

Driving Entrepreneurial Performance in MSMEs: The Role of Management Control Systems, Innovation Capability and Digital Technology

Rizaldi Yusfiarto¹, Hisham Al Ghunaimi², Dzikria Al Haq³, and Isma Hisbullah Al Jauhany⁴

¹²³⁴ Faculty of Islamic Economics and Business, Universitas Islam Negeri Sunan Kalijaga Yogyakarta, Indonesia.

* Corresponding author: rizaldiyusfiarto@gmail.com

Article Info

Article History

Received : January 05, 2026
Revised : March 27, 2026
Accepted : May, 20 2026
Published : June 23, 2026

Article DOI:

10.14421/EkBis.2026.10.1.2996

Copyright © 2026 by authors



Published by:

FEBI UIN Sunan Kalijaga Yogyakarta

ABSTRACT

This study examines the drivers of entrepreneurial performance in Indonesian Micro, Small, and Medium Enterprises (MSMEs) by integrating the Resource-Based View (RBV) and Dynamic Capabilities Theory (DCT). Using a cross-sectional survey of 296 MSME owners and managers across Indonesia and analyzing the data with Partial Least Squares Structural Equation Modeling. The findings show that all four factors significantly and positively contribute to improving MSME performance, highlighting the complementary roles of strong internal organizational systems and external strategic networks. These results suggest that MSMEs that combine effective managerial controls, innovation-oriented processes, digital technology adoption, and collaborative business relationships are better positioned to achieve superior entrepreneurial outcomes in dynamic market environments. By proposing and empirically validating an integrated RBV–DCT framework in the MSME context, this research provides a holistic perspective that extends prior fragmented approaches and enriches the understanding of entrepreneurial performance in emerging economies such as Indonesia.

Keywords: MSMEs, Entrepreneurial Performance, Management Control Systems, Process Innovation, Digital Technology, Inter-Firm Linkage.

JEL Classification: L16; O32

How to cite: Yusfiarto, R., Ghunaimi, H., A., Haq, D., A., Jauhany, I., H., A. (2026). Driving Entrepreneurial Performance in MSMEs: The Role of Management Control Systems, Innovation Capability and Digital Technology. *EkBis: Jurnal Ekonomi dan Bisnis*, 10(1), 1-18. DOI: <https://doi.org/10.14421/EkBis.2026.10.1.2996>

INTRODUCTION

The contribution made by the performance of Micro, Small, and Medium Enterprises (MSMEs) covers the subnational and even national levels, so in general, it has had a significant impact on the economy in Indonesia (Afandi et al., 2025). The contribution made at the national level can be seen in macroeconomic indicators, such as job creation, income increase, gross domestic product (GDP) growth, and the emergence of creativity that gives rise to new businesses (Al Ghunaimi & Awashreh, 2025; Nofirda & Azhari, 2025; White & Madgavkar, 2024). However, looking at the entrepreneurial nature of MSMEs, they have difficulties when competing in a highly dynamic market environment (Chan et al., 2018; Yusfiarto & Pambekti, 2019). The emergence of the complexity and dynamics of today's business environment encourages a deeper understanding of the organization and the variables or factors that are considered the key to competitive success (J. Barney, 1991; Yusfiarto et al., 2025). Activities such as financial planning, cost accounting, and economic and financial diagnostics should be common tools in the organizational systems of all companies, regardless of size.

Nevertheless, many studies have found that in MSMEs companies, management control systems (MCS) has not been fully implemented or has not yet become a common practice (Gomez-Conde et al., 2023). Various empirical studies have also found differences in MCS implementation between family and non-family companies (Kotey, 2005). Family influence is an important and distinctive factor that has not been considered by most MCS studies (Duréndez et al., 2023; Senftlechner et al., 2015). In addition, the capabilities of the innovation process are widely recognized as a fundamental determinant of a company's performance. The innovation process allows companies to develop new products,

improve existing services, and improve operational procedures in response to changing market conditions (Shane & Venkataraman, 2000). With innovation, MSMEs will be able to act proactively, face fierce competition, and create value for customers, which ultimately improves entrepreneurial performance (Morgan, 2012; Wales et al., 2021).

In addition, in reaction to competitive pressures, many entrepreneurial MSMEs have also turned to Digital Technology (DTC) to support their planned business strategies (Li et al., 2016). Companies will be able to manage, edit, and distribute data at an unprecedented scale (Yoo et al., 2010). Digital platforms are very influential on a company's strategy to gain a competitive advantage, after undergoing many changes since the existence of digital platforms, so that digital platforms also play an important role in the company's value proposition through information management (Cenamor et al., 2019). In its implementation, digital platforms face various problems such as the need for impulsive resources, high costs, and the complexity of integrating new technologies into existing systems (Chan et al., 2018). This problem will certainly be more difficult for SMEs because they have limited resources (Ghobakhloo & Morteza, 2021). Therefore, understanding the impact of digital technology on company performance is still limited.

In addition to internal factors, inter-company collaboration is also the most important factor in improving entrepreneurial performance, especially for MSMEs operating with limited resources (Krolkowski et al., 2017; Mei et al., 2019). Inter-firm linkage (IFL) provides a view of the pattern of strategic collaboration between companies and external partners, such as suppliers, customers, distributors, financial institutions, and supporting institutions, which will be highly possible for the

exchange of resources, knowledge, and market information (Gulati, 1998; Mei et al., 2019). Although much research has been developed widely, previous research has mostly focused on large companies, so the understanding of the impact of management controls, innovation processes, digital technologies, and inter-firm linkage on MSMEs is still limited (Faisal et al., 2023; Ghezzi & Cavallo, 2018; Utama et al., 2023). Also, empirical evidence that simultaneously examines these four factors in MSMEs is still scarce, rather than assessing their combined effects on entrepreneurial performance. There is a limited understanding of how organizational controls, innovation processes, inter-firm linkage, and digital technologies simultaneously shape the entrepreneurial performance of MSMEs, especially in developing countries.

For this reason, this study aims to analyze how management control, process innovation, digital technology, and inter-firm linkage can have a direct influence on the entrepreneurial performance of MSMEs. With a primary focus on MSMEs, this research is expected to provide empirical insights into how internal managerial systems, innovation efforts, and technological resources contribute to performance achievement in resource-constrained environments. Thus, this researcher uses the partial least squares structural equation modeling (PLS-SEM) approach, which is used to analyze the complex relationships between latent constructs and predictive research in the context of MSMEs (Hair et al., 2021).

Theoretically, this study expands previous studies by connecting the perspectives of management control systems, innovation processes, digital technology and inter-firm linkage in one conceptual framework to explain entrepreneurial performance. Then, practically, this research can have an impact on MSMEs in making various business policies, by emphasizing the

importance of strengthening management control systems, developing Innovation Processes (PIC), accelerating technology adoption, and make relationship between company to improve the entrepreneurial performance (EP) and competitiveness of MSMEs in this very dynamic business environment.

LITERATURE REVIEW

Theoretical Framework

In this study, the resource based view (RBV) theory developed by Barney, 1991 was used. This theory explains that the advantage in market competition and the performance of the company is not solely determined by the industrial structure or external pressures, but is more influenced by the internal characteristics of a company, such as the resources and capabilities owned (Barney, 2001). This theory emphasizes two main assumptions: first, companies engaged in the same industry have diverse resources, both in the form of tangible and intangible assets. Second, these resources cannot be fully transferred between companies, so that differences in the durability of resources tend to be longer and become a source of sustainable competitive advantage (Barney, 1991). These resources can be in the form of managerial capabilities, organizational knowledge, technology, management control systems, as well as culture and innovation processes (Jeong et al., 2019; Yusfiarto et al., 2025). Then there is also the theory of dynamic capability, which states that the performance of a company in a very dynamic environment will be highly dependent on the discovery of opportunities by the company, then utilizing them effectively, so that it can sustainably transform internal processes (Chirico & Salvato, 2008; Teece et al., 1997). For this reason, this theory is relevant to SMEs, which can tell us how MSMEs are able to maintain and improve

entrepreneurial performance in a highly dynamic business environment.

Entrepreneurial Performance

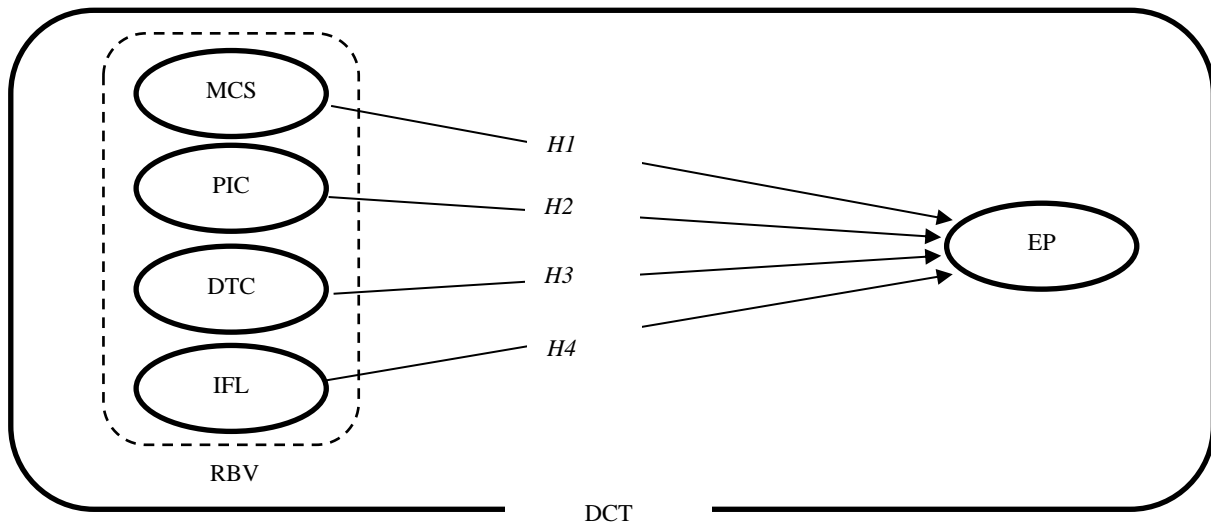


Figure 1: Conceptual Model
 Source(s): Author's own work

Hypothesis Development

Management Control System

MSMEs, by designing MCS well, will have a positive effect on managerial awareness, which will later give rise to market opportunities and operational inefficiencies, so that this greatly enables the Company to take advantage of opportunities through appropriate strategic actions (Duréndez et al., 2023; Yusfiarto et al., 2025). In addition, MCS also has a positive impact on encouraging organizational learning and resource reallocation, which is an important element in the transition to dynamic capabilities (Duréndez et al., 2016; Ruiz-Palomo et al., 2019). Many studies that have been conducted in the past have shown that an effective MCS contributes positively to the Company's performance through increased strategic alignment, efficiency, and adaptability (Bisbe & Otley, 2004; Cosenz & Noto, 2016). Based

on the above explanation, the following hypotheses can be formulated:

H1. Management control system has a significant positive impact on MSMEs entrepreneurial performance.

Digital Technology

The adoption of digital technologies has become an important driver of dynamic capabilities, especially in a business environment full of uncertainty (Ta & Lin, 2023). Digital technology allows companies to detect market trends through data analysis, capitalize on opportunities through digital platforms, and transform business processes through automation and system integration (Nambisan, 2016; Yoo et al., 2010). In MSMEs, digital technology increases flexibility, efficiency, and market reach, thus enabling companies to overcome limited resources and compete more effectively (Giordino et al., 2025). However, DCT emphasizes that digital technology does not

automatically improve performance; The value of technology depends on how companies integrate and utilize it in organizational processes (Al Ghunaimi et al., 2025; Teece et al., 1997). When used effectively, digital technologies will strengthen dynamic capabilities through increased responsiveness, coordination, and innovation, which ultimately contribute directly to entrepreneurial performance (Cenamor et al., 2019; Jing et al., 2023; Sharabati et al., 2024). Based on the above explanation, the following hypotheses can be formulated:

H2. Digital technology has a significant positive impact on MSMEs entrepreneurial performance.

Innovation Process

According to dynamic capability theory, the main mechanism of a company in transforming its resources into new configurations that create value is the capability of the innovation process (Teece et al., 1997). In MSMEs, innovation will allow companies to act proactively, be brave in taking risks, and be able to take advantage of opportunities more widely. Companies with stronger innovation capabilities are seen to be better able to respond to customer needs, technological changes, and competitive pressures (Al Ghunaimi et al., 2024; Yusfiarto et al., 2022). There is empirical evidence that consistently shows that innovation capabilities have a positive effect on the Company's performance, competitiveness, and long-term sustainability. Thus, it means that the capability of the innovation process is the main dynamic capability because it drives entrepreneurial performance directly (Mamun et al., 2017; Matsuno et al., 2002; Pambekti et al., 2022; Wales et al., 2023). Based on the above explanation, the following hypotheses can be formulated:

H3. Innovation processes have a significant positive impact on MSMEs entrepreneurial performance.

Interfirm linkage

In the context of entrepreneurial performance, inter-firm linkage also encourages proactive behavior, including the courage to make risky decisions, as well as the wider utilization of opportunities (Afdawaiza, Yusfiarto, et al., 2025; Faisal et al., 2023). Just like before, MSMEs that have a wide and strong business network tend to be better able to enter new markets, improve product quality, and create sustainable differentiation (Mei et al., 2019). In addition to this, collaboration with strategic partners can also help MSMEs in reducing environmental uncertainty and improving adaptability, which is an important indicator of entrepreneurial performance (Afandi et al., 2025; Afdawaiza, Supriani, et al., 2025; Utama et al., 2023). From various empirical studies conducted, inter-firm linkage has a positive effect on the Company's performance (Zacca et al., 2015), especially in the context of MSMEs (Faisal et al., 2023; Mei et al., 2019; Utama et al., 2023). The existence of relationships between companies, MSMEs will have the potential to reduce transaction costs, increase operational efficiency, and even accelerate the innovation process through joint learning and knowledge exchange. Based on the above explanation, the following hypotheses can be formulated:

H4. Inter-firm linkage has a significant positive impact on MSMEs entrepreneurial performance.

METHODOLOGY

Data and Sample

A cross-sectional survey design was conducted to evaluate the conceptual model designed to examine the drivers of Entrepreneurial Performance in Indonesian Micro, Small, and

Medium Enterprises (MSMEs). The sampling strategy employed was purposive sampling, a nonprobability method suitable for selecting participants who meet specific inclusion criteria relevant to the research context (Andrade, 2021). The respondent selection criteria focused on: (1) Business operators (owners or managers) whose enterprises have been operational for at least one year. (2) MSMEs classified in accordance with Indonesian governmental standards. (3) Business utilizing at least one form of digital technology (e-commerce, fintech, or social media) in their operations. (4) Enterprises with established inter-firm linkage, either locally or internationally. These criteria were applied during the respondent screening process to ensure the sample's relevance to the study's objectives.

The survey instrument was developed based on well-established scales from prior literature. To ensure content validity, the questionnaire was reviewed by two academic experts in the fields of entrepreneurship and digital business. Their feedback was incorporated to improve item clarity and relevance before distribution. Also, data collection was conducted over one month using a hybrid approach: online (via social media platforms with online interviews) and offline (via in-person interviews). A total of 296 complete responses were collected. All responses met the predetermined inclusion criteria, and no exclusions were made based on business size or operational duration. Therefore, the final dataset consisted of 296 valid responses from MSMEs across various sectors and regions in Indonesia.

Regarding the minimum sample adequacy, this study followed the guidelines of Hair et al. (2021) and applied the inverse square root method proposed by Kock & Hadaya (2018). With a statistical power of 80%, a significance level of 5%, and a minimum path coefficient of 0.15, the minimum required sample size was determined to

be 155. The final sample of 296 respondents not only meets but substantially exceeds this requirement, ensuring robust analytical capacity for Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis (Hair, Black, et al., 2019). Table 1 presents a detailed demographic and business profile of the respondents in this study.

Data Analysis

All constructs were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Measurement items were adapted from well-established scales in prior literature to ensure content validity and contextual relevance to Indonesian MSMEs. Modifications were made to align the wording with the operational realities of micro, small, and medium enterprises. Data analysis was performed using SMARTPLS software following the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. PLS-SEM was selected due to its suitability for predictive research, ability to handle complex model structures with multiple latent variables, and robustness with non-normally distributed data (Hair et al., 2021). This method is particularly appropriate for studies involving entrepreneurial performance, innovation capabilities, and digital adoption in dynamic business environments such as MSMEs.

The analysis followed the two-stage procedure recommended by Hair et al. (2021). First, the measurement model was evaluated to assess reliability and validity. Indicator reliability was examined through outer loadings above 0.708, internal consistency was measured using Cronbach's alpha and composite reliability (>0.70), convergent validity was assessed via average variance extracted (AVE > 0.50), and discriminant validity was tested using the Fornell-Larcker criterion. Second, the structural model was assessed to examine the hypothesized

relationships among the latent constructs. This stage involved the evaluation of path coefficients, coefficients of determination (R^2), effect sizes (f^2), and predictive relevance ($Q^2 > 0$). Statistical

significance was determined using a bootstrapping procedure with 5,000 resamples, and overall model fit was assessed using the Standardized Root Mean Square Residual ($SRMR < 0.08$).

Table 1. Spectrum of respondents

Spectrum	Category	Frequency	%
Gender	Female	158	53.4
	Male	138	46.6
MSMEs Industry	Food and Beverages	154	52.0
	Fashion	47	15.9
	Creative	28	9.5
	Furniture (Meubel)	19	6.4
	Retail	9	3.0
	Services (other)	17	5.7
	Others	22	7.4
Type of SMEs	Manufacturing (Processing)	167	56.4
	Services	106	35.8
	Trade	23	7.8
Business Operating Length	2-4 years	149	50.3
	5-7 years	75	25.3
	8-10 years	45	15.2
	More than 10 years	27	9.1
Number of Employees	Micro (0-5 persons)	52	17.6
	Small (6-19 persons)	193	65.2
	Medium (20-99 persons)	51	17.2
Provincial Domicile	DIYogyakarta	152	51.4
	Central Java	62	20.9
	East Java	41	13.9
	West Java	16	5.4
	Others	25	8.4

RESULT AND DISCUSSION

Measurement model

The dataset was initially screened, confirming that there were no missing values. To assess the potential common method bias (CMB), Harman's single-factor test was conducted, a widely used diagnostic technique (Kock, 2015). The results showed that no single factor explained more than 50% of the total variance, indicating that CMB is unlikely to be a major issue in this study. Construct reliability was evaluated using Cronbach's alpha (α), rho_A, and composite reliability (CR), following contemporary guidelines for partial least squares structural equation modeling (PLS-SEM) (Hair et al., 2022). As reported in Table 2, α values ranged from 0.803 to 0.925, rho_A values from 0.823 to 0.925, and CR values from 0.884 to 0.944, all of which surpassed the recommended threshold of 0.70.

Convergent validity was examined through indicator loadings and the average variance extracted (AVE). All outer loadings were statistically significant and exceeded 0.70, ranging from 0.713 to 0.925 (see Table 4), which aligns with the requirement that loadings should be >0.708 to ensure that the construct explains more than 50% of the indicator's variance (Hair et al., 2022). Furthermore, the AVE for each construct ranged from 0.606 to 0.770 (Table 2), all above the 0.50 benchmark, thereby establishing convergent validity (Fornell & Larcker, 1981; Hair, Risher, et al., 2019). Discriminant validity was tested using the Fornell-Larcker criterion (Fornell & Larcker, 1981). As presented in Table 3, the square root of the AVE for each construct (diagonal values) satisfies the criterion for discriminant validity (Hair et al., 2022).

Table 2. Reliability and validity test

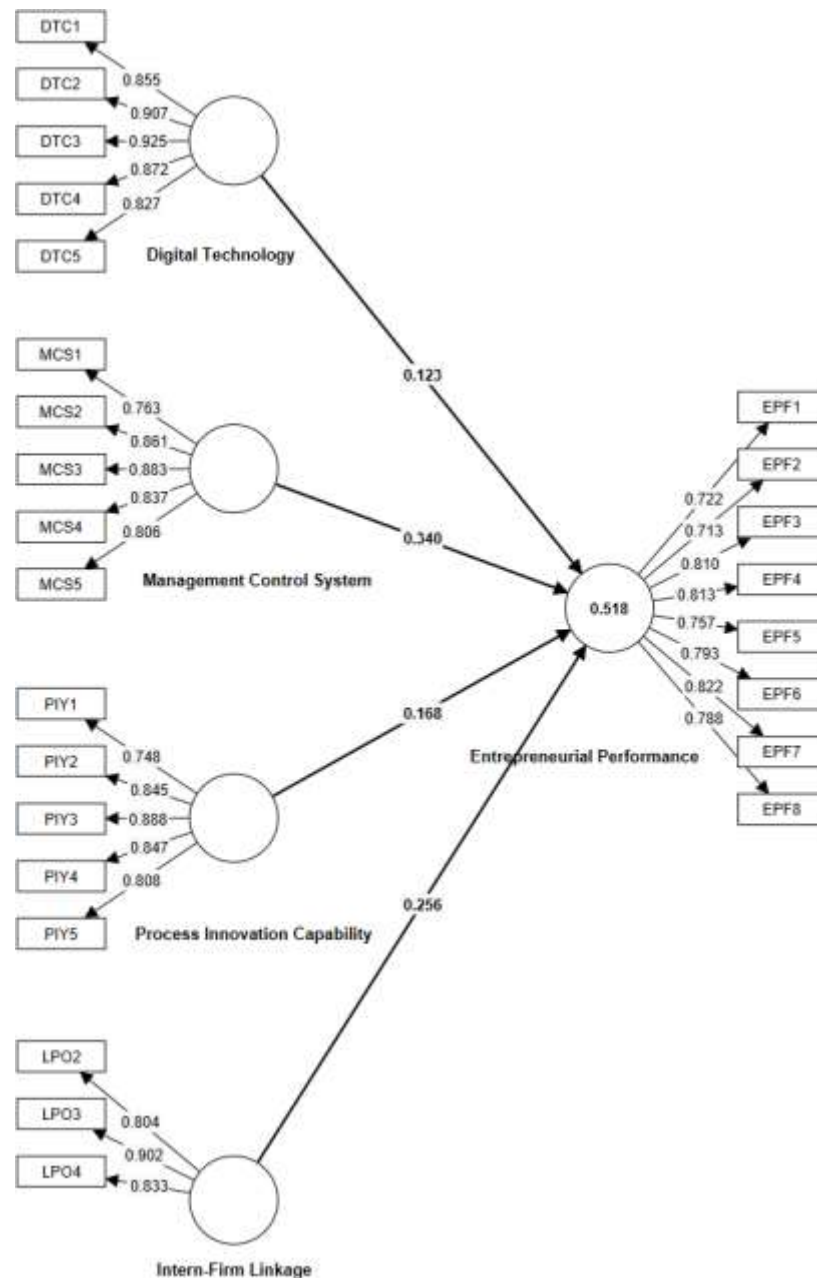
Constructs	α	rho_A	CR	AVE
DigitalTechnology	0.925	0.925	0.944	0.77
Entrepreneurial Performance	0.907	0.911	0.925	0.606
Inter-Firm Linkage	0.803	0.823	0.884	0.717
Management Control System	0.888	0.895	0.918	0.691
Process Innovation Capability	0.885	0.895	0.916	0.687

Table 3. Fornell-Larcker criterion test

Constructs	1	2	3	4	5
DigitalTechnology	0.878				
Entrepreneurial Performance	0.450	0.778			
Inter-Firm Linkage	0.413	0.571	0.847		
Management Control System	0.412	0.640	0.529	0.831	
Process Innovation Capability	0.488	0.586	0.500	0.676	0.829

Table 4. Item and outer loadings

Variable	Code	Item	Loadings
Digital Technology	DTC1	Our business operations are shifting to digital technologies such as cloud, mobile devices, and social media platforms	0.855
	DTC2	Our company integrates digital technologies into business processes, such as cloud, mobile devices, and social media platforms	0.907
	DTC3	Our company drives new business processes built on digital technologies such as cloud, mobile devices, and social media platforms	0.925
	DTC4	Our company develops digital products or services and related activities	0.872
	DTC5	Our company will actively promote digitalization skills in managerial settings	0.827
Entrepreneurial Performance	EPF1	The company maintains good profit margins	0.722
	EPF2	The business's rate of return on investment is at a satisfactory level	0.713
	EPF3	The company's sales revenue grew rapidly	0.81
	EPF4	The company's product market share is increasing well	0.813
	EPF5	The company's net profit increased rapidly	0.757
	EPF6	Starting this business makes me feel satisfied	0.793
	EPF7	Our product sales are increasing well	0.822
	EPF8	We experienced increased customer relations	0.788
Inter-Firm Linkage	LPO2	We have close relationships with component suppliers	0.804
	LPO3	We have close relationships with key customers and users	0.902
	LPO4	We have close relationships with complementary parties	0.833
	MCS1	Our company implements Cost Accounting (profit and loss bookkeeping) well	0.763
Management Control System	MCS2	Our company implements budget control well	0.861
	MCS3	Our company implements Financial Analysis well	0.883
	MCS4	Our company implements strategic planning well	0.837
	MCS5	Our company implements internal quality control (Products and Services) well	0.806
	Process Innovation Capability	PIY1	Our company continues to develop programs to reduce production costs
PIY2		Our company organizes its production efficiently	0.845
PIY3		Our company can integrate production management activities	0.888
PIY4		Our company has valuable knowledge for the production process innovation	0.847



Structural model

In this phase, the analysis begins with the evaluation of the coefficient of determination (R^2). The results indicate that Entrepreneurial Performance has an R^2 value of 0.518, which exceeds the recommended threshold of 0.25 (Hair, Risher, et al., 2019). Nevertheless, a considerable portion of the variance remains unexplained by the model, suggesting that additional factors beyond the scope of the current study may

warrant further investigation. Subsequently, the analysis proceeds to assess the predictive relevance of the model using Stone-Geisser's Q^2 value. The Q^2 for Entrepreneurial Performance is 0.295, which is above the recommended threshold (>0), indicating that the model possesses adequate predictive relevance and is capable of reconstructing observed values satisfactorily (Hair, Risher, et al., 2019) (see Tables 5 and 6).

Table 5. Structural model analysis

Constructs	SSO	SSE	Q ²	R ²	SRMR
DigitalTechnology	1480	1480			
Entrepreneurial Performance	2368	1669.2	0.295	0.518	0.064
Inter-Firm Linkage	888	888			
Management Control System	1480	1480			
Process Innovation Capability	1480	1480			

Table 6. PLSpredict analysis

Indicators	PLS RMSE	PLS MAE	LM RMSE	LM MAE	Q ² predict
EPF1	0.737	0.531	0.742	0.528	0.341
EPF2	0.753	0.578	0.787	0.601	0.244
EPF3	0.752	0.562	0.765	0.572	0.195
EPF4	0.825	0.597	0.851	0.634	0.195
EPF5	0.785	0.610	0.806	0.626	0.194
EPF6	0.668	0.525	0.677	0.520	0.393
EPF7	0.688	0.534	0.718	0.548	0.329
EPF8	0.657	0.520	0.656	0.508	0.405

Hypothesis test

Before hypothesis testing, several preliminary evaluations were conducted to ensure the suitability of the research model. One such evaluation involved assessing model fit using the standardized root mean square residual (SRMR). The SRMR value in this study is 0.064, which falls within the acceptable range (<0.080) as recommended by Henseler et al. (2014). Next, the variance inflation factor (VIF) was used to confirm the absence of multicollinearity. The VIF values ranged from 1.387 to 2.097, all below the maximum threshold of 3 (Hair, Risher, et al., 2019). For hypothesis testing, this study employed a bootstrap approach with 5,000 resamples, utilizing bias-corrected and accelerated confidence intervals alongside two-tailed p-values to determine significance levels.

Based on the path analysis results presented in Table 7, all hypothesized relationships were found to be statistically significant. First, the relationships between Digital Technology and Entrepreneurial Performance were significant ($\beta = 0.123^{**}$, $p < 0.05$), thus supporting H1. Second, Inter-Firm Linkage also had a significant effect on Entrepreneurial Performance ($\beta = 0.256^{***}$, $p < 0.01$), supporting H2. Third, the Management Control System exhibited a positive and significant influence ($\beta = 0.340^{***}$, $p < 0.01$), supporting H3. Finally, Process Innovation Capability was also found to significantly affect Entrepreneurial Performance ($\beta = 0.168^{**}$, $p < 0.05$), thereby supporting H4.

Table 7. Hypothesis test

PLS-Path	VIF	β	t-values	Conclusion
Digital Technology → Entrepreneurial Performance	1.387	0.123**	2.381	Supported
Inter-Firm Linkage → Entrepreneurial Performance	1.523	0.256***	4.175	Supported
Management Control System → Entrepreneurial Performance	2.032	0.340***	5.196	Supported
Process Innovation Capability → Entrepreneurial Performance	2.097	0.168**	2.496	Supported

Note(s): ** $p < 0.05$, *** $p < 0.01$

Discussion

This study examines how Management Control Systems (MCS), Process Innovation Capability, Digital Technology, and Inter-Firm Linkage influence the Entrepreneurial Performance of MSMEs in Indonesia. The empirical results, derived from PLS-SEM analysis of 296 MSME respondents, reveal that all four hypotheses are supported, though with varying degrees of influence. The model explains 51.8% of the variance in entrepreneurial performance, indicating a substantial explanatory power while suggesting room for other contextual or moderating factors.

The strongest predictor of entrepreneurial performance in this study is the Management Control System ($\beta = 0.340$, $p < 0.01$), confirming H1. This finding aligns with the Resource-Based View (RBV), which posits that internal organizational systems can become sources of sustained competitive advantage when they are valuable, rare, and difficult to imitate (J. Barney, 1991). In the context of Indonesian MSMEs, where formal control mechanisms are often underdeveloped, the implementation of structured MCS enhances strategic clarity, improves resource allocation, and fosters accountability. These mechanisms enable MSMEs to detect market shifts more systematically and respond with agility, thereby strengthening their dynamic capabilities (Tece, 2007). This result extends prior studies that have primarily examined MCS in large firms (Kotey &

Slade, 2005; Laitinen, 2008), demonstrating its critical relevance even in resource-constrained, small-scale enterprises.

Inter-Firm Linkage emerged as the second strongest driver ($\beta = 0.256$, $p < 0.01$), supporting H2. This finding corroborates network theory and the dynamic capabilities perspective, which emphasize that external collaborations provide access to complementary resources, knowledge spillovers, and new market opportunities (Gulati, 1998). For MSMEs operating with limited internal resources, linkages with suppliers, distributors, financial institutions, and even competitors reduce transaction costs, mitigate risks, and accelerate learning. Notably, 52.4% of respondents were located in urban areas, where business networks tend to be denser and more accessible, potentially amplifying the observed effect. This result reinforces the argument that in emerging economies, inter-firm network serves as a vital mechanism for MSMEs to overcome resource scarcities and enhance market adaptability (Lin & Lin, 2016).

Process Innovation Capability significantly influences entrepreneurial performance ($\beta = 0.168$, $p < 0.05$), supporting H3. This underscores the importance of operational agility and continuous improvement as dynamic capabilities. MSMEs that systematically refine their internal processes, such as production workflows, service delivery, or quality control, are better positioned to reduce costs, enhance efficiency, and respond to customer demands.

Interestingly, the majority of respondents were from the food and beverage sector (52.0%), an industry where process innovation (e.g., halal certification, packaging efficiency, supply chain integration) is often a key differentiator. This finding aligns with prior studies that link process innovation to sustained performance in competitive markets (Matsuno et al., 2002; Wales et al., 2023)

Although Digital Technology had a statistically significant effect ($\beta = 0.123, p < 0.05$), supporting H4, its influence was the smallest among the four predictors. This nuanced finding suggests that technology adoption alone is insufficient to drive performance; its value is contingent on complementary organizational capabilities and contextual factors. For instance, while 66.2% of respondents used e-commerce and 84.1% adopted social media, the tangible benefits of these technologies may be limited by integration challenges, skill gaps, or misalignment with business processes, issues frequently reported in MSME digitalization studies (Ghobakhloo & Morteza, 2021). This echoes the dynamic capabilities view, which posits that technology must be strategically absorbed and reconfigured to create value (Teece, 2018).

CONCLUSION AND RECOMMENDATION

This study concludes that Management Control Systems, Process Innovation Capability, Digital Technology, and Inter-Firm Linkage collectively and significantly enhance the entrepreneurial performance of MSMEs in Indonesia. The findings validate the integrated application of Resource-Based View and Dynamic Capabilities Theory in the MSME context, demonstrating that a synergistic combination of internal organizational systems and external strategic linkages, supported by technological

adoption, is crucial for achieving sustainable performance. Theoretically, this research extends RBV and DCT by illustrating that internal resource, such as structured control systems and innovation capabilities, alongside external networks, can be cultivated and leveraged by MSMEs despite resource constraints.

Practically, for MSME owners and managers, the results underscore the importance of prioritizing the development of structured management control systems, even in basic forms, to enhance accountability and operational efficiency. Additionally, building and maintaining collaborative networks with suppliers, financial institutions, and business associations can open access to new resources and knowledge. Process innovation should be pursued continuously and integrated into daily operations, while digital technology adoption must be selective and aligned with business needs. For policymakers and support institutions, the study recommends providing tailored training programs, facilitating networking platforms, and offering technical and financial support for digitalization. MSME-friendly policies, such as regulatory simplification and tax incentives for innovation, are also essential to foster a conducive business environment.

Limitations and Further Research

This study acknowledges several limitations. First, the cross-sectional design restricts the ability to draw causal inferences; future longitudinal data could capture the dynamics of capability and performance evolution over time. Second, although the samples include diverse regions, the geographical concentration in Indonesia limits the generalizability of findings to other national contexts with differing institutional and cultural conditions. Third, self-reported data may introduce common method bias, though

Harman's test indicated this was not a serious concern. Fourth, the model explains only 51.8% of the variance, suggesting that nearly half is influenced by other untested factors, such as entrepreneurial orientation, leadership style, access to finance, or environmental turbulence.

Future research should consider several directions. Longitudinal or experimental designs would help understand causal relationships and the dynamic evolution of MSME capabilities. Cross-country or cross-cultural comparative studies could test the moderating

role of institutional and economic factors. Incorporating additional variables, such as moderators (firm size, age, industry) and mediators (organizational learning, strategic agility), could enrich the model. Mixed-methods approaches combining quantitative surveys with qualitative case studies or interviews would provide deeper insights into the practical implementation of controls, innovation, technology, and networking among MSMEs. Sector-specific investigations could reveal industry-specific drivers and barriers.

REFERENCES

- Afandi, M. Y., Yusfiarto, R., Rusydiana, A. S., Mutmainah, L., Febriyanto, A., & Hasanah, I. (2025). NGOs and the development of Islamic entrepreneurship: enhancing absorptive capacity innovation, and performance through an institutional lens. *Journal of Islamic Accounting and Business Research*. <https://doi.org/10.1108/JIABR-02-2025-0105>
- Afdawaiza, A., Supriani, I., & Yusfiarto, R. (2025). Catalyzing Muslim women-owned Halal SMEs: Aligning models of Islamic financial institutions and governmental involvement. *Social Sciences & Humanities Open*, 12, 102042. <https://doi.org/10.1016/j.ssaho.2025.102042>
- Afdawaiza, A., Yusfiarto, R., Pambekti, G. T., Al Ghunaimi, H., & Febriyanto, A. (2025). From Social Trust to Halal Industry Dynamic: The Synergy of Islamic Social Capital and Financial Capability in Small Enterprises Sectors. *Mazahib*, 24(2), 248–281. <https://doi.org/10.21093/mj.v24i2.11318>
- Al Ghunaimi, H., Almaqtari, F. A., Wesonga, R., & Elmashtawy, A. (2025). The Rise of FinTech and the Journey Toward a Cashless Society: Investigating the Use of Mobile Payments by SMEs in Oman in the Context of Vision 2040. *Administrative Sciences*, 15(5), 178. <https://doi.org/10.3390/admsci15050178>
- Al Ghunaimi, H., & Awashreh, R. (2025). Enhancing sustainability and competitiveness of self-funded SMEs: The hotel model. *International Journal of Innovative Research and Scientific Studies*, 8(1), 1806–1817. <https://doi.org/https://doi.org/10.53894/ijirss.v8i1.4805>
- Al Ghunaimi, H., Sallem, R., Al Hatroshi, A., & Balushi, J. Al. (2024). The Impact of Entrepreneurial Alertness and Innovativeness on SMEs' Crisis Management in Oman: Evidence from A 'Sharqiyah Governorate's Entrepreneurs. In *Business Resilience and Market Adaptability* (pp. 37–50). https://doi.org/10.1007/978-981-97-2962-3_3
- Andrade, C. (2021). The Inconvenient Truth About Convenience and Purposive Samples. *Indian Journal of Psychological Medicine*, 43(1), 86–88. <https://doi.org/10.1177/0253717620977000>
- Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99–120. <https://doi.org/10.1177/014920639101700108>

- Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management*, 27(6), 643–650. [https://doi.org/10.1016/S0149-2063\(01\)00115-5](https://doi.org/10.1016/S0149-2063(01)00115-5)
- Bisbe, J., & Otley, D. (2004). The effects of the interactive use of management control systems on product innovation. *Accounting, Organizations and Society*, 29, 709–737. <https://doi.org/10.1016/j.aos.2003.10.010>
- Cenamor, J., Parida, V., & Wincent, J. (2019). How entrepreneurial SMEs compete through digital platforms: The roles of digital platform capability, network capability and ambidexterity. *Journal of Business Research*, 100(April), 196–206. <https://doi.org/10.1016/j.jbusres.2019.03.035>
- Chan, C. M. L., Yeow, A., & Pan, G. (2018). Agility in responding to disruptive digital innovation: Case study of an SME. Wiley, April 2017, 1–20. <https://doi.org/10.1111/isj.12215>
- Chirico, F., & Salvato, C. (2008). Knowledge Integration and Dynamic Organizational Adaptation in Family Firms. *Family Business Review*, 21(2), 169–181. <https://doi.org/10.1111/j.1741-6248.2008.00117.x>
- Cosenz, F., & Noto, G. (2016). Applying System Dynamics Modelling to Strategic Management: A Literature Review. *Systems Research and Behavioral Science*, July 2015. <https://doi.org/10.1002/sres.2386>
- Duréndez, A., Dieguez-Soto, J., & Madrid-Guijarro, A. (2023). The influence of CEO's financial literacy on SMEs technological innovation: the mediating effects of MCS and risk-taking. *Financial Innovation*, 9(1), 15. <https://doi.org/10.1186/s40854-022-00414-w>
- Duréndez, A., Ruíz-Palomo, D., García-Pérez-de-Lema, D., & Diéguez-Soto, J. (2016). Management control systems and performance in small and medium family firms. *European Journal of Family Business*, 6(1), 10–20. <https://doi.org/10.1016/j.ejfb.2016.05.001>
- Faisol, N. A., Kumar, V., & Aliami, S. (2023). Mediating role of inter-firm linkages and innovation capability towards the sustainability of SMEs in Indonesia. *International Journal of Technology, Policy and Management*, 23(4), 387–409. <https://doi.org/10.1504/IJTPM.2023.133918>
- Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39–50. <https://doi.org/10.1177/002224378101800104>
- Ghezzi, A., & Cavallo, A. (2018). Agile Business Model Innovation in Digital Entrepreneurship: Lean Startup Approaches. *Journal of Business Research*, February 2017, 0–1. <https://doi.org/10.1016/j.jbusres.2018.06.013>
- Ghobakhloo, & Morteza. (2021). Digital transformation success under Industry 4. 0: a strategic guideline for manufacturing SMEs. *Journal of Manufacturing Technology Management*, 32(8), 1533–1556. <https://doi.org/10.1108/JMTM-11-2020-0455>
- Giordino, D., Troise, C., Bresciani, S., & Camilleri, M. A. (2025). Growth hacking capability: Antecedents and performance implications in the context of SMEs. *Journal of Business Research*, 192, 115288. <https://doi.org/10.1016/j.jbusres.2025.115288>
- Gomez-Conde, J., Lopez-Valeiras, E., Rosa, F. S., & Lunkes, R. J. (2023). The effect of management control systems in managing the unknown: Does the market appreciate the breadth of vision? *Review of Managerial Science*, 17(8), 2769–2795. <https://doi.org/10.1007/s11846-022-00601-0>

- Gulati, R. (1998). Alliances and networks. *Strategic Management Journal*, 19, 293–317.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate Data Analysis*. Cengage Learning.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Sage Publications.
- 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.)*. Thousand Oaks, CA: Sage.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to Use and How to Report The Results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Jeong, S. W., Chung, J.-E., & Roh, J.-S. (2019). Impact of External Knowledge Inflow on Product and Process Innovation of Korean SMEs: Absorptive Capacity as a Mediator. *Clothing and Textiles Research Journal*, 37(4), 219–234. <https://doi.org/10.1177/0887302X19860913>
- Jing, H., Zhang, Y., & Ma, J. (2023). Influence of digital ambidextrous capabilities on SMEs' transformation performance: The mediating effect of business model innovation. *Heliyon*, 9(11), e21020. <https://doi.org/10.1016/j.heliyon.2023.e21020>
- 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/https://doi.org/10.4018/ijec.2015100101>
- Kock, N., & Hadaya, P. (2018). Minimum Sample Size Estimation in PLS-SEM: The Inverse Square Root and Gamma-Exponential Methods. *Information Systems Journal*, 28(1), 227–261. <https://doi.org/10.1111/isj.12131>
- Kotey, B. (2005). Goals, management practices, and performance of family SMEs. *International Journal of Entrepreneurial Behaviour & Research*, 11(1), 3–24. <https://doi.org/10.1108/13552550510580816>
- Kotey, B., & Slade, P. (2005). Formal Human Resource Management Practices in Small Growing Firms. *Journal of Small Business Management*, 43(1), 16–40. <https://doi.org/https://doi.org/10.1111/j.1540-627X.2004.00123.x>
- Krolikowski, M. W., Adhikari, H. P., Malm, J., & Sah, N. B. (2017). Inter-firm linkages and M&A returns. *The Quarterly Review of Economics and Finance*, 63, 135–146. <https://doi.org/10.1016/j.qref.2016.04.009>
- Laitinen, E. K. (2008). Value Based Performance Measurement in A Small Industrial Company. *Journal of Applied Management Accounting Research*, 6(1), 1–23.
- Li, W., Liu, K., Belitski, M., Ghobadian, A., & Regan, N. O. (2016). e-Leadership through strategic alignment: an empirical study of small- and medium- sized enterprises in the digital age. *Journal of Information Technology*, 31, 185–206. <https://doi.org/10.1057/jit.2016.10>
- Lin, F.-J., & Lin, Y.-H. (2016). The Effect of Network Relationship on The Performance of SMEs. *Journal of Business Research*, 69(5), 1780–1784. <https://doi.org/https://doi.org/10.1016/j.jbusres.2015.10.055>
- Mamun, A. Al, Muhammad, N. M. N., & Ismail, M. Bin. (2017). Absorptive Capacity, Innovativeness and the Performance of Micro-enterprises in Malaysia. *Vision: The Journal of Business Perspective*, 21(3), 243–249. <https://doi.org/10.1177/0972262917716729>

- Matsuno, K., Mentzer, J. T., & Özsomer, A. (2002). The Effects of Entrepreneurial Proclivity and Market Orientation on Business Performance. *Journal of Marketing*, 66(3), 18–32.
- Mei, L., Zhang, T., & Chen, J. (2019). Exploring the effects of inter-firm linkages on SMEs' open innovation from an ecosystem perspective: An empirical study of Chinese manufacturing SMEs. *Technological Forecasting and Social Change*, 144, 118–128. <https://doi.org/10.1016/j.techfore.2019.04.010>
- Morgan, N. A. (2012). Marketing and business performance. *Journal of the Acad*, 40(July 2011), 102–119. <https://doi.org/10.1007/s11747-011-0279-9>
- Nambisan, S. (2016). Entrepreneurship: Toward a Digital Technology Perspective of Entrepreneurship. 414, 1–27. <https://doi.org/10.1111/etap.12254>
- Nofirda, F. A., & Azhari, I. P. (2025). Entrepreneurial Orientation and SMEs Business Performance: The Role of Technology and Competitive Intensity as Mediating Variable. *Jurnal Manajemen Teknologi*, 24(1), 1–14. <https://doi.org/10.12695/jmt.2025.24.1.1>
- Pambekti, G. T., Yusfiarto, R., & Nugraha, S. S. (2022). ROSCAs Through the Islamic Community: An Alternative to Enhancing Entrepreneurship and Wealth. *Journal of Islamic Monetary Economics and Finance*, 8, 81–106. <https://doi.org/10.21098/jimf.v8i0.1371>
- Ruiz-Palomo, D., Diéguez-Soto, J., Duréndez, A., & Santos, J. A. C. (2019). Family Management and Firm Performance in Family SMEs: The Mediating Roles of Management Control Systems and Technological Innovation. *Sustainability*, 11(14), 3805. <https://doi.org/10.3390/su11143805>
- Senftlechner, D., W., M. R., & Hiebl. (2015). Management Accounting and Management Control in Family Businesses: Past Accomplishments and Future Opportunities. *Journal of Accounting & Organizational Change*, 11(4), 1–49.
- Shane, S., & Venkataraman, S. (2000). The Promise of Entrepreneurship as a Field of Research. *The Academy of Management Review*, 25(1), 217–226.
- Sharabati, A.-A. A., Ali, A. A. A., Allahham, M. I., Hussein, A. A., Alheet, A. F., & Mohammad, A. S. (2024). The Impact of Digital Marketing on the Performance of SMEs: An Analytical Study in Light of Modern Digital Transformations. *Sustainability*, 16(19), 8667. <https://doi.org/10.3390/su16198667>
- Ta, V. A., & Lin, C.-Y. (2023). Exploring the Determinants of Digital Transformation Adoption for SMEs in an Emerging Economy. *Sustainability*, 15(9), 7093. <https://doi.org/10.3390/su15097093>
- Teece, D. J. (2007). Explicating Dynamic Capabilities: The Nature and Microfoundations of (Sustainable) Enterprise Performance. 28(13), 1319–1350. <https://doi.org/10.1002/smj.64>Received
- Teece, D. J. (2018). Business models and dynamic capabilities *. *Long Range Planning*, 51(1), 40–49. <https://doi.org/10.1016/j.lrp.2017.06.007>
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509–533.
- Utama, S., Yusfiarto, R., Pertiwi, R. R., & Khoirunnisa, A. N. (2023). Intentional model of MSMEs growth: a tripod-based view and evidence from Indonesia. *Journal of Asia Business Studies*. <https://doi.org/10.1108/JABS-08-2022-0291>

- Wales, W. J., Covin, J. G., Schüler, J., & Baum, M. (2023). Entrepreneurial orientation as a theory of new value creation. *The Journal of Technology Transfer*, August, 1752–1772. <https://doi.org/10.1007/s10961-023-10021-1>
- Wales, W. J., Kraus, S., Filser, M., & St, C. (2021). The status quo of research on entrepreneurial orientation : Conversational landmarks and theoretical scaffolding. *Journal of Business Research*, 128, 564–577. <https://doi.org/10.1016/j.jbusres.2020.10.046>
- White, O., & Madgavkar, A. (2024). Why closing the small business productivity gap can create enormous value for economies. *World Economic Forum*. <https://www.weforum.org/agenda/2024/06/msme-productivity-gap-global-economy/>
- Yoo, Y., Henfridsson, O., & Lyytinen, K. (2010). Research Commentary — The New Organizing Logic of The New Organizing Logic of Digital Innovation: An Agenda for Information Systems Research. *Institute for Operations Research and the Management Sciences (INFORMS)*, 21(May 2014), 724–735. <https://doi.org/10.1287/isre.1100.0322>
- Yusfiarto, R., Abdeljawad, I., Syarifah, L., Rosman, R., Febriyanto, A., & Ibrahim, M. H. (2025). Shaping entrepreneurial performance in small business sectors: does Islamic financial institutions' support matter? *Journal of Developmental Entrepreneurship*. <https://doi.org/10.1142/S1084946725500141>
- Yusfiarto, R., & Pambekti, G. T. (2019). Do internet marketing factors with Islamic values improve SMEs performance? *Journal of Islamic Monetary Economics and Finance*, 5(4), 807–828. <https://doi.org/10.21098/jimf.v5i4.1101>
- Yusfiarto, R., Pambekti, G. T., Setiawan, A., Khoirunnisa, A. N., & Nugraha, S. S. (2022). Does Islamic Social Capital Enhancing SMEs Sustainable Performance? *Journal of Islamic Monetary Economics and Finance*, 8(1). <https://doi.org/10.21098/jimf.v8i1.1398>
- Zacca, R., Dayan, M., Ahrens, T., Zacca, R., Dayan, M., & Ahrens, T. (2015). Impact of network capability on small business performance. *Management Decision*, 53(1), 2–23.