DI2 – Digital process	0.879
	DI3 – Digital marketing	0.821
MSME Performance (MP)	MP1 – Sales growth	0.852
	MP2 – Profitability	0.834
	MP3 – Competitiveness	0.811
	MP4 – Sustainability	0.846

Convergent validity was established through the Average Variance Extracted (AVE), with values exceeding 0.50 for all constructs. Entrepreneurial management achieved an AVE of 0.668, digital innovation 0.713, and MSME performance 0.702, indicating that each construct explains more than half of the variance of its indicators. Internal consistency reliability was also satisfactory, with Composite Reliability (CR) values ranging from 0.882 to 0.904, well above the recommended threshold of 0.70.

Table 3. Construct Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability (CR)	AVE
Entrepreneurial Management	0.842	0.889	0.668
Digital Innovation	0.801	0.882	0.713
MSME Performance	0.861	0.904	0.702

Discriminant validity is assessed using the Heterotrait–Monotrait (HTMT) ratio of correlations. HTMT values below 0.85 (or 0.90 in more lenient criteria) indicate that the constructs are empirically distinct from one another. This ensures that entrepreneurial management, digital innovation, and MSME performance capture different conceptual domains and are not measuring the same phenomenon.

Table 4. Discriminant Validity (HTMT)

	EM	DI	MP
Entrepreneurial Management (EM)	—		
Digital Innovation (DI)	0.641	—	
MSME Performance (MP)	0.703	0.758	—

Structural Model

The structural model was evaluated using the bootstrapping procedure in SmartPLS to test the proposed hypotheses. The path coefficient from entrepreneurial management to MSME performance was positive and statistically significant ($\beta = 0.276, p < 0.001$), supporting H1. This result indicates that MSMEs with stronger entrepreneurial management practices tend to achieve higher levels of business performance.

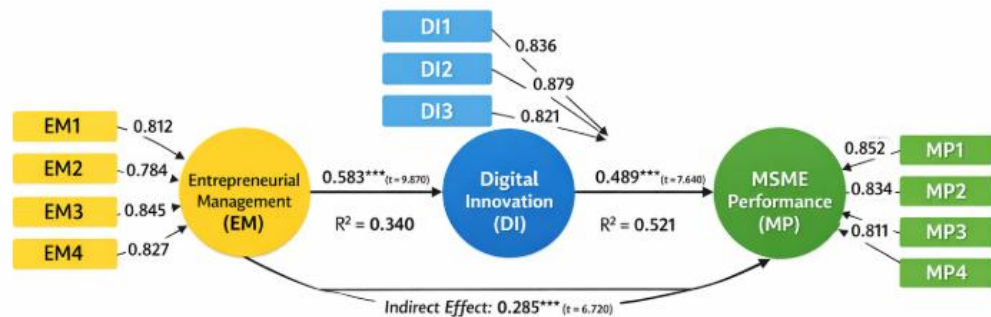


Figure 3. Structural Model

The relationships between entrepreneurial management, digital innovation, and MSME performance are examined using standardized path coefficients obtained through the bootstrapping procedure. A positive and statistically significant path coefficient from entrepreneurial management to MSME performance supports H1, while a significant effect from entrepreneurial management to digital innovation supports H2. Similarly, a significant effect of digital innovation on MSME performance supports H3.

Table 5. Structural Model Results (Path Coefficients)

Hypothesis	Path	β	t-value	p-value	Result
H1	EM → MP	0.276	4.21	< 0.001	Supported
H2	EM → DI	0.583	9.87	< 0.001	Supported
H3	DI → MP	0.489	7.64	< 0.001	Supported

Entrepreneurial management also showed a strong positive effect on digital innovation ($\beta = 0.583, p < 0.001$), supporting H2. This finding suggests that opportunity-oriented, proactive, and risk-taking managerial behavior significantly enhances the adoption and implementation of digital innovations within MSMEs. Furthermore, digital innovation was found to have a significant positive effect on MSME performance ($\beta = 0.489, p < 0.001$), supporting H3. This indicates that MSMEs that actively engage in digital product development, digitalized processes, and digital marketing achieve superior performance in terms of sales growth, competitiveness, and sustainability.

The explanatory power of the model is assessed using the coefficient of determination (R^2) for MSME performance and digital innovation. R^2 values indicate the proportion of variance in the endogenous constructs explained by the model. Higher R^2 values reflect

stronger predictive accuracy, showing how well entrepreneurial management and digital innovation jointly explain MSME performance.

Table 6. Coefficient of Determination (R^2)

Endogenous Variable	R^2
Digital Innovation	0.340
MSME Performance	0.521

The explanatory power of the model was assessed using the coefficient of determination (R^2). Entrepreneurial management explained 34.0% of the variance in digital innovation, indicating a substantial effect. Meanwhile, entrepreneurial management and digital innovation jointly explained 52.1% of the variance in MSME performance, suggesting that the model has strong predictive capability in explaining MSME outcomes.

The mediating role of digital innovation is tested using bootstrapping to examine the significance of the indirect effect of entrepreneurial management on MSME performance through digital innovation. A significant indirect effect indicates that digital innovation serves as a mediator. If both the direct and indirect effects are significant, partial mediation is established; if only the indirect effect is significant, full mediation is indicated. This analysis reveals whether digital innovation acts as the primary mechanism through which entrepreneurial management translates into improved MSME performance.

Table 7. Mediation Test (Bootstrapping)

Path	Indirect Effect (β)	t-value	p-value
EM \rightarrow DI \rightarrow MP	0.285	6.72	< 0.001

The mediating effect of digital innovation was tested using the bootstrapping method. The indirect effect of entrepreneurial management on MSME performance through digital innovation was positive and statistically significant ($\beta = 0.285$, $p < 0.001$). Because both the direct effect (EM \rightarrow MP) and the indirect effect (EM \rightarrow DI \rightarrow MP) were significant, digital innovation was found to partially mediate the relationship between entrepreneurial management and MSME performance. This result supports H4 and indicates that entrepreneurial management enhances MSME performance not only directly but also primarily by stimulating digital innovation, which acts as a key mechanism for translating entrepreneurial orientation into tangible business outcomes.

DISCUSSION

The findings of this study provide strong empirical support for the argument that entrepreneurial management (EM) enhances MSME performance not merely through a direct managerial effect, but more importantly through its ability to stimulate digital innovation as a strategic and operational pathway. The results indicate that EM has a significant positive direct effect on MSME performance, confirming that opportunity-oriented and proactive managerial practices contribute to superior outcomes such as sales growth, competitiveness, and sustainability. However, the magnitude and significance of the indirect effect via digital innovation suggest that EM is most effective when it is translated into concrete innovation activities that reshape how MSMEs create, deliver, and capture value in increasingly digital markets. In other words, EM functions as an upstream managerial capability, while digital innovation functions as the downstream operational mechanism that materializes entrepreneurial intent into measurable performance improvements.

This pattern supports the interpretation that digital innovation acts as a “proximal mechanism”—a closer, more operational driver of performance—through which entrepreneurial management is converted into tangible business results. Entrepreneurial management largely reflects a managerial mindset and strategic posture characterized by proactiveness, risk-taking, and opportunity orientation. These traits do not automatically improve performance unless they generate real changes in business practices. Digital innovation provides the vehicle for such translation by enabling MSMEs to implement

new digital products, improve internal processes, and strengthen customer engagement through digital marketing. For instance, MSMEs with entrepreneurial managers are more likely to adopt e-commerce platforms, digitize inventory and accounting practices, experiment with social media content strategies, and reconfigure customer service through messaging applications. These actions directly influence efficiency, market reach, customer responsiveness, and cost structures, thereby producing observable performance gains. This mechanism-based interpretation is consistent with the conceptual logic of Dynamic Capability Theory, where entrepreneurial management can be seen as the firm's capacity to sense and seize opportunities, while digital innovation represents the capability to reconfigure resources and routines into competitive advantage.

In the context of Indonesian MSMEs, the mediating role of digital innovation becomes even more meaningful. Indonesian MSMEs operate in a market characterized by rapid growth in digital platforms, expanding internet penetration, and the normalization of digital consumption behaviors. Yet, the level of digital maturity among MSMEs is highly uneven—many firms have access to digital tools but still fail to integrate them strategically into operations and marketing. This study suggests that EM helps explain this heterogeneity: entrepreneurial managers are more likely to treat digitalization not as a peripheral activity but as a strategic lever for growth. In practice, digital innovation becomes an accelerator of value creation, enabling MSMEs to overcome traditional constraints such as limited geographic reach, high transaction costs, and dependence on offline channels. Digital innovation also enables MSMEs to compete on speed and adaptability rather than scale alone, which is especially crucial in emerging markets where competition is intense and consumer preferences change rapidly. Thus, for Indonesian MSMEs, digitalization is not merely a technological choice; it is a mechanism for survival and growth, particularly when guided by entrepreneurial management.

When compared with prior studies on the EM–performance relationship, the results of this study help clarify why empirical findings in the literature have sometimes been inconsistent. Several earlier studies reported a positive link between entrepreneurial-oriented management and firm performance, emphasizing that proactiveness and opportunity-seeking behavior help SMEs compete in dynamic environments. However, other research has found weaker or context-dependent effects, suggesting that the relationship may be contingent on environmental conditions, resource availability, or innovation capacity. The current findings support a synthesis of these perspectives by demonstrating that EM does matter, but its influence becomes stronger and more predictable when the innovation pathway is explicitly modeled. This helps explain why EM may appear less impactful in some contexts: if firms have limited innovation capability or lack the infrastructure to implement new practices, the entrepreneurial mindset alone may not generate performance improvements. Therefore, the mediation model contributes to theory by showing that the EM–performance relationship is not purely direct and that the mechanism through which EM operates must be specified to obtain a more consistent explanation.

The findings also align closely with the broader literature on digital entrepreneurship and innovation, which increasingly highlights digital technologies as enablers of entrepreneurial opportunity exploitation. Digital entrepreneurship research emphasizes that digital platforms lower entry barriers, allow rapid experimentation, and facilitate scalable business models—features that amplify entrepreneurial behavior. Similarly, digital innovation studies argue that technology-driven process improvements and customer engagement innovations directly enhance productivity and market performance, particularly in SMEs. This study extends that literature by positioning digital innovation not merely as an independent driver of performance, but as a mediating bridge between managerial entrepreneurship and performance outcomes. In doing so, it emphasizes that digital innovation is the practical channel through which entrepreneurial management becomes economically productive. This integration also suggests that MSME performance gains from entrepreneurship are increasingly shaped by the firm's

digital capabilities and willingness to innovate digitally, especially in environments where market interactions, promotion, and transactions are increasingly digitized.

Overall, the discussion underscores three key implications. First, entrepreneurial management is necessary but not sufficient for improving MSME performance; it must be accompanied by operational change, and digital innovation provides the most effective route for such transformation in contemporary markets. Second, digital innovation should be treated as a strategic capability, not a peripheral tool, because it directly affects how firms execute entrepreneurial strategies through product development, process efficiency, and customer engagement. Third, in the Indonesian MSME context, where digital adoption is expanding yet uneven, entrepreneurial management can act as a critical determinant of whether digital technologies are used superficially or leveraged strategically to generate performance improvements. Therefore, policies and MSME development programs should not only encourage digital tool adoption but also strengthen entrepreneurial managerial capability so that MSMEs can convert digital opportunities into real, sustained business outcomes.

CONCLUSION

This study provides empirical evidence on the critical role of entrepreneurial management and digital innovation in enhancing MSME performance in an emerging economy context. The findings demonstrate that entrepreneurial management has a positive and significant direct effect on MSME performance, confirming that opportunity-oriented, proactive, and innovation-driven managerial practices contribute to better sales growth, competitiveness, and sustainability. More importantly, the results reveal that digital innovation significantly mediates this relationship, indicating that entrepreneurial management achieves its strongest impact when it is translated into digital products, digitalized processes, and digitally enabled marketing activities. These findings underscore that MSME performance is not driven by managerial entrepreneurship alone, but by how effectively entrepreneurial orientation is operationalized through digital innovation.

From a theoretical perspective, this study contributes to the entrepreneurship and innovation literature in several important ways. First, it positions entrepreneurial management as a form of dynamic capability, rather than merely a behavioral or strategic orientation. Entrepreneurial management enables MSMEs to sense emerging opportunities, seize them through strategic initiatives, and adapt their organizational routines in response to environmental change. This capability becomes particularly valuable in volatile and technology-driven markets. Second, the study advances existing theory by demonstrating that digital innovation functions as a key performance mechanism through which entrepreneurial management creates value. By integrating Resource-Based View, Dynamic Capability Theory, and Entrepreneurial Orientation Theory, this research provides a more nuanced explanation of how managerial entrepreneurship is converted into tangible business outcomes, thereby addressing inconsistencies in prior empirical findings.

The study also offers several practical implications. For MSME owners and managers, the results highlight that adopting an entrepreneurial mindset must be accompanied by concrete investments in digital innovation, such as e-commerce platforms, digital marketing, and digitalized business processes. Entrepreneurial intentions without digital execution are unlikely to generate sustainable performance improvements. For policymakers and government agencies, the findings suggest that MSME development programs should not only focus on providing digital infrastructure and technology access, but also on strengthening entrepreneurial management capabilities, including opportunity recognition, strategic risk-taking, and innovation management. For business incubators, accelerators, and support institutions, the results emphasize the importance of integrating entrepreneurship training with digital innovation mentoring, so that MSMEs can effectively transform entrepreneurial ideas into scalable and competitive business models.

By aligning entrepreneurial management with digital innovation, MSMEs can enhance their resilience, competitiveness, and long-term sustainability in the digital economy.

Limitations and Future Research

Despite the contributions of this study, several limitations should be acknowledged. First, this research relies on cross-sectional survey data, which captures respondents' perceptions at a single point in time and may be subject to common method bias and self-reporting errors, even though procedural and statistical remedies were applied. As a result, the causal inferences among entrepreneurial management, digital innovation, and MSME performance should be interpreted with caution. Future studies are therefore encouraged to employ longitudinal research designs to better observe how changes in entrepreneurial management and digital innovation influence MSME performance over time and to capture dynamic learning and adaptation processes. In addition, the present model focuses on digital innovation as the primary mediating mechanism, while MSME performance is likely influenced by a broader set of strategic and organizational factors. Future research could extend the model by incorporating variables such as financial management capability, business networks and partnerships, and AI adoption, which may further explain how entrepreneurial management translates into sustainable competitive advantage. Integrating these factors would allow for a more comprehensive and robust understanding of MSME development in increasingly digital and technology-driven business environments.

REFERENCES

- [1] Ayu Widiarti, N. S., Utami, C. W., & Bernardus, D. (2025). Driving SME Performance through Digital and Network Capabilities: The Mediating Role of Innovation. *Jurnal Ilmiah Manajemen Kesatuan*, 13(5), 3727–3740. <https://doi.org/10.37641/jimkes.v13i5.3737>
- [2] Arroyabe, M. F., Arranz, C. F. A., Arroyabe, I. F., & Bilbao, A. (2024). AI adoption in European SMEs: The role of digital capabilities, innovation capability, and environmental support. *Technology in Society*, 79, 102733. <https://doi.org/10.1016/j.techsoc.2024.102733>
- [3] Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>
- [4] De Reuver, M., Sørensen, C., & Basole, R. C. (2018). The digital platform: A research agenda. *Journal of Information Technology*, 33(2), 124–135. <https://doi.org/10.1057/s41265-016-0033-3>
- [5] Eggers, F., Niemand, T., Kraus, S., & Breier, M. (2020). Developing a scale for entrepreneurial marketing: Revealing its inner frame and prediction of performance. *Journal of Business Research*, 113, 72–82. <https://doi.org/10.1016/j.jbusres.2020.02.020>
- [6] Gfrerer, S., Gschwendtner, T., & Winter, R. (2023). Developing digital capabilities in SMEs: A maturity-based human-centric approach. *Journal of Business Research*, 158, 113684. <https://doi.org/10.1016/j.jbusres.2022.113684>
- [7] Gong, C., & Ribiere, V. (2021). Developing a unified definition of digital transformation. *Technovation*, 102, 102217. <https://doi.org/10.1016/j.technovation.2020.102217>
- [8] Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). Sage Publications.
- [9] Hanaysha, J. R. (2022). An examination of entrepreneurial marketing dimensions and SMEs performance. *Sustainability*, 14(18), 11444. <https://doi.org/10.3390/su141811444>
- [10] Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the*

- Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- [11] Jang, S. H., Chung, J., & Kim, J. (2025). Digital entrepreneurial orientation, absorptive capacity, digital innovation, and business performance. *Systems*, 13(4), 300. <https://doi.org/10.3390/systems13040300>
- [12] Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration*, 11(4), 1–10. <https://doi.org/10.4018/ijec.2015100101>
- [13] Merín-Rodríguez, J., Dasí, À., & Alegre, J. (2024). Digital transformation and firm performance in innovative SMEs: The mediating role of business model innovation. *Technovation*, 134, 103027. <https://doi.org/10.1016/j.technovation.2023.103027>
- [14] Morris, M. H., Schindehutte, M., & LaForge, R. W. (2002). Entrepreneurial marketing: A construct for integrating emerging entrepreneurship and marketing perspectives. *Journal of Marketing Theory and Practice*, 10(4), 1–19. <https://doi.org/10.1080/10696679.2002.11501922>
- [15] Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- [16] Sadiku-Dushi, N., Dana, L.-P., & Ramadani, V. (2019). Entrepreneurial marketing dimensions and SMEs performance. *Journal of Business Research*, 100, 86–99. <https://doi.org/10.1016/j.jbusres.2019.03.025>
- [17] Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial least squares structural equation modeling. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.), *Handbook of market research* (pp. 1–47). Springer. https://doi.org/10.1007/978-3-319-05542-8_15-1
- [18] Setiyaningrum, A., Udayana, I. B. N., & Mulyana, M. (2022). Entrepreneurial marketing dimensions and MSME performance in Indonesia. *BENEFIT: Jurnal Manajemen dan Bisnis*, 7(2), 101–115.
- [19] Stevenson, H. H., & Jarillo, J. C. (1990). A paradigm of entrepreneurship: Entrepreneurial management. *Strategic Management Journal*, 11(Special Issue), 17–27. <https://doi.org/10.1002/smj.4250110103>
- [20] Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of enterprise performance. *Strategic Management Journal*, 28(13), 1319–1350. <https://doi.org/10.1002/smj.640>
- [21] Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478. <https://doi.org/10.2307/30036540>
- [22] Wang, S., Zhang, Y., & Li, H. (2025). Digital transformation and innovation performance in SMEs: A systems perspective. *Systems*, 13(1), 43. <https://doi.org/10.3390/systems13010043>
- [23] Zahra, S. A., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review*, 27(2), 185–203. <https://doi.org/10.5465/amr.2002.6587995>

*Entrepreneurial
Management and
MSME Performance*

3956