



Competitive advantage: Selective mediator of digital-financial capabilities MSME performance

Setya Pramono¹, Nanang Apriliyanto², Atika Desiana³

^{1,2,3}Faculty Of Economics And Business, Selamat Sri University, Indonesia

Article Info	ABSTRACT
Article history: Received Apr 17, 2026 Revised Jun 4, 2026 Accepted Sep 2, 2026 Keywords: Competitive advantage; E-commerce adoption; Financial literacy; Financial inclusion; MSME performance.	This study examines how financial literacy, financial inclusion, and e-commerce adoption enhance MSME performance through competitive advantage as a mediating mechanism. While prior research demonstrates these capabilities independently improve performance, limited understanding exists regarding the underlying pathways through which they operate. Competitive advantage serves as a critical mediator because it transforms isolated resources into distinctive, inimitable capabilities that create sustainable business value, a principle underexplored in rural MSME contexts. Theoretically, this study advances RBV and Dynamic Capability Theory by demonstrating that resource ownership alone is insufficient for performance improvement without strategic transformation into competitive advantages. Additionally, we extend the TOE framework by revealing that technological adoption (e-commerce) generates greater value when converted into competitive advantage compared to financial capabilities alone. Using a quantitative approach with 70 MSME owners from Sukodono Village, Kendal District, data were analyzed via Smart-PLS structural equation modeling. Results reveal that financial literacy, financial inclusion, and e-commerce adoption positively affect MSME performance. Critically, competitive advantage significantly mediates only the e-commerce-performance relationship, not financial capability relationships. This selective mediation indicates that digital capabilities are more effectively translated into competitive advantage than financial capabilities. These findings suggest that sustainable MSME development requires integrating financial capability enhancement with digital transformation initiatives. However, financial resources alone require complementary strategic management to yield competitive advantages, highlighting the need for holistic business development approaches combining financial education, digital training, and innovation support to strengthen long-term MSME competitiveness and sustainability. <i>This is an open access article under the CC BY-NC license.</i>



Corresponding Author:

Setya Pramono,
Faculty of Economics and Business,
Selamat Sri University,
Jl. Soekarno-Hatta KM. 3, Kabupaten Kendal, Jawa Tengah, 51351, Indonesia.
Email: setyapramono539@gmail.com

1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play a strategic role in the national economy because they absorb a large workforce and contribute significantly to economic growth. In Indonesia, MSMEs are one of the sectors that have been able to survive various economic crises and serve as the backbone of regional economic development. Therefore, improving MSME performance is a crucial issue that

continues to receive attention from the government, academics, and business practitioners. MSME performance is generally measured by sales growth, profit growth, market expansion, and the ability to maintain business sustainability amidst increasingly fierce competition (Evinita et al., 2025).

Despite their crucial role in the economy, many MSMEs still face various challenges that can impact their performance. Some of the obstacles frequently encountered by MSMEs include limited financial management skills, limited access to formal financial services, and the suboptimal use of digital technology in business activities (Surya et al., 2021). These conditions can hinder business development and reduce MSME competitiveness in an increasingly dynamic market (Surya et al., 2021).

Direct evidence can be observed in Sukodono Village, Kendal District, an area characterized by active economic activity and diverse MSMEs. Despite its strategic business potential, the number of MSMEs has declined by 18% over the past five years, leaving only 70 active businesses based on data from the Population and Civil Registration Office (Dispendukcapil). This decline indicates that many MSMEs continue to face challenges in maintaining and improving their performance. Pre-questionnaire results further reveal that 69% of respondents identified financial management as a major challenge, while 87.5% reported difficulties in adopting e-commerce technologies, which negatively affect business performance and may even lead to business closure.

Therefore, financial literacy is a crucial factor in improving MSME performance. Financial literacy is an individual's ability to understand financial concepts and effectively manage financial resources to achieve economic goals (Nogueira et al., 2025). MSMEs with good financial literacy tend to be more capable of financial planning, cash flow management, and making more informed business decisions (Panda & Baral, 2025). Therefore, a high level of financial literacy can help MSMEs improve operational efficiency and business sustainability (Masdupi et al., 2025).

In addition to financial literacy, financial inclusion is also a crucial factor influencing the development of MSMEs. Financial inclusion refers to the availability of public access to various financial services, such as savings, credit, insurance, and digital payment systems, that are affordable and easily accessible. Access to financial services enables MSMEs to obtain the financing they need to develop their businesses, increase production capacity, and expand their markets (Sun & Zhang, 2024). Therefore, a high level of financial inclusion can provide greater opportunities for MSMEs to improve their business performance (Ratnawati & Yuana, 2022).

On the other hand, the development of digital technology has driven a transformation in business activities, including in the MSME sector. One form of digital transformation widely utilized by businesses is the implementation of e-commerce. E-commerce enables MSMEs to conduct marketing and sales activities online, thereby reaching a wider market without geographical limitations (Kilay et al., 2022). Furthermore, the use of e-commerce platforms can also improve operational efficiency and facilitate consumer transactions. Therefore, the implementation of e-commerce is a crucial strategy for MSMEs in improving their competitiveness and business performance (Abdullah et al., 2023).

Despite extensive research on financial literacy, financial inclusion, e-commerce adoption, and MSME performance, important gaps remain. Previous studies have reported inconsistent findings regarding how financial and digital resources improve MSME performance (Aritonang et al., 2023; Sari et al., 2026; Tajudeen et al., 2025). In particular, limited research has examined competitive advantage as the mechanism through which financial and digital capabilities influence MSME performance (Desmiyawati et al., 2024).

This study addresses these gaps by positioning competitive advantage as a mediator between financial literacy, financial inclusion, e-commerce adoption, and MSME performance. Its novelty lies in integrating financial and digital capability perspectives within a single model in the context of village-based MSMEs. The study contributes to the RBV, Dynamic Capability Theory, and TOE framework by demonstrating that financial and digital resources alone are insufficient to enhance performance unless they are strategically transformed into competitive advantages that create business value and sustainability (Cruz-Sánchez et al., 2026; Polisetty et al., 2026).

Based on this description, this study aims to analyze the influence of financial literacy, financial inclusion, and e-commerce implementation on MSME performance, with competitive advantage as the mediating variable, in MSMEs in Sukodono Village, Kendal District. This research is expected to contribute to enriching studies on the factors influencing MSME performance and provide recommendations for business actors and policymakers in improving the competitiveness and sustainability of MSMEs at the local level.

2. RESEARCH METHOD

This study employs a quantitative approach with an explanatory design to examine causal relationships between variables in a systematic and measurable way. This approach enables not only the description of phenomena but also empirical testing of the influence among variables (Hafni Sahir, 2021). The study uses a non-probability sampling method with a saturated sampling technique. A total of 70 respondents, consisting of MSME owners in Sukodono Village, Kendal Regency, were selected to ensure accurate and relevant insights into real business conditions. The sample size aligns with Bougie & Sekaran (2019) recommendation (30–500 respondents). The PLS-SEM analysis was conducted using SmartPLS. The outer model was evaluated through outer loadings, Average Variance Extracted (AVE), Cronbach's Alpha, Composite Reliability, and HTMT to ensure reliability and validity. Common method bias was assessed using Inner VIF values. The inner model was evaluated using path coefficients, bootstrapping results, R^2 , f^2 , Q^2 , SRMR, NFI, and PLSpredict to assess the model's explanatory, predictive, and goodness-of-fit performance (Hair & Alamer, 2022). The measurement indicators used in this study were adopted and adapted from established previous research to maintain theoretical robustness. Since the original indicators were developed in various different contexts, the adaptation process involved translating the items into Indonesian and adjusting the phrasing to ensure they were highly relevant and easily comprehensible for MSME owners in Sukodono Village. The following is a table of indicators:

Table 1. Table of indicators

Variable	Indikator Code	Indicator	Reference
MSME performance (PE)	PE1	Capacity utilization	Lestari et al. (2024)
	PE2	Return on equity ratio	
	PE3	Annual real sales growth	
	PE4	Annual employment growth	
	PE5	Annual labor productivity growth	
	PE6	Percentage of firms purchasing fixed assets	
Competitive Advantage (CA)	CA1	Quality	Farida & Setiawan (2022)
	CA2	Delivery dependability	
	CA3	Innovation	
	CA4	Time to Market	
Financial Literacy (FL)	FL1	Knowledge of basic financial terms	Wati et al. (2025)
	FL2	Ability to create and manage a budget	
	FL3	Understanding of financial statements	
	FL4	Awareness of different financing options	
Financial Inclusion (FI)	FI1	Service availability	Widiantari et al. (2024)
	FI2	Ease of access for service recipients	
	FI3	Insurance ownership	
	FI4	Risk management	
	FI5	Digital service security	
E-commerce Adoption (IE)	IE1	Technology readiness	Salah & Ayyash (2024)
	IE2	Organizational capacity	
	IE3	Transaction speed	
	IE4	Environmental factors	

3. RESULTS AND DISCUSSIONS

Outer Model

The results of the outer model evaluation are presented in Table 2 and Table 3.

Table 2. Outer model

Variable	Indikator Code	Outer loading	AVE	Cronbach's alpha	Composite reliability
MSME performance (PE)	PE1	0.826	0.775	0.941	0.954
	PE2	0.890			
	PE3	0.929			
	PE4	0.873			
	PE5	0.930			
	PE6	0.828			
Competitive Advantage (CA)	CA1	0.811	0.640	0.812	0.876
	CA2	0.731			
	CA3	0.827			
	CA4	0.826			
Financial Literacy (FL)	FL1	0.938	0.816	0.925	0.946
	FL2	0.916			
	FL3	0.847			
	FL4	0.909			
Financial Inclusion (FI)	FI1	0.857	0.669	0.876	0.910
	FI2	0.785			
	FI3	0.789			
	FI4	0.835			
	FI5	0.821			
E-commerce Adoption (IE)	IE1	0.824	0.713	0.865	0.908
	IE2	0.865			
	IE3	0.799			
	IE4	0.887			

Table 3. Discriminant validity with HTMT

Construct	CA	FI	FL	IE	PE
CA	-				
FI	0.617	-			
FL	0.555	0.645	-		
IE	0.555	0.384	0.229	-	
PE	0.808	0.717	0.621	0.554	-

Source: Analysis of primary data (2026)

The measurement model demonstrated satisfactory reliability and validity. All outer loadings exceeded 0.70, AVE values were above 0.50, Cronbach's Alpha show above 0.60, and Composite Reliability values surpassed the recommended threshold of 0.70. Furthermore, the HTMT values ranged from 0.229 to 0.808, remaining below the threshold of 0.85, thereby confirming discriminant validity among all constructs.

Inner Model

The results of the inner model evaluation are presented in Table 4, Table 5 and Table 6.

Table 4. PLSpredict, R-Square, Q-Square

Variable	Indikator Code	PLS-RMSE	LM-RMSE	Information	R-Square	Information	Q-Square
MSME performance (PE)	PE1	0.652	0.782	Better	0.662	Strong	0.469
	PE2	0.665	0.670	Better			
	PE3	0.632	0.657	Better			
	PE4	0.519	0.657	Better			
	PE5	0.573	0.670	Better			
	PE6	0.626	0.691	Better			
Competitive Advantage (CA)	CA1	0.679	0.834	Better	0.432	Moderate	0.224
	CA2	0.706	1.175	Better			
	CA3	0.644	0.813	Better			
	CA4	0.717	0.785	Better			

Competitive advantage: selective mediator of digital-financial capabilities MSME performance (Setya Pramono)

Table 5. Model fit

Model Fit	Values
SRMR	0.088
NFI	0.565

Table 6. Inner VIF and f-Square

Connection	Inner VIF	f-Square	Information
Financial Literacy→MSME performance	1.669	0.073	Small
Financial Inclusion →MSME performance	1.772	0.121	Small
E-commerce Adoption→MSME performance	1.313	0.082	Small
Competitive Advantage→MSME performance	1.760	0.242	Moderate
Financial Literacy→Competitive Advantage	1.531	0.090	Small
Financial Inclusion→Competitive Advantage	1.653	0.072	Small
E-commerce Adoption→Competitive Advantage	1.128	0.164	Moderate

Source: Analysis of primary data (2026)

The Inner VIF values ranged from 1.128 to 1.772. Because all VIF values are well below the recommended threshold of 3.3, it confirms not only the absence of multicollinearity issues but also indicates that the data is free from common method bias. The effect size (f-Square) analysis revealed small to moderate effects among the hypothesized relationships, with the strongest effects observed for Competitive Advantage on Performance (0.242) and e-commerce adoption on Competitive Advantage (0.164). The model demonstrated substantial explanatory power (R-Square) for Competitive Advantage (0.662) and moderate explanatory power for Performance (0.432). Furthermore, the Q-Square values of 0.224 and 0.469 confirmed satisfactory predictive relevance for Competitive Advantage and Performance, respectively. Regarding model fit, the SRMR value of 0.088 indicated an acceptable fit, while the NFI value of 0.565 suggested a modest fit. Finally, the PLSpredict results showed that all PLS-RMSE values were lower than the corresponding LM-RMSE values, indicating superior predictive performance and strong out of sample predictive power of the proposed model.

Hypothesis Testing

The proposed relationships were assessed using original sample (β), t-statistics, and p-values. A hypothesis was considered supported when the path coefficient was in the expected direction, $p < 0.05$, and $t > 1.96$; otherwise, it was rejected (Memon et al., 2021). The results of the direct and indirect effect analyses are presented in Table 7.

Table 7. Hypothesis testing

Hypothesis	Original Sample (β)	T-statistic	P-Values (p)	Information
Financial Literacy→MSME performance	0.202	1.986	0.048	Accepted
Financial Inclusion →MSME performance	0.269	3.063	0.002	Accepted
E-commerce Adoption→MSME performance	0.191	2.204	0.028	Accepted
Competitive Advantage→MSME performance	0.379	3.715	0.000	Accepted
Financial Literacy→Competitive Advantage	0.280	2.150	0.032	Accepted
Financial Inclusion→Competitive Advantage	0.261	2.270	0.024	Accepted
E-commerce Adoption→Competitive Advantage	0.324	3.639	0.000	Accepted
Financial Literacy →Competitive Advantage→ MSME performance	0.106	1.892	0.059	Rejected
Financial Inclusion→Competitive Advantage→ MSME performance	0.099	1.895	0.059	Rejected
E-commerce Adoption→Competitive Advantage→ MSME performance	0.123	2.620	0.009	Rejected

Source: Analysis of primary data (2026)

The hypothesis testing results indicate that Financial Literacy ($\beta = 0.202$; $p = 0.048$), Financial Inclusion ($\beta = 0.269$; $p = 0.002$), E-commerce Adoption ($\beta = 0.191$; $p = 0.028$), and Competitive Advantage ($\beta = 0.379$; $p = 0.000$) have positive and significant effects on MSME Performance. Likewise, Financial Literacy ($\beta = 0.280$; $p = 0.032$), Financial Inclusion ($\beta = 0.261$; $p = 0.024$), and E-commerce

Adoption ($\beta = 0.324$; $p = 0.000$) positively and significantly influence Competitive Advantage. Regarding the mediating effects, Competitive Advantage did not significantly mediate the relationships between Financial Literacy and MSME Performance ($\beta = 0.106$; $p = 0.059$) or between Financial Inclusion and MSME Performance ($\beta = 0.099$; $p = 0.059$). However, Competitive Advantage significantly mediated the effect of E-commerce Adoption on MSME Performance ($\beta = 0.123$; $p = 0.009$).

Financial Literacy and MSME Performance

The results indicate that financial literacy has a positive and significant effect on MSME performance, although the overall effect size is relatively small. This suggests that MSME owners with better financial knowledge are more capable of managing budgets, cash flow, and investment decisions, leading to improved business performance. These findings are consistent with Wati et al. (2025), Nogueira et al. (2025), and Panda & Baral (2025).

In the Indonesian MSME context, particularly in rural and semi-urban areas, financial literacy remains important because many business decisions are still based on experience rather than formal financial analysis. MSME owners with higher financial literacy are more likely to separate personal and business finances and manage financial risks effectively, supporting business sustainability (Mang'ana et al., 2024; Panda & Baral, 2025). The finding supports the RBV, which considers financial literacy an intangible resource that enhances organizational capabilities and performance. However, the small effect size indicates that financial literacy alone is insufficient to substantially improve performance and should be complemented by other organizational and technological capabilities. Practically, this result highlights the importance of financial education and training programs that strengthen financial management skills and support sustainable MSME performance.

Financial Inclusion and MSME Performance

The results indicate that financial inclusion has a positive and significant effect on MSME performance, although the overall effect size is relatively small. This indicates that greater access to financial products and services helps MSMEs obtain working capital, manage cash flow, and support business expansion. Access to formal financial institutions also reduces financing constraints, which remain a major challenge for many Indonesian MSMEs. This finding is consistent with Tandilino et al. (2025), Sun & Zhang (2024) and Ratnawati & Yuana (2022).

In the Indonesian context, MSMEs that successfully utilize banking and digital financial services tend to achieve better operational performance and business sustainability. These findings support the RBV, which considers financial access a strategic resource that enhances organizational performance. However, the small effect size suggests that financial inclusion alone is insufficient to substantially improve performance without complementary managerial and technological capabilities. Practically, MSME owners, particularly in rural areas such as Sukodono Village, should make greater use of banking and FinTech services to strengthen capital and support business growth. The findings also highlight the importance of government and financial institution initiatives to expand financial access through financial literacy programs, microcredit schemes, and digital financial services.

E-commerce Adoption and MSME Performance

The results indicate that e-commerce adoption has a positive and significant effect on MSME performance, although the overall effect size is relatively small. These findings indicate that the stronger the level of e-commerce adoption among MSMEs, the better their business performance. The adoption of e-commerce enables MSMEs to reach wider markets, improve transaction efficiency, reduce operational costs, and strengthen customer relationships through digital channels. This result is consistent with previous studies by Kilay et al. (2022) and (Abdullah et al., 2023).

This finding is particularly relevant in Indonesia, where digital transformation has accelerated due to increasing internet penetration and changing consumer preferences toward online transactions. For MSMEs, especially those in Sukodono Village, e-commerce is no longer merely a business trend but a strategic necessity that directly influences business performance (Kilay et al., 2022;

Liemansyaputri et al., 2025). Through digital platforms, MSMEs can overcome geographical limitations, access broader customer segments, and increase sales opportunities beyond local markets. From a theoretical perspective, this result supports the TOE framework, which suggests that technological adoption enhances organizational effectiveness and business outcomes. Practically, the findings encourage MSME owners to strengthen their presence on digital platforms and social media while improving digital literacy and online order management capabilities. However, the relatively small effect size indicates that the performance benefits of e-commerce are likely to be greater when combined with complementary capabilities such as innovation and strategic management.

Competitive Advantage and MSME Performance

The results indicate that competitive advantage has a positive and significant effect on MSME performance, although the overall effect size is relatively moderate. These findings indicate that the greater the competitive advantage possessed by MSMEs, the better their business performance. MSMEs that are able to differentiate their products, improve service quality, or achieve operational efficiency are more likely to generate superior financial and non-financial outcomes. This result is consistent with previous studies by Susanti et al. (2023), Zahara et al. (2024) and Farida & Setiawan (2022), which emphasize that the ability to create unique value is a key driver of business growth and sustainability.

Among all direct relationships, competitive advantage demonstrated the largest contribution to MSME performance, highlighting that performance improvement depends not only on resource ownership but also on how effectively those resources are transformed into distinctive capabilities. This finding supports the RBV and Dynamic Capability Theory, which argue that sustainable performance is achieved when organizational resources are converted into advantages that are difficult for competitors to imitate. In the context of village level MSMEs, competitiveness is not merely an abstract concept but an operational capability that directly translates internal strengths into measurable business outcomes. Therefore, MSMEs in Sukodono should prioritize product innovation and production efficiency to strengthen their competitive position, increase bargaining power and market share, and ultimately enhance long term business performance and sustainability.

Financial Literacy and Competitive Advantage

The results indicate that financial literacy has a positive and significant effect on competitive advantage, although the overall effect size is relatively small. These findings indicate that the higher the level of financial literacy possessed by MSME actors, the greater their ability to create competitive advantages. MSME owners with stronger financial knowledge are better able to manage costs efficiently, plan optimal capital allocation, and make strategic decisions that create business value. This result is consistent with Desmiyawati et al. (2024), who found that financial literacy strengthens MSME competitiveness through improved financial management practices.

In the Indonesian MSME sector, where managerial practices are often informal, financial literacy serves as an intangible resource that supports more structured and sustainable business strategies, consistent with the RBV. However, the relatively small effect size suggests that financial literacy alone is insufficient to generate substantial competitive advantages and should be complemented by other organizational capabilities. Practically, MSMEs in Sukodono Village need to continuously improve their financial knowledge through training, mentoring, and the utilization of digital financial technologies, while government agencies and related institutions should provide ongoing financial education programs to strengthen MSME competitiveness in an increasingly competitive business environment.

Financial Inclusion and Competitive Advantage

The results indicate that financial inclusion has a positive and significant effect on competitive advantage, although the overall effect size is relatively small. This finding indicates that the higher the level of financial inclusion possessed by MSMEs, the greater their ability to create competitive

advantages. Access to financing, savings, and other formal financial services enables MSMEs to increase production capacity, support innovation, improve product quality, and expand market reach, thereby strengthening their competitive position. This result is consistent with previous studies, including Desmiyawati et al. (2024), and supports the RBV, which considers financial resources as valuable assets that contribute to competitive capability development.

In the context of MSMEs in Sukodono Village, greater access to financial services can provide opportunities for business growth and sustainability. Therefore, support from the government, financial institutions, and fintech providers remains important through programs such as People's Business Credit, digital payment systems, and financial service education. However, the relatively small effect size suggests that financial inclusion alone is insufficient to create sustainable competitive advantages without effective managerial and strategic utilization of financial resources.

E-commerce Adoption and Competitive Advantage

The results indicate that E-commerce adoption has a positive and significant effect on competitive advantage, although the overall effect size is relatively moderate. These findings indicate that the higher the level of e-commerce adoption by MSMEs, the greater their ability to create competitive advantage. This result is consistent with previous studies Xuhua et al. (2019) and Salah & Ayyash (2024), which found that e-commerce enables businesses to expand market reach, improve access to information, and accelerate transaction processes. Through digital technologies, MSMEs can enhance market responsiveness, customer engagement, and operational efficiency, thereby strengthening their competitiveness.

Compared with financial literacy and financial inclusion, e-commerce adoption exhibits the strongest influence on competitive advantage. This finding reflects the growing importance of digital transformation in Indonesia's MSME sector, where online platforms provide opportunities for broader market access and business innovation. It also supports Competitive Advantage Theory (Farida & Setiawan, 2022), as well as the TOE and Dynamic Capability frameworks, which emphasize that innovation and technology utilization are strategic resources for developing sustainable competitive capabilities. Therefore, MSMEs, particularly in Sukodono Village, should strengthen their digital competencies, including online marketing and digital store management, while support from government and related stakeholders through digital training and technological infrastructure remains essential to maximize the competitive benefits of e-commerce adoption.

Competitive advantage as a mediator between Financial Literacy and MSME Performance

Contrary to expectations, competitive advantage did not significantly mediate the relationship between financial literacy and MSME performance. Although financial literacy significantly improves both competitive advantage and performance, its indirect effect through competitive advantage was not sufficiently strong. This finding indicates that financial literacy plays a greater role in internal business activities, such as financial management, cost control, and decision-making, rather than being fully translated into competitive strategies that strengthen market position (Sunatriyo, 2025).

One possible explanation is that Indonesian MSME owners primarily utilize financial knowledge for operational and administrative purposes rather than for strategic differentiation. While business owners may possess adequate financial management skills, they may not yet be able to leverage this knowledge to develop product innovation, differentiation, or effective marketing strategies that enhance competitiveness. Consequently, financial literacy contributes directly to business performance through improved financial practices but does not necessarily generate competitive advantages capable of producing additional performance gains. This finding suggests that financial literacy alone is insufficient to create sustainable competitive positioning without complementary capabilities such as innovation, entrepreneurial orientation, or digital transformation. Furthermore, this result is inconsistent with the findings of Desmiyawati et al. (2024), who reported a significant mediating role of competitive advantage in the relationship between financial literacy and business performance.

Competitive advantage as a mediator between Financial Inclusion and MSME Performance

The mediating role of competitive advantage in the relationship between financial inclusion and MSME performance was found to be insignificant. This result suggests that although access to financial services improves MSME performance, competitive advantage does not effectively transmit these benefits. In the Indonesian MSME context, financial access is primarily used to support short-term operational needs, such as working capital and cash flow management, rather than strategic activities that foster differentiation or innovation. As a result, financial inclusion contributes more directly to performance than through the development of competitive advantage.

This finding extends the RBV by indicating that access to financial resources alone is insufficient to create sustainable competitive advantages unless those resources are strategically utilized. Therefore, financial inclusion programs should be complemented by business mentoring, management training, and innovation development initiatives to enhance MSMEs' ability to use financial resources productively and transform them into competitive advantages that ultimately improve business performance (Tandilino et al., 2025; Widyastuti et al., 2023).

Competitive advantage as a mediator between E-commerce Adoption and MSME Performance

The results confirm that competitive advantage significantly mediates the relationship between e-commerce adoption and MSME performance. This indicates that e-commerce improves MSME performance both directly and indirectly through the development of competitive advantage. E-commerce helps MSMEs expand market reach, improve efficiency, strengthen customer relationships, and differentiate products and services, which ultimately enhances performance. This finding supports competitive the TOE framework, and Dynamic Capability Theory, suggesting that digital technologies create greater value when transformed into unique capabilities that are difficult for competitors to imitate (Salah & Ayyash, 2024; Sutrisno et al., 2025). Practically, MSMEs should utilize e-commerce not only for sales but also for marketing, branding, and customer engagement. Government support through digital training and infrastructure development is also important to accelerate digital transformation and strengthen MSME competitiveness (Tripathi & Singh, 2024).

4. CONCLUSION

This study examines the effects of financial literacy, financial inclusion, and e-commerce adoption on MSME performance, with competitive advantage as a mediator among MSMEs in Sukodono Village, Kendal District. The results show that all variables positively and significantly improve MSME performance and competitive advantage. However, competitive advantage only mediates the relationship between e-commerce adoption and MSME performance, not the relationships involving financial literacy or financial inclusion. The novelty of this study lies in integrating financial literacy, financial inclusion, and e-commerce adoption in a single model while testing the mediating role of competitive advantage in a rural MSME context. The findings extend RBV, Dynamic Capability Theory, and TOE framework by showing that financial and technological resources enhance performance through different pathways. Specifically, e-commerce adoption generates greater value when translated into competitive advantage, whereas financial literacy and financial inclusion contribute more directly to performance. Practically, MSME owners should strengthen financial capabilities, financial access, and digital adoption to build sustainable competitiveness. Policymakers should support these efforts through financial education, digital training, and technology infrastructure programs. This study is limited by its cross-sectional design, localized sample, and reliance on self-reported data. Future research should use longitudinal approaches, broader samples, and additional variables such as innovation capability, entrepreneurial orientation, digital literacy, or business resilience to better explain MSME performance.

REFERENCES

- Abdullah, L. Z., Apriliyanto, N., & Junianingrum, S. (2023). Determinants of repurchase intention in the Indonesian e-commerce platforms. *Journal of Enterprise and Development (JED)*, 5, 2023.

- Aritonang, M. P., Sadalia, I., & Muluk, C. (2023). *The Effect of Financial Literacy and Financial Inclusion on MSMEs Performance* (pp. 356–368). https://doi.org/10.2991/978-94-6463-008-4_46
- Bougie, R., & Sekaran, U. (2019). *Research Methods For Business: A Skill Building Approach*. Wiley. <https://books.google.co.id/books?id=ikl6EAAAQBAJ>
- Cruz-Sánchez, O., Cruz-Cázares, C., & Hernandez-Vivanco, A. (2026). Business model innovation from dynamic capabilities perspective: A systematic literature review. *Journal of Business Research*, 204, 115835. <https://doi.org/10.1016/j.jbusres.2025.115835>
- Desmiyawati, D., Susilatri, S., & Ramaiyanti, S. (2024). Financial Literacy, Technology, Competitive Advantages and Implications to MSMEs Performance. *Jurnal Organisasi Dan Manajemen*, 20(2), 236–251. <https://doi.org/10.33830/jom.v20i2.7671.2024>
- Evinita, L. L., Tangkau, J. E. M., Pesak, P. J., & Cahyono, S. (2025). Policy Framework to Improve MSME Competitiveness and Financial Performance with Indonesia's Asta Cita Vision Goals. *Journal of Risk and Financial Management*, 18(12), 692. <https://doi.org/10.3390/jrfm18120692>
- Farida, I., & Setiawan, D. (2022). Business Strategies and Competitive Advantage: The Role of Performance and Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 163. <https://doi.org/10.3390/joitmc8030163>
- Hafni Sahir, S. (2021). *Metodologi Penelitian*. www.penerbitbukumurah.com
- Hair, J., & Alamer, A. (2022). Partial Least Squares Structural Equation Modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research Methods in Applied Linguistics*, 1(3), 100027. <https://doi.org/10.1016/j.rmal.2022.100027>
- Kilay, A. L., Simamora, B. H., & Putra, D. P. (2022). The Influence of E-Payment and E-Commerce Services on Supply Chain Performance: Implications of Open Innovation and Solutions for the Digitalization of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 119. <https://doi.org/10.3390/joitmc8030119>
- Lestari, R., Syahyuti, Mulia Wibawa, B., Endayani, F., Setyawati, D., & Silalahi, S. A. F. (2024). Confirmatory factor analysis of marketing performance dimensions: a lesson from SMEs in Malang, Indonesia. *Cogent Business & Management*, 11(1). <https://doi.org/10.1080/23311975.2024.2310084>
- Liemansyaputri, S., Sarwoko, E., & Gatot Haryono, C. (2025). Digital Transformation of MSMEs: A Study on the Impact and Motives of Using Third-Party E-Commerce Platforms: Profitable or Not? *Eduvest-Journal of Universal Studies*, 5(9). <http://eduvest.greenvest.co.id>
- Mang'ana, K. M., Hokororo, S. J., & Ndyetabula, D. W. (2024). An Investigation of the Extent of Implementation of the Financial Management Practices of Agri-SMEs in developing countries: Evidence from Tanzania. *Sustainable Technology and Entrepreneurship*, 3(1), 100049. <https://doi.org/10.1016/j.stae.2023.100049>
- Masdupi, E., Imran, M., & Sintya, R. (2025). Financial literacy and sustainability of SMEs: the mediating and moderating effect of entrepreneurial financing choice, risk-taking and social capital. *Management & Sustainability: An Arab Review*, 1–24. <https://doi.org/10.1108/MSAR-01-2025-0003>
- Memon, M. A., T., R., Cheah, J.-H., Ting, H., Chuah, F., & Cham, T. H. (2021). PLS-SEM STATISTICAL PROGRAMS: A REVIEW. *Journal of Applied Structural Equation Modeling*, 5(1), i–xiv. [https://doi.org/10.47263/JASEM.5\(1\)06](https://doi.org/10.47263/JASEM.5(1)06)
- Nogueira, M. C., Almeida, L., & Tavares, F. O. (2025). Financial Literacy, Financial Knowledge, and Financial Behaviors in OECD Countries. *Journal of Risk and Financial Management*, 18(3), 167. <https://doi.org/10.3390/jrfm18030167>
- Panda, N., & Baral, S. K. (2025). Financial Literacy and Its Impact on MSEs Performance: A Mediating Role of Financial Self-efficacy. *SEDME (Small Enterprises Development, Management & Extension Journal): A Worldwide Window on MSME Studies*, 52(3), 268–288. <https://doi.org/10.1177/09708464251361231>
- Polisetty, A., G, S., Chakraborty, D., & Bresciani, S. (2026). Sustainable competitiveness through regulatory trust: How indian small and medium enterprises transform regulation into innovation. *Technological Forecasting and Social Change*, 230, 124766. <https://doi.org/10.1016/j.techfore.2026.124766>
- Ratnawati, K., & Yuana, P. (2022). Financial inclusion and its impact on performance of MSMEs with efficiency and financial flexibility as mediation: Empirical evidence from Malang city. In *Contemporary Research on Management and Business* (pp. 184–187). CRC Press. <https://doi.org/10.1201/9781003295952-47>
- Salah, O. H., & Ayyash, M. M. (2024). E-commerce adoption by SMEs and its effect on marketing performance: An extended of TOE framework with ai integration, innovation culture, and customer tech-savviness. *Journal of Open Innovation: Technology, Market, and Complexity*, 10(1), 100183. <https://doi.org/10.1016/j.joitmc.2023.100183>
- Sari, F. N., Komariyah, E. F., Rofiqoh, I., & Andiyansari, P. (2026). Does Financial Literacy and Government Support Affect SME Performance? Evidence from Disability-owned SMEs in Yogyakarta. *International Journal of*

- Scientific Research and Management (IJSRM)*, 14(01), 10259–10269. <https://doi.org/10.18535/ijssrm/v14i01.emo8>
- Sun, J., & Zhang, J. (2024). Digital Financial Inclusion and Innovation of MSMEs. *Sustainability*, 16(4), 1404. <https://doi.org/10.3390/su16041404>
- Sunatriyo, G. L. (2025). Analysis of the Influence of Financial Literacy Levels on Financial Management and Micro Business Sustainability (Case Study on Micro Businesses in Bandar Lampung. *Eduvest - Journal of Universal Studies*, 5(11), 14029–14041. <https://doi.org/10.59188/eduvest.v5i11.51888>
- Surya, B., Menne, F., Sabhan, H., Suriani, S., Abubakar, H., & Idris, M. (2021). Economic Growth, Increasing Productivity of SMEs, and Open Innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 20. <https://doi.org/10.3390/joitmc7010020>
- Susanti, E., Mulyanti, R. Y., & Wati, L. N. (2023). MSMEs performance and competitive advantage: Evidence from women's MSMEs in Indonesia. *Cogent Business & Management*, 10(2). <https://doi.org/10.1080/23311975.2023.2239423>
- Sutrisno, Widodo, & Ausat, A. M. A. (2025). In-Depth Study of the Strategic Interaction between Electronic Commerce, Innovation, and Attainment of Competitive Advantage in the Context of SMEs. *International Journal of Analysis and Applications*, 23, 78. <https://doi.org/10.28924/2291-8639-23-2025-78>
- Tajudeen, F. P., Moghavvemi, S., Thirumoorthi, T., Phoong, S. W., & Bahri, E. N. B. A. (2025). Impact of Digital Transformation on Business Functional Areas of SMEs. In *Digital Transformation of Malaysian Small and Medium Enterprises* (pp. 45–68). Emerald Publishing Limited. <https://doi.org/10.1108/978-1-83662-168-320251004>
- Tandilino, C., Pontoh, G. T., Darmawati, D., & Indrijawati, A. (2025). Digital Financial Inclusion as a Mediator of Digital Financial Literacy and Government Support in MSME Performance. *International Journal of Financial Studies*, 13(4), 199. <https://doi.org/10.3390/ijfs13040199>
- Tripathi, A., & Singh, A. (2024). SMEs Awareness and Preparation for Digital Transformation: Exploring Business Opportunities for Entrepreneurs in Saudi Arabia's Ha'il Region. *Sustainability*, 16(9), 3831. <https://doi.org/10.3390/su16093831>
- Wati, K. L., Sianturi, M., & Liswatin, L. (2025). The Impact of Financial Literacy on SMEs Performance: The Role of Access to Financial Resources as a Mediator. *RIGGS: Journal of Artificial Intelligence and Digital Business*, 4(2), 5969–5979. <https://doi.org/10.31004/riggs.v4i2.1540>
- Widiantari, K. S., Putra, I. G. K. S., & Basmantra, I. N. (2024). Influences on MSME Sustainability: The roles of financial literacy, business capital, and financial inclusion. *Review of Management, Accounting, and Business Studies*, 5(2), 109–117. <https://doi.org/10.38043/revenue.v5i2.5581>
- Widyastuti, M., Ferdinand, D. Y. Y., & Hermanto, Y. B. (2023). Strengthening Formal Credit Access and Performance through Financial Literacy and Credit Terms in Micro, Small and Medium Businesses. *Journal of Risk and Financial Management*, 16(1), 52. <https://doi.org/10.3390/jrfm16010052>
- Xuhua, H., Elikem, O. C., Akaba, S., & Brown, D. W. (2019). Effects of business-to-business e-commerce adoption on competitive advantage of small and medium-sized manufacturing enterprises. *Economics and Sociology*, 12(1), 80–99. <https://doi.org/10.14254/2071-789X.2019/12-1/4>
- Zahara, Z., Muslimin, M., Rumijati, A., & Rony, Z. T. (2024). Competitive Advantage as Mediating Role to Enhance MSMEs Performance. *Journal of Small Business Strategy*, 34(2). <https://doi.org/10.53703/ooic.121131>