SMALL BUSINESSES, BIG INNOVATIONS: REDEFINING MSE PERFORMANCE THROUGH KNOWLEDGE AND TECHNOLOGY SYNERGIES

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Abstract:

Background: The performance of MSMEs is a key priority in both developing and developed countries due to their significant economic contributions. In Indonesia, MSMEs account for 64.2 million units, contributing 61.07% to the GDP and providing employment for 135.5 million people, with the majority in the micro sector. Despite their potential, MSMEs often face challenges in management and technical skills, limiting their operational effectiveness, particularly in small-scale enterprises.
Purpose: This study explores the relationship between knowledge management, technology adoption, and innovation capability in MSEs while providing practical recommendations to enhance business performance in the digital era.
Design/methodology/approach: This study uses a quantitative survey approach, collecting data via Google Form and direct visits to MSME organizations. The population consists of Muslim-owned MSMEs in Bandung Raya operating for at least six months. Data were collected between November '24-January '25 from a sample of 300 respondents, and analysed using SmartPLS 4.0.
Findings/Result: Knowledge management enhances innovation capability, which in turn drives technology adoption; however, none of these variables significantly affect MSEs' performance, either directly or through mediation.
Conclusion: Knowledge Management boosts Innovation Capability and Technology Adoption, but none directly enhance MSEs performance.
Originality/value (State of the art): This study integrates three key concepts knowledge management, technology adoption, and innovation capability within a comprehensive and holistic research framework.

Keywords: entrepreneurship, innovation capability, knowledge management, MSEs performance, technology adoption

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INTRODUCTION

The performance of Micro, Small, and Medium Enterprises (MSMEs) is a key priority in both developing and developed countries due to their undeniable contribution to economic growth (Munawar & Handayani, 2025; Nema Head et al. 2021; Sindhwani et al. 2023). In Indonesia, the sector comprises 64.2 million units, contributing 61.07% to the Gross Domestic Product (GDP), equivalent to 8,573.89 trillion rupiahs (Asmara et al. 2024). Additionally, MSMEs play a dominant role in employment, absorbing 96.9% of the workforce, or approximately 135.5 million people, with 89% employed in the micro sector (Abdillah, 2024). Despite their vast potential, MSMEs often face challenges in management and technical skills, limiting their operational effectiveness, particularly in small-scale enterprises (Kyal et al. 2022; Subramaniam & Shankar, 2020).

Therefore, skills enhancement is crucial to optimizing business performance (Sari et al. 2023). Overall, business performance is determined by a company's ability to achieve its goals and compete effectively (Danil et al. 2025; Darmawan et al. 2023). Superior business performance not only reflects success but also serves as the foundation for building competitive advantage (Guo & Xu, 2021). However, many MSMEs tend to focus solely on sales, neglecting a holistic management approach, which ultimately hinders long-term growth and competitiveness (Maswin & Sudrajad, 2023). One strategic measure MSMEs can adopt is knowledge management, a systematic process involving the creation, sharing, utilization, and management of knowledge within an organization.

The implementation of knowledge management can significantly enhance operational efficiency, innovation capability, and overall MSME performance (Olivia et al. 2024; Widodo, 2023). Studies indicate that MSMEs that actively implement knowledge management are better equipped to respond to market changes and customer needs, which, in turn, contributes to improved business performance (Nahimana, 2024; Parera, 2019). Additionally, knowledge management supports better decision-making and operational efficiency, both of which are critical factors in maintaining competitiveness in a dynamic market (Dahinine et al. 2023; Fulgence et al. 2023). Furthermore, the adoption of knowledge management can accelerate the technology adoption process within MSMEs, fostering innovation and competitive advantage, which are essential for organizational success in the digital era (Cunningham et al. 2023; Lestari et al. 2024; Novela et al. 2024).

Technology adoption enables MSMEs to improve products and services, create sustainable value, and deliver benefits across all aspects of business operations (Kruger & Steyn, 2020; O'Kane et al. 2021). It facilitates process automation, more effective resource management, and enhanced internal and external communication (Chege et al. 2020).The speed of technology adoption strengthens MSMEs' ability to differentiate themselves from competitors, meet consumer expectations, and support market creation and new business models (Ferrer-Dávalos, 2023; Valdez-Juárez et al. 2023). Research findings (Bagheri et al. 2019; Le et al. 2023) suggest that MSMEs actively engaging in technology adoption achieve greater competitive advantages. This indicates a positive relationship between technology adoption and MSME innovation capability, enabling the introduction of new products and services, process improvements, and ultimately, business performance growth (Nafizah et al. 2024).

Innovation capability is essential for MSMEs to survive and grow amid rapid technological advancements and market dynamics (Trivedi & Srivastava, 2022). This capability enables firms to convert available resources into sustainable competitive advantages (Donbesuur et al. 2020), by leveraging employee competencies to transform knowledge and ideas into innovative products, processes, or systems. Such an approach not only optimizes resource utilization but also adds value to businesses and their stakeholders (Panya & Petchsawang, 2024).

Through the Resource-Based View (RBV) (Wernerfelt, 1984) and Dynamic Capabilities Theory (DCT) (Teece et al. 1997), MSMEs can maximize resource utilization, capitalize on unique organizational capabilities, and enhance their adaptive capacity to restructure resources in response to market and technological changes (Zulu-Chisanga et al. 2021). The integration of these two theories underscores the crucial role of knowledge management and technology adoption in strengthening innovation capability and fostering sustainable MSME performance (Ogutu et al. 2023).

However, research gaps remain. One of the primary challenges is the inconsistency of findings in previous studies. Some studies confirm that innovation capability and knowledge management positively influence business performance (Bakaritantri et al. 2022; Fakhrunnisa et al. 2023). In contrast, other research suggests that knowledge management does not directly impact MSME performance, implying that other factors may play a more dominant role (Olivia et al. 2024; Setiyono et al. 2022). Furthermore, (Foli et al. 2024) argue that while technological innovation enhances performance, an overemphasis on innovation without strategic planning may yield diminishing returns. Meanwhile, (Ali et al. 2020) found that innovation capability significantly influences business performance. These inconsistencies highlight the need for further research to better understand the factors influencing the relationship between knowledge management, technology adoption, and innovation capability in the MSME context.

This study offers novelty by integrating three key concepts knowledge management, technology adoption, and innovation capability into a holistic research framework. This approach not only addresses previous research inconsistencies but also provides a new perspective on how the combination of knowledge management and technology adoption can drive innovation capability and Micro Small Enterprise's (MSEs) performance in the Bandung Raya. Unlike prior studies that assume a direct performance payoff, this study demonstrates that knowledge management and technology adoption primarily operate as capability-building mechanisms rather than immediate performance drivers in MSEs.

Overall, this study aims not only to fill the literature gap regarding the relationship between knowledge management, technology adoption, and innovation capability in MSEs but also to offer practical recommendations for MSEs practitioners and policymakers to enhance business performance, particularly in navigating the challenges of the digital era. By adopting this holistic approach, the study aspires to generate new insights into MSEs management and contribute to both theoretical development and practical applications relevant to the MSEs sector in Bandung Raya.

METHODS

The population of this study comprises all MSEs operating in the Bandung Raya area, although the exact number remains undetermined. Given the large number of MSEs spread across different sectors, this study focuses on MSEs that have been operational for at least six months and are Muslim-owned, in accordance with the research criteria. A purposive sampling technique, a form of non-probability sampling, is used. The sample size is determined based on the 30-item instrument, multiplied by a factor of 10, resulting in a minimum of 300 respondents required for hypothesis testing (Joe F. Hair et al. 2019).

A quantitative approach with a survey design is employed, where data were collected (November 2024–January 2025) through a structured questionnaire distributed online via Google Forms. The questionnaire is disseminated through social media platforms such as Instagram and direct visits to MSEs organizations, including Kamar Dagang dan Industri (KADIN) Kota Bandung and Pimpinan Wilayah 'Aisyiyah (PWA) Jawa Barat, before being further shared with affiliated MSEs through WhatsApp. The measurement instrument utilizes a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) to assess participants' perceptions of various dimensions examined in this study (Al-Mamary & Alshallaqi, 2022).

The collected data will be analysed using Structural Equation Modelling (SEM) through SmartPLS 4.0. This approach is chosen for its capability to examine complex variable relationships, validate theoretical models, and provide a comprehensive understanding of the studied phenomena. The analysis process consists of two main stages: (1) outer model evaluation, which assesses construct validity (including convergent and discriminant validity), and (2) inner model evaluation, which measures the relationships between latent constructs and tests the formulated hypotheses. Additionally, SEM allows for mediating effect testing, which is a key focus of this study.

The study's measurement framework is based on relevant dimensions for each variable. Knowledge management is assessed through four primary dimensions: knowledge acquisition, knowledge creation, dissemination of knowledge, and utilization of knowledge, which evaluate different aspects of knowledge management influencing MSE competitiveness and performance.

Innovation capability is measured across three dimensions: product innovation, technological innovation, and marketing innovation (Sunyoto et al. 2023), aiming to assess the ability of MSEs to adopt and utilize new technologies, drive innovation, and sustain competitive advantage. Technology adoption consists of three key elements: sensing capability, seizing capability, and transforming capability (Ahmed et al. 2024; Engelmann, 2024), which measure the extent to which MSEs adopt technology and identify areas for improvement to enhance business performance. Finally, MSEs performance is evaluated based on three dimensions: financial performance, product performance, and marketing performance (Sunyoto et al. 2023), providing a comprehensive view of business performance from financial, product, and marketing perspectives.

This framework (Figure 1) shows that knowledge management drives both technology adoption and innovation capability, which in turn enhance MSE performance. It also highlights their mediating roles, emphasizing how effective knowledge use can boost innovation, technology integration, and overall business outcomes. Knowledge management (KM) is hypothesized to have a direct influence on both technology adoption (TA) and innovation capability (IC). In turn, TA and IC are expected to enhance micro and small enterprises (MSEs) performance (MP). Furthermore, TA and IC are proposed to act as mediating variables, explaining how effective knowledge utilization translates into improved business performance. This framework reflects the assumption that KM serves as the foundation for building digital readiness, fostering innovation, and strengthening competitiveness among MSEs in the Bandung Raya area.

Based on the discussion, this study formulates eight main hypotheses that examine both direct and mediating relationships between the variables:

$H_{1:}$ Knowledge management is associated with MSEs' performance.

H_2: Knowledge management is associated with MSEs' performance.

H_3: Knowledge management is associated with innovation capability MSE

H_4: Technology adoption is associated with MSE's Performance

H_5: Innovation capability is associated with MSE's Performance

H_6: Innovation capability is associated with technology adoption MSE

H_7: Technology adoption mediates the relationship between knowledge management and MSE performance.

H_8: Innovation capability mediates the relationship between knowledge management and MSE performance

The measurement instruments used in this study are summarized in Table 1. Each construct is operationalized through multiple items adapted from prior studies to ensure validity and contextual relevance. MSEs performance is measured by six items reflecting financial growth, production, sales, and customer expansion. Knowledge management is represented by eight items related to knowledge sharing, utilization, and creation. Technology adoption consists of ten items that capture the ability to sense, adapt, and implement technologies. Innovation capability is measured by six items focusing on product, technological, and marketing innovation. Together, these instruments provide a comprehensive framework for capturing the dynamics among the studied variables.

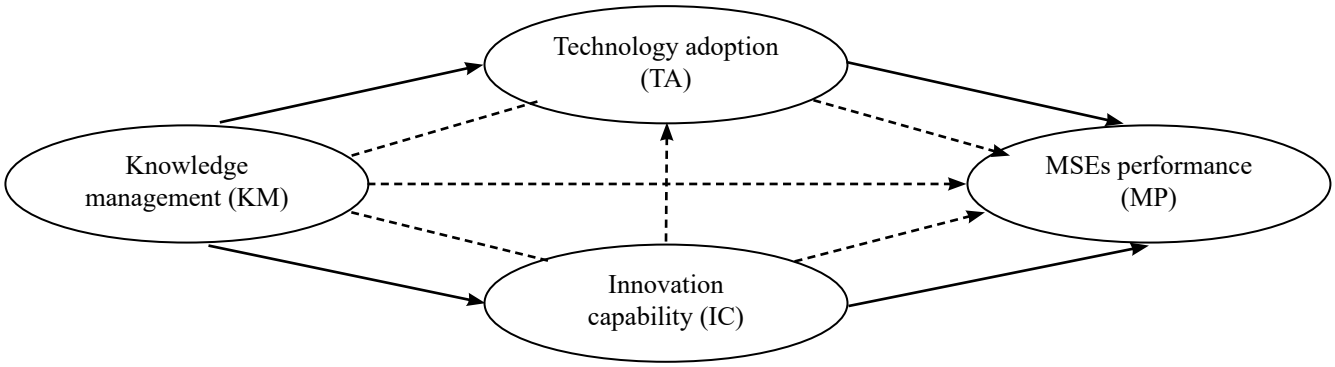

Figure 1. Research framework

Table 1. Research instruments

Variable	Code	Instrument	Sources
MSEs Performance	MP1	Profit achievement has increased every month	(Eniola & Ektebang, 2014; Shahbaz et al. 2014; Sunyoto et al. 2023)
	MP2	Increase in business capital in every month	
	MP3	Production of products has increased every month	
	MP4	Product request increased every month	
	MP5	Sales growth has increased every month	
	MP6	Customers are increased every month	
Knowledge Management	KM1	After getting training, educate your coworkers.	(Mills & Smith, 2011; Sunyoto et al. 2023)
	KM2	Actively share knowledge with co-workers whether requested or not	
	KM3	Utilize existing knowledge for the creation of new products	
	KM4	Utilizing existing knowledge to create new ideas to support work	
	KM5	Sharing information and knowledge that is necessary to carry out work assignments	
	KM6	Exchange ideas with employees to obtain new innovations	
	KM7	Using existing knowledge to produce products that have selling value	
	KM8	Apply available knowledge to improve performance	
Technology Adoption	TA1	Systematically searches for information about technologies that can help the business	(Ahmed et al. 2024; Engelmann, 2024)
	TA2	Consistently follows the development of technologies relevant to our industry.	
	TA3	Consistently monitors how competitors are using technology.	
	TA4	Quickly understand and adapt to new technologies	
	TA5	Able to recognize how new technologies can be applied to our business	
	TA6	Can turn new technological knowledge into innovation in products or business processes.	
	TA7	Information about the latest technologies helps us in developing new products or services.	
	TA8	By setting clear responsibilities, we have successfully implemented new technologies in our business.	
	TA9	Decisions regarding the implementation of new technologies in our business are carried out consistently.	
	TA10	The implementation of technology can be done without disrupting daily operations.	
Innovation Capability	IC1	Able to create products to be something new for consumers	(Baregheh et al. 2012; Sunyoto et al. 2023; Toma et al. 2014)
	IC2	Able to create products with a variety of new flavours	
	IC3	Utilizing technology in creating products	
	IC4	Able to adapt ideas to create exciting new products through technology	
	IC5	Providing a choice of new products that suit consumer needs through online media	
	IC6	Expanding marketing reach through online media	

RESULTS

Respondent Profile

The data show that 71% of respondents are female (213 individuals), while 29% are male (87 individuals). The majority of respondents (36%) are aged 45–60 years, followed by those aged 29–44 years (31%) and 13–28 years (31%). Meanwhile, only 2% of respondents are aged 61–79 years. In terms of domicile, 53.5% of the respondents are from Bandung City, while the remaining 46.5% reside in the Bandung Raya. Regarding business sectors, 64% of respondents operate in the culinary industry, 21% in the service sector, while the remaining respondents are engaged in other industries. Additionally, all respondents (100%) identify as Muslim.

Outer Model

Convergent and Discriminant Validity

Figure 2 confirms convergent validity, as all loading factors exceed 0.70, indicating strong relationships between indicators and their constructs (Hamid et al. 2022). Additionally, Table 2 demonstrates discriminant validity, as the square root of AVE for each variable surpasses inter-construct correlations, ensuring clear construct differentiation and preventing conceptual overlap

Composite Reliability and Cronbach's Alpha

The composite reliability and Cronbach's alpha values for all variables in this study exceed 0.70, indicating that the research instrument demonstrates good reliability (Table 3). Composite reliability assesses the internal consistency among indicators measuring the same construct, while Cronbach's alpha evaluates the correlation between items within the measurement instrument (Hair et al. 2014).

With these values, the measurement of innovation capability, knowledge management, MSEs performance, and technology adoption is proven to be reliable and consistent. This ensures that the relationships between variables, including the indirect effect of knowledge management on MSEs performance through technology adoption and innovation capability, are trustworthy and remain consistent across repeated studies.

Inner Model R-Square Test

The R-Square value indicates the extent to which the model explains the variance in the studied variables. The obtained values of 3.3%, 1.3%, and 12.3% suggest that the model accounts for only a small portion of the variance in these variables, while the remaining variation is influenced by external factors beyond the model (Table 4). These findings indicate that the model's ability to explain the relationships between variables remains weak, necessitating the consideration of additional factors to enhance the accuracy of the analysis.

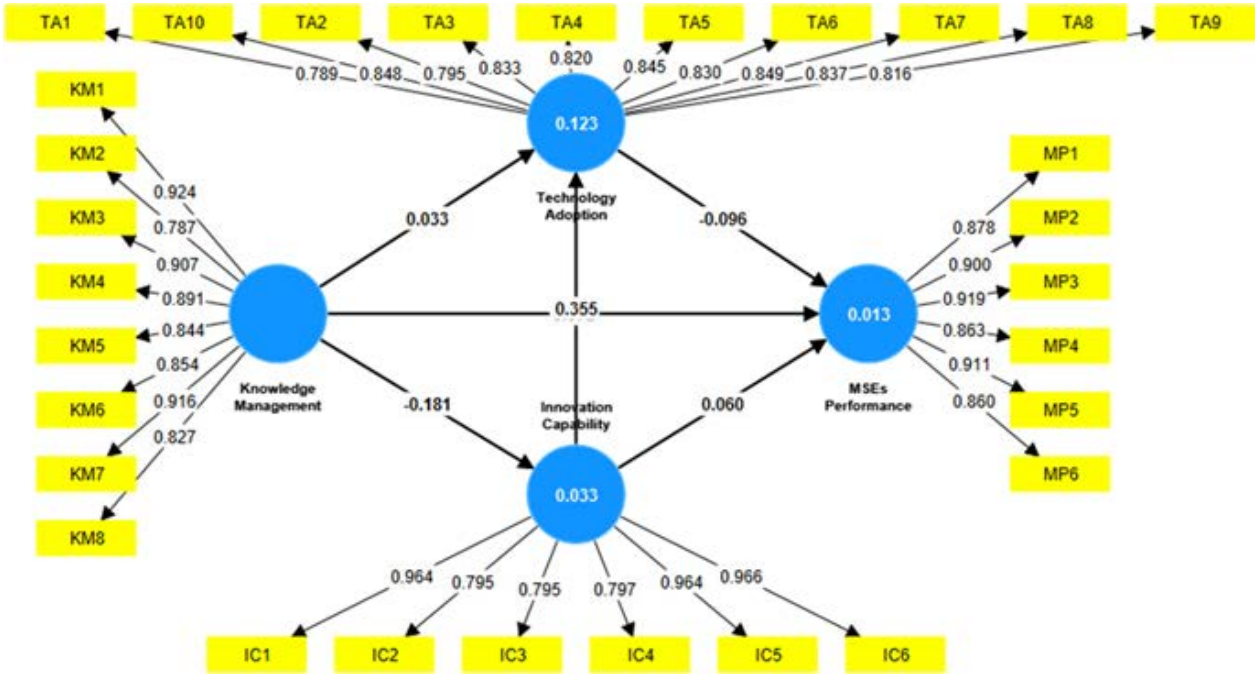

Figure 2. Outer Model

Table 2. Discriminant Validity

	Innovation Capability	Knowledge Management	MSE's Performance	Technology Adoption
Innovation Capability	0.884			
Knowledge Management	-0.181	0.870		
MSE's Performance	0.013	0.064	0.889	
Technology Adoption	0.349	-0.031	-0.078	0.826

Table 3. Composite reliability and cronbach's alpha result

	Cronbach's alpha	Composite reliability (rho_c)	Result > 0.70
Innovation Capability	0.951	0.955	Valid
Knowledge Management	0.956	0.961	Valid
MSEs Performance	0.948	0.958	Valid
Technology Adoption	0.950	0.956	Valid

Table 4. R-Square Test Result

	R-square	R-square adjusted
Innovation Capability	0.033	0.030
MSEs Performance	0.013	0.003
Technology Adoption	0.123	0.117

Effect Size

The f-square value indicates that innovation capability has the greatest influence on technology adoption (0.139), followed by knowledge management on innovation capability (0.034) (Table 5). Meanwhile, the effects of innovation capability on MSEs performance (0.003), knowledge management on technology adoption (0.001) and MSEs Performance (0.001), as well as technology adoption on MSEs performance (0.008), are considered very weak. Although innovation capability contributes more significantly to technology adoption than other variables, the overall model still exhibits weak explanatory power.

Hypothesis Test

Knowledge Management and MSE's Performance

Table 6 indicates that knowledge management does not have a significant direct effect on MSEs performance p = 0.199 (H1=Rejected). This finding contradicts previous studies (Davila et al. 2019; Fernández-López et al. 2018) which suggest that knowledge management enhances MSEs competitiveness by fostering innovation, operational efficiency, and sustainable business growth. Although its direct effect is not significant, knowledge management still plays a crucial role in supporting more accurate and strategic decision-making. Other studies (Heltberg, 2022; Sayyadi & Provitera, 2023) emphasize that access to relevant and reliable information enables MSEs to develop more effective business strategies, mitigate risks, and enhance competitiveness.

These findings suggest that knowledge management may contribute indirectly, for instance, through technology adoption, which has been proven to drive innovation, efficiency, and competitiveness. Therefore, targeted strategies, external collaborations, and supportive policies are crucial factors in optimizing the impact of knowledge management on MSEs performance.

Knowledge Management and Technology Adoption

Table 6 shows that the p-value is 0.373, indicating that knowledge management does not have a significant direct effect on technology adoption in MSEs. Consequently, hypothesis H2 cannot be accepted. Table 6 shows that the p-value is 0.373, indicating that knowledge management does not have a significant direct effect on technology adoption in MSEs (H2=rejected).

This result are not consistent (Janssen et al. 2020; Shahzad et al. 2020; Sun et al. 2022) which assert that knowledge management plays a crucial role in driving technology adoption by enhancing organizational readiness through the provision of relevant information, the improvement of employee capabilities, and the facilitation of organizational learning.

Moreover, a knowledge-sharing culture and collaboration facilitate the identification and implementation of new technologies, while a collective problem-solving approach accelerates adaptation and the successful adoption of technology.

The rejection of H1 and H2 could be due to the dominance of female respondents, who often face limited access to technology and information. In addition, women entrepreneurs tend to rely more on experience and social networks than formal knowledge management systems, which may affect the effectiveness of knowledge management implementation.

Knowledge Management and Innovation Capability

Furthermore, Table 6 shows that the p-value is 0.000, indicating that knowledge management has a significant effect on innovation capability (H3=Accepted). This finding suggests that the effective implementation of knowledge management can enhance innovation capability in MSEs by strengthening the accumulation, dissemination, and utilization of knowledge within the organization.

This result aligns with previous studies (Lam et al. 2021; Salunke et al. 2019), which emphasize that optimal knowledge management fosters the development of new ideas, improvements in business processes, and the adoption of innovative strategies, all of which contribute to competitiveness and business sustainability. Therefore, this study confirms that knowledge management plays a crucial role in creating a conducive environment for innovation in MSEs.

Technology Adoption and MSEs performance

Next, Table 6 shows that the p-value is 0.095, indicating that technology adoption does not have a significant effect on MSEs performance (H4=Rejected). This finding suggests that while technology adoption contributes to operational efficiency and innovation, it is not sufficient to directly enhance MSEs performance. These results contradict previous studies (Dimoso & Utonga, 2024) that highlight the importance of technology adoption in improving productivity, business efficiency, and market competitiveness.

Table 5. F-square test result

	Innovation Capability	Technology Adoption	MSEs Performance
Innovation Capability		0.139	0.003
Knowledge Management	0.034	0.001	0.001
Technology Adoption			0.008

Table 6. Hypothesis test result

	T statistics (> 1.96)	P values (< 0.05)	Remark
Innovation_Capability → MSEs_Performance	1.125	0.261	Rejected
Innovation_Capability → Technology_Adoption	10.184	0.000	Supported
Knowledge_Management → Innovation_Capability	4.250	0.000	Supported
Knowledge_Management → MSEs_Performance	1.283	0.199	Rejected
Knowledge_Management → Technology_Adoption	0.891	0.373	Rejected
Technology_Adoption → MSEs_Performance	1.672	0.095	Rejected
Knowledge_Management → Innovation_Capability → MSEs_Performance	1.053	0.292	Rejected
Knowledge_Management → Technology_Adoption → MSEs_Performance	0.726	0.468	Rejected

However, the lack of significance in this relationship may be attributed to several factors, such as the organization's readiness to implement technology, resource constraints, or the need for more relevant mediating variables to clarify the mechanism linking technology adoption to MSEs performance.

The rejection of H4 could be influenced by the majority of older respondents, who may have resistance to change and limited digital skills. This age group also tends to focus more on business stability than the exploration of new innovations.

Innovation Capability and MSEs Performance

Table 6 shows that the p-value is 0.261, indicating that innovation capability does not have a significant direct effect on MSEs performance (H5=rejected). This finding suggests that enhancing innovation capability in MSEs does not automatically lead to improved business performance. These results contradict previous studies (Jalil et al. 2022; Pradana & Safitri, 2023) that emphasize the crucial role of innovation capability in enhancing competitiveness and business growth for small and medium enterprises.

Although innovation can be a key driver of operational efficiency and product differentiation, this study suggests that its impact on business performance may be indirect or moderated by other factors, such as technology adoption, business strategy, or external influences.

The rejection of H5 may be influenced by the majority of respondents engaged in the culinary sector, where practical skills and experience take precedence over the utilization of high technology. This industry tends to be more based on product creativity and marketing strategies than technology-based innovation.

Innovation Capability and Technology Adoption

Furthermore, Table 6 shows that the p-value is 0.000, indicating a significant relationship between innovation capability and technology adoption. This finding confirms that innovation capability plays a crucial role in driving technology adoption in MSEs (H6=Accepted).

This result aligns with previous studies (Jin & Choi, 2019; Nafizah et al. 2024), which suggest that innovation capability enables MSEs to be more adaptive to technological advancements, improve operational efficiency, and enhance market competitiveness. Highly innovative MSEs are more likely to explore and adopt new technologies as a strategy to increase productivity, expand market reach, and create added value for customers.

Therefore, strengthening innovation capability within the MSEs business environment can be a key factor in accelerating digital transformation and ensuring long-term business sustainability.

Knowledge Management, Technology Adaption and MSEs Performance

Table 6 shows that the p-value is 0.468, indicating that the mediating relationship between knowledge management and MSEs performance through technology adoption is not significant (H7=Rejected). This finding suggests that even when technology adoption mediates knowledge management, its impact on MSEs performance remains statistically unproven. In other words, technology adoption does not serve as an effective mediator in strengthening the relationship between knowledge management and MSEs performance.

This result contradicts previous studies (Purwanto et al. 2023), which argue that knowledge management enhances business performance through the mediation of technology adoption, as technology adoption is often considered a key enabler for the more effective utilization of intellectual resources. However, in the context of this study, other factors may play a more dominant role in determining MSEs performance, such as market dynamics, regulatory frameworks, access to funding, or organizational readiness for technology implementation.

Knowledge Management, Innovation capability and MSEs Performance

Table 6 shows that the p-value is 0.292, indicating that the mediating relationship between knowledge management and MSEs performance through innovation capability is not significant (H8=Rejected). This finding suggests that even when innovation capability mediates knowledge management, its impact on MSEs performance remains statistically unproven. In other words, innovation capability does

not serve as an effective mediator in strengthening the relationship between knowledge management and MSEs performance.

This result contradicts several previous studies (Purwanto et al. 2023), which suggest that innovation capability is a key factor linking knowledge management to business performance improvement. In various studies, innovation capability is often regarded as a mechanism that enables MSEs to convert managed knowledge into innovations that enhance competitiveness and business growth. However, within the context of this study, the insignificance of this relationship may be attributed to several factors, such as suboptimal innovation readiness, resource constraints in implementing innovations, or external factors such as market conditions and regulatory frameworks that may have a stronger influence on MSEs performance.

Goodness of Fit (GoF)

The GoF value of 0.207 (Table 7) indicates that although innovation capability, knowledge management, and technology adoption influence MSEs performance, the model's explanatory power remains weak (Darwin & Umam, 2020). This suggests that these factors are not strong enough to directly explain variations in MSEs Performance. Therefore, additional factors or more relevant mediating variables are needed to enhance the significance of the relationships between variables and more accurately reflect the dynamics of MSEs performance improvement.

Table 7. GoF Test Result

	AVE	R-square
Innovation Capability	0.782	0.033
Knowledge Management	0.757	
MSEs Performance	0.790	0.013
Technology Adoption	0.683	0.123

Managerial Implication

This study shows that, based on the results in Table 6, only the effect of knowledge management on innovation capability (H_3) and the effect of innovation capability on technology adoption (H_6) are statistically significant, while other direct and mediating effects are not supported. This suggests that managers of micro and small enterprises should prioritize strengthening innovation capability through effective knowledge management practices, such as continuous training and systematic documentation of business processes, to ensure efficient knowledge transfer. Enhanced innovation capability can, in turn, drive technology adoption, enabling the use of digital platforms, customer relationship management systems, and business process automation to improve operational efficiency and competitiveness. Although technology adoption did not directly improve performance in this study, it remains a critical enabler when combined with innovation capability. Therefore, owners and managers should integrate knowledge management and innovation capability development into their long-term business strategies while also addressing external factors such as market dynamics and access to resources.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

These findings suggest that while knowledge management, technology adoption, and innovation capability are essential strategic resources, their contribution to MSEs' performance is largely indirect and contingent on broader organizational and environmental conditions, their impact on MSEs performance may depend on other external and internal factors. Market conditions, regulatory frameworks, access to capital, and organizational readiness likely play a more substantial role in shaping business performance. Furthermore, the low explanatory power of the model (GoF = 0.207) highlights the need for further research incorporating additional variables to improve the understanding of performance determinants in MSEs.

Recommendations

To enhance MSEs performance, governments and industry stakeholders should provide stronger policy support by improving access to funding, technology infrastructure, and business advisory services. MSEs must also focus on strengthening organizational readiness through leadership development, employee training, and digital literacy to maximize the benefits of technology adoption and innovation. Additionally, businesses should implement structured knowledge management systems that encourage knowledge sharing, organizational learning, and collaboration to drive innovation and adaptability. Future research

should explore additional mediating factors such as market dynamics, business agility, and entrepreneurial orientation to gain deeper insights into the mechanisms influencing MSEs performance. Lastly, fostering innovation ecosystems through partnerships with universities, research institutions, and technology providers can enhance innovation capabilities and facilitate the seamless adoption of advanced technologies.

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