BEYOND DIGITAL TRANSFORMATION: DIGITAL TECHNOLOGY AS MEDIATOR FOR STRATEGIC MSME PERFORMANCE IN DEMAK

Sulistyorini[1], Ayu Nurafni Octavia, Any Setyarini

Faculty of Economics, University of Semarang (USM)
Jl. Soekarno-Hatta Tlogosari, Semarang 50196, Indonesia

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Abstract:

Background: The rising prominence of the digital economy has heightened the need for MSMEs in Demak Regency to adopt digital technologies. However, many MSMEs face challenges in effectively utilizing these technologies to enhance their performance. This study addresses the research gap by examining the mixed results in prior studies on the impact of business strategy and technopreneurship on MSMEs' performance.
Purpose: The study will investigate the key determinants of MSMEs' performance in Demak Regency and the intermediary role of digital technology. It examines how business strategy and technopreneurship, through digital technology, influence MSMEs' performance.
Design/Methodology/Approach: This research adopts a quantitative method by collecting data from 109 MSME respondents in Demak Regency through convenience and non-probability sampling. The study analyzes the connections among business strategy, technopreneurship, digital technology, and MSMEs' performance using SmartPLS version 4.
Finding/Result: The data suggests that business strategy and technopreneurship are positively tied to the adoption of digital technology. Business strategy significantly boosts MSMEs' performance, whereas technopreneurship, despite a positive trend, isn't statistically significant. Digital technology substantially improves performance, mediating business strategies' and technopreneurship's influence on MSME success.
Conclusion: Strategic planning and innovation in technology play essential roles in promoting the adoption of digital tools and improving MSME performance. Digital technology acts as a key mediator that strengthens these relationships. As a result, MSMEs are encouraged to improve digital literacy and infrastructure, and policy support remains crucial in fostering an environment that supports digital adoption.
Original/value (state of the art): This study offers new insights into the elements that influence MSMEs' performance in the digital economy, highlighting the importance of strategic management and technological adoption. The findings hold value for both policymakers and business practitioners.

Keywords: business strategy, technopreneurship, digital technology, MSMEs performance

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[1] Corresponding author:
Email: sulistyorini@usm.ac.id

INTRODUCTION

Demak Regency, Central Java, Indonesia, boasts a vibrant MSME scene, with 13,027 registered businesses playing a key role in the local economy (BPS-Statistics of Demak Regency, 2024). Yet, amidst growing globalization and tougher competition (Al-Omush et al. 2023; Chen et al. 2024; Wu et al. 2024), these MSMEs find it hard to keep pace with the digital economy. While technopreneurship thrives in today's business landscape (Chen et al. 2024; Leitão et al. 2024; Xia et al. 2024), numerous MSMEs in Demak face challenges with digital skills and understanding, hindering their participation in the digital marketplace (Toraman et al. 2024; Zheng et al. 2024). This has consequently impacted the Regional Gross Domestic Product (RGDP), particularly due to the pandemic-induced shift (Statista, 2025) towards online shopping. Before the pandemic, MSMEs contributed to Indonesia's GDP, reaching 61.41% in 2018 (Resmi et al. 2020). However, the COVID-19 outbreak in 2020 led to a decline in MSME contribution to 37.3% (Mualim Hasibuan et al. 2024). While MSME contribution to GDP recovered to 61.7% in 2021 and 60.1% in 2020 (Mualim Hasibuan et al. 2024), challenges remain, including a decline in sales, financial problems, distribution issues, and the need for increased digitization (Resmi et al. 2020). These factors hinder MSME competitiveness and their ability to disseminate products within the digital marketplace effectively.

As shown in Table 1, the Gross Regional Domestic Product (GRDP) of Demak Regency experienced a notable increase from 2.62% in 2021 to 5.25% in 2022. However, this growth rate slightly declined to 5.01% in 2023.

The phenomenon observed among MSMEs in the Demak Regency highlights a significant issue concerning their suboptimal performance. Despite there being 13,027 registered MSMEs, only 50 percent have adopted digital technology. Previous studies have primarily focused on the general impact of digital adoption on MSME performance, yet they often lack empirical testing, overlook the mediating role of digital technology, or fail to consider the regional context of MSMEs in the Demak Regency. This study also identifies the problem's root in the limitations and gaps of previous research, as outlined below (Table 2).

This study critically examines the interplay between business strategy, technopreneurship, and the performance of Micro, Small, and Medium Enterprises (MSMEs) in Demak Regency, where existing research on these relationships presents conflicting findings (Wu et al. 2024; Rumijati & Hakim, 2023; Susanti et al. 2023; Oyero & Oyedele, 2022; Gebrekidan et al. 2023; Purwati et al. 2023). This research examines how digital technology can bridge existing gaps in MSME performance in Demak Regency, where the adoption of digital technologies and technopreneurship remains suboptimal. This inquiry probes the facilitative role of digital technology in addressing extant performance differentials among MSMEs within Demak Regency, a locale characterized by a less than maximal assimilation of digital innovations and entrepreneurial technology. Especially, it scrutinizes digital technology's mediating capacity within the interconnectedness of business strategizing, technological entrepreneurship, and consequential MSME outcomes

To tackle these underexplored areas, this investigation melds business strategy and technopreneurship alongside digital technology to scrutinize their synergistic influence on MSMEs performance. A salient feature of this inquiry involves evaluating how embracing digital technology might diminish competitive imbalances among MSMEs within Demak Regency. Through the incorporation of empirical scrutiny, this study endeavors to furnish a more refined comprehension of the digital evolution hurdles encountered by MSMEs. The research employs a systematic methodology to probe the direct and indirect ramifications of business strategy and technopreneurship on MSME performance. This framework yields pragmatic perspectives for refining digital assimilation towards enduring business advancement.

This study seeks to illuminate the mediating role of digital tech in the dynamic among business strategy, technopreneurship, and MSME outcomes, focusing on Demak Regency. Addressing earlier mixed findings, the research intends to offer real-world evidence on how going digital shapes business success. This research delves deeper into how digital proficiency and technological expertise influence MSMEs' competitive strength in the online sphere. The expected findings should offer practical guidance for strengthening MSME adaptability through the adoption of digital transformation. Ultimately, this study adds to the ongoing scholarly conversation about incorporating Indonesian MSMEs into the digital economy.

Table 1. Growth Rate of GRDP at Constant Prices (Base Year 2010) by Sectors (Percentage)

	Growth Rate of GRDP at Constant Prices (Base Year 2010) by Sector (Percentage)		
	2021	2022	2023
GRDP of Demak Regency	2.62	5.25	5.01

Table 2. Research Gap

Research Gap	Research Findings	Researchers
There are differing findings regarding the impact of business strategy on MSME performance.	Business strategy significantly impacts MSME performance.	(Wu et al. 2024; Chen et al. 2024)
	Business strategy does not significantly impact MSME performance.	(Rumijati & Hakim, 2023; Susanti et al. 2023)
There are differing findings regarding the impact of technopreneurship on MSME performance.	Technopreneurship significantly impacts MSME performance.	(Oyero & Oyedele, 2022; Gebrekidan et al. 2023)
	Technopreneurship does not significantly impact MSME performance.	(Purwati et al. 2023)

METHODS

This research drew upon both firsthand and existing information. Firsthand data came from organized interviews and surveys, while existing information was sourced from the Demak Regency Statistics Agency (BPS) and pertinent scholarly publications. The firsthand data centered on MSME operators in Demak Regency with a minimum of one year managing their ventures. Concurrently, the existing information encompassed MSME growth metrics and digital adoption rates from BPS, alongside theoretical perspectives from academic sources that underpin the study's structure.

Data collection took place between July and September 2024. Primary data were gathered through structured interviews and questionnaires to gain a well-rounded understanding of MSME operations. The questionnaire included 20 items measured on a 7-point Likert scale. Based on the guidelines from Hair et al. (2020) regarding SEM-PLS, the study initially aimed to gather responses from at least 140 participants. Nevertheless, due to on-the-ground challenges, only 109 complete and usable responses were obtained. Respondents were selected using a convenience sampling technique, which prioritized accessibility and availability. While this method proved practical and time-efficient, especially under resource constraints, it may also introduce limitations in terms of how broadly the results can be applied.

For data analysis, this research employed Structural Equation Modeling Partial Least Squares (SEM-PLS), consistent with the protocols outlined by Hair et al. (2020). Recognizing the SEM-PLS sample size guideline of 100 to 200 respondents, with a minimum of 5 to 10 observations for each estimated parameter, this study met these criteria to ensure strong statistical rigor. The analytical process involved examining the connections between core variables, evaluating the model's appropriateness, and interpreting the significance of MSME digital adoption and growth trends within Demak Regency.

The Influence of Business Strategy on Digital Technology

In today’s evolving business landscape, MSMES need to harness digital technology to thrive. A clear business strategy acts as a guide, shaping technology adoption to fit specific objectives, target markets, and competitive strengths. This targeted method, emphasizing pertinent tools rather than broad adoption, fosters more successful digital integration (Sitorus et al. 2023; Latifah et al. 2021; Chen et al. 2024). Therefore, it is logical to expect that a strong business strategy will considerably shape how MSMEs embrace and apply digital technologies.
H1: Business strategy has a significant impact on digital technology

The Influence of Technopreneurship on Digital Technology

Technopreneurs are individuals who stand out for their ability to innovate in the market, adapt to changes, and use available resources creatively. Their influence in driving the adoption of digital technology within Micro, Small, and Medium Enterprises (MSMEs) cannot be overstated. Studies by Rafiki (2024), Bala & Arora (2023), and Gebrekidan et al. (2023) show that technopreneurs excel in spotting new market opportunities and using technology to develop creative solutions. They also take on a crucial role in helping consumers understand the benefits of embracing new technologies, which in turn encourages wider adoption. This unique blend of innovation and advocacy for digital tools supports the hypothesis that technopreneurship plays a critical role in influencing the successful adoption and integration of digital technology.
H2: Technopreneurship has a significant impact on the adoption and implementation of digital technology.

The Influence of Business Strategy on MSME Performance

For MSMEs to thrive, a clear business strategy is crucial. This strategy acts as a guide for how they use their resources, adapt to market changes, and gain an edge over competitors. Research by Latifah et al. (2021), Riza et al. (2022), and Susanti et al. (2023) indicates that when MSMEs have effective strategies – often boosted by things like innovation, good accounting systems, online sales, and a strong competitive position – their overall performance improves. Given this evidence, it's reasonable to expect a strong link between a business's strategy and how well it performs.
H3: Business strategies significantly impact MSME performance.

The Influence of Technopreneurship on MSME Performance

For small and medium-sized enterprises (MSMEs) to truly thrive, the fusion of technological innovation and entrepreneurial spirit, known as technopreneurship, is key. As research from Aulia et al. (2023) and Oyero & Oyedele (2022) demonstrates, technopreneurs are drivers of new ideas, enabling MSMEs to reach wider markets and operate more efficiently through smart technology use. This capacity to harness technology for both creating better products and refining internal processes leads us to believe that technopreneurship has a substantial effect on how well MSMEs perform.
H4: Technopreneurship influences MSME performance.

The Influence of Digital Technology on MSME Performance

Digital technology is now a key element for the competitiveness, efficiency, and long-term viability of MSMEs in today's business environment. Studies by Bhatti et al. (2022), Indriyaningrum & Fachrunnisa (2021), He et al. (2023), Le et al. (2024), and Chen et al. (2024) consistently show that the adoption and effective use of digital technologies directly contribute to improved MSME performance. This leads to the reasonable hypothesis that digital technology significantly influences how well MSMEs perform.
H5: Digital technology influences MSME performance.

Digital Technology mediates the relationship between Business Strategy and MSME Performance

The connection between a business's strategy and how well small and medium-sized enterprises (MSMEs) perform is shaped by digital technology. Research by Cunningham et al. (2023) highlights the interdependence of business strategies and IT. Indeed, digital tools have been shown to boost MSME sales, profits, and customer service (He et al. 2023; Le et al. 2024; Chen et al. 2024). This move towards digital operations is key for MSMEs to align their plans with their goals and improve their overall performance (Buteau, 2021). By helping business strategies and operational goals work together, digital transformation acts as an intermediary in how business strategies impact MSME performance.
H6: Digital technology serves as a mediating factor in the relationship between business strategies and the performance of MSMEs.

Digital Technology mediates the relationship between Technopreneurship and MSME Performance

In today's competitive world, digitally transforming operations is no longer optional for MSMEs; it's a key driver of their ability to compete effectively. Studies (Cunningham et al. 2023; Buteau, 2021; He et al. 2023; Le et al. 2024; Chen et al. 2024) highlight how integrating digital tools and processes boosts MSME performance through increased automation and the fostering of new ideas. Moreover, the ability

of MSMEs to not only endure but genuinely prosper in today's dynamic business environment is strongly linked to their willingness to adopt a technopreneurial mindset, as noted by Al-Omush et al. (2023).Therefore, it's proposed that digital technology functions as an essential go-between, significantly influencing how a commitment to technopreneurship ultimately affects the performance outcomes of MSMEs.

H7: The hypothesis posits that digital technology mediates the impact of technopreneurship on the performance of MSMEs.

This research makes a distinct contribution by investigating how a business's overall strategy and its embrace of technology-driven entrepreneurship (technopreneurship) work together to boost the performance of MSMEs, with digital technology serving as a key link between them. Unlike earlier work, such as the qualitative study by Riza et al. (2022) and the focus on development strategies by Sitorus et al. (2023), our study takes a quantitative approach. We employ Smart-PLS analysis to thoroughly examine the influence of both business strategy and technopreneurship on how well MSMEs perform. Furthermore, while Yuningsih et al. (2023) explored general entrepreneurship, this study specifically introduces the idea of technopreneurship. This offers a novel angle on how leveraging technological innovation can spark business growth and improve performance in today's digital landscape.

Figure 1 presents the study's conceptual framework, pinpointing challenges and suggesting solutions through a clear structure. It visually depicts how business strategy and technopreneurship are proposed to drive the adoption and use of digital technology (H1 & H2), which subsequently boosts MSME performance (H5). This framework also proposes that a company's overall business strategy and its embrace of technology-driven entrepreneurship (technopreneurship) have a direct effect on how well it performs as an MSME (H3 & H4). Crucially, it suggests that digital technology serves as a vital link, influencing the way both business strategy (H6) and technopreneurship (H7) ultimately contribute to an MSME's success. Drawing on the Resource-Based View (RBV), this model suggests that MSMEs can develop a lasting advantage over competitors by strategically leveraging their internal resources. This is particularly true when they actively adopt digital technology and cultivate a culture of technopreneurship.

Business Strategy comprises four indicators adapted from (Safitri, 2019), including innovation in business motifs, product focus, market analysis for expansion, and product alignment with environmental pressures (X1.1–X1.4 in Figure 2) and (S1–S4 in Table 3). Technopreneurship, based on Syaifulloh (2021), includes mastery of market and technology resources, speed and flexibility in product launches, innovative and attractive products, and consumer education on new technologies (X2.1–X2.6 in Figure 2) and (T1–T6 in Table 3). Digital Technology, drawing from (Judijanto, 2024), encompasses the extent of digital technology usage, types of technologies used, digital platforms employed, and digital technology used by startups Y1.1–Y1.4 in Figure 2) and D1– D4 in Table 3. Finally, MSME Performance, adapted from (Aulia, 2021), includes output quantity, work quality, time management efficiency, business planning and execution discipline, initiative for better outcomes, and human resource management leadership (Y2.1 – Y2.6 in Figure 2) and (P1 – P6 in Table 3).

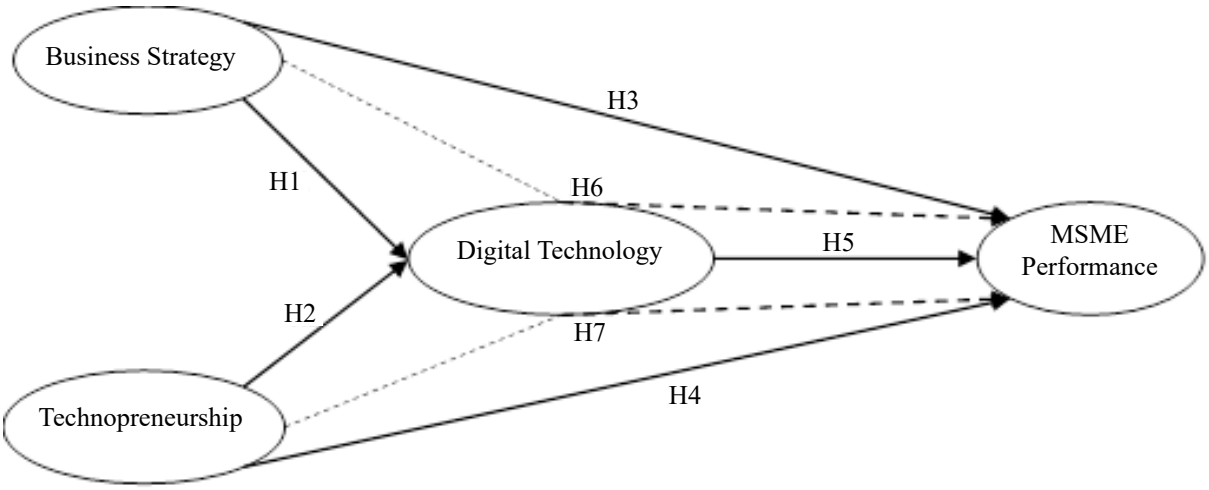

Figure 1. Research Framework

Table 3. Result of outer loading before elimination

Indicators	Digital Technology	MSME Performance	Business Strategy	Technopreneurship
S1			0.876	
S2			0.916	
S3			0.894	
S4			0.831	
T1				0.788
T2				0.933
T3				0.889
T4				0.903
T5				0.911
T6				0.883
D1	0.928			
D2	0.912			
D3	0.944			
D4	0.869			
P1		0.871		
P2		0.871		
P3		0.890		
P4		0.533		
P5		0.899		
P6		0.892		

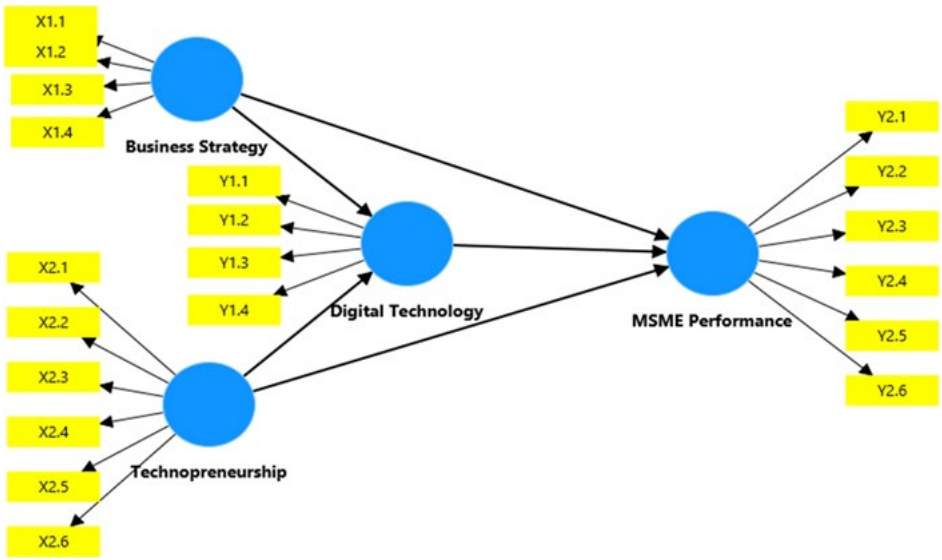

Figure 2. Measurement Model Result Before Elimination

RESULTS

Descriptive Respondents

This study involved 109 business owners in Demak Regency, with a response rate of 77.85%. The majority of respondents were female (71%), indicating significant female entrepreneurial activity in the region. The majority of respondents were female (71%), highlighting the strong presence of women entrepreneurs in Demak Regency. What's truly remarkable is that this figure surpasses the national average of 64.5% for women-owned small businesses throughout Indonesia. It vividly illustrates the strong engagement of women in entrepreneurship within this region and their significant impact on the local economic landscape. Looking at the age breakdown, the 30 to 35-year-olds make up the biggest chunk at 44%, which suggests a lot of entrepreneurial energy in this group. There are probably a few reasons why

this age range is so prominent in the startup world. For many, this is a time of career changes, and they might be using their previous job experience to launch their own thing. Plus, with increasing financial responsibilities, starting a business can seem like a more stable way to earn a living. Plus, it's common to see that access to funds gets easier as people get older. They've usually had more time to save up or build a good credit history, making business investments a bit smoother. On the education front, a solid 59% of respondents had completed high school or something similar. This 59% figure hints that you don't necessarily need a higher education to make an MSME work. It looks like hands-on experience, those entrepreneurial skills, and being able to roll with the punches might be bigger factors in keeping and growing MSMEs going strong in Demak Regency. When it comes to how long people have been in business, about 50% said they've been at it for one to three years, which suggests a pretty young and dynamic entrepreneurial scene in Demak Regency. This may indicate that formal education is not necessarily a prerequisite for MSME success, as practical experience, adaptability, and market-driven strategies could play a more significant role in sustaining business operations. These demographic insights provide valuable context for understanding the entrepreneurial characteristics of the study population.

Measurement Model (Outer Model)

Validity testing

To establish the questionnaire's validity, convergent validity measures were assessed within a PLS framework. While our study is empirical, outer loading values between 0.50 and 0.60 are acceptable during initial scale development to provide a comprehensive explanation of validity thresholds. However, we primarily adhere to the standard criterion of ≥0.70 for assessing construct validity in this study (Ghozali, 2021). PLS analysis revealed the structural model's loading factors, providing insights into the relationships between constructs, as depicted in Figure 2.

As depicted in Figure 2, the pre-elimination assessment of the measurement model's validity is summarized in Table 3. One questionnaire item exhibited an insufficient outer loading value of less than 0.60, suggesting its invalidity. The whole questionnaire's validity is compromised. To rectify this, the removal of the invalid item (P4) is recommended. As depicted in Figure 3, the assessment of the measurement model following the removal of non-significant items is summarized in Table 4. Tables 3 and 4 confirm model validity, with convergent validity demonstrated by loading factor values exceeding 0.5 and Cronbach's alpha values above 0.60, indicating satisfactory reliability (Ghozali, 2021; Hair et al. 2019; Ringle et al. 2023). Discriminant validity was also established.

Referencing Table 5, all constructs in this study met the AVE threshold (>0.50), confirming strong convergent validity. Digital technology, as the highest AVE construct (0.835), reinforces its role as a critical mediator in the relationship between business strategy, technopreneurship, and MSME performance. Table 6 also confirms that all constructs in this study meet the HTMT criterion, with values below the threshold of 1, ensuring adequate discriminant validity (Hair et al. 2017). With the measurement model validated, the next step involves assessing the reliability and structural model to examine the hypothesized relationship variables.

Reliability Testing

Reliability testing evaluates data consistency and accuracy. According to Ghozali (2021), it is assessed in PLS through composite reliability and Cronbach's alpha to ensure stable results. Composite reliability is a key indicator for evaluating the true reliability of a construct, often considered a more accurate measure of internal consistency. The accepted standard is that composite reliability should generally In this study, composite reliability exceeded 0.70, indicating strong internal consistency. While a 0.70 threshold is commonly recommended for confirmatory research, a threshold of 0.6 is acceptable in exploratory studies, where the aim is to develop and refine theoretical constructs rather than confirm established models (Hair et al. 2019)yet concise, overview of the considerations and metrics required for partial least squares structural equation modeling (PLS-SEM. As shown in Table 7, all variables exhibit composite reliability values exceeding 0.70, suggesting adequate reliability for further research. In this context, reliability signifies that the indicators utilized in the study accurately represent the actual conditions of the research subject. Table 7 also confirms that all constructs in this study demonstrate satisfactory reliability, with Cronbach's Alpha values surpassing the 0.60 threshold.

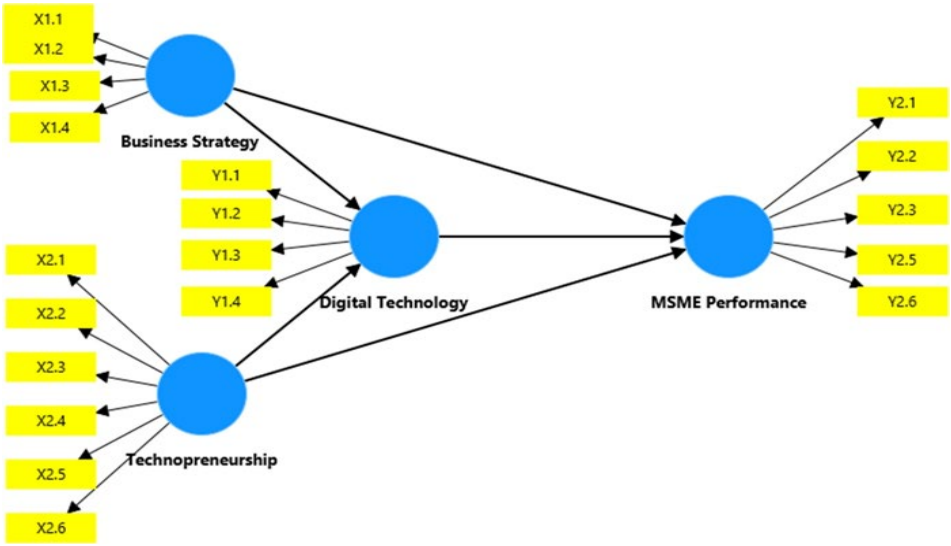

Figure 3. Measurement Model Result after Elimination

Table 4. Result for Outer Loading after Elimination

Indicators	Digital Technology	MSME Performance	Business Strategy	Technopreneurship
S1			0.876	
S2			0.916	
S3			0.894	
S4			0.831	
T1				0.788
T2				0.933
T3				0.889
T4				0.903
T5				0.911
T6				0.883
D1	0.928			
D2	0.912			
D3	0.944			
D4	0.869			
P1		0.883		
P2		0.865		
P3		0.903		
P5		0.896		
P6		0.893		

Table 5. Average variance extracted (AVE)

	Average variance extracted (AVE)
Business Strategy	0.774
Technopreneurship	0.785
Digital Technology	0.835
MSME Performance	0.789

Table 6. Heterotrait-Monotrait Ratio (HTMT)

Variables	Digital Technology	MSME Performance	Business Strategy	Technopreneurship
Digital Technology				
MSME Performance	0.863			
Strategi Bisnis	0.901	0.929		
Technopreneurship	0.899	0.830	0.921	

Table 7. Composite Reliability and Cronbach's Alpha

	Composite reliability	Cronbach Alpha
Business Strategy	0.905	0.902
Technopreneurship	0.951	0.945
Digital Technology	0.937	0.934
MSME Performance	0.939	0.933

Assessment of the Structural Model (Inner Model)

The next phase involves evaluating the structural model, analyzing latent constructs' relationships, path coefficients, statistical significance, R-squared, and hypothesis testing (Ghozali, 2021). The coefficient of determination (R-squared) measures model accuracy by evaluating how independent variables explain variation in the dependent variable. Ghozali (2021) states that R-squared values of 0.75, 0.5, and 0.25 represent strong, moderate, and weak relationships. Table 8 shows that business strategy (X1) and technopreneurship (X2) collectively explain 76.4% of the variance in digital technology (Y1), with an adjusted R^2 of 0.759. Similarly, X1, X2, and Y1 explain 79.1% of SME performance (Y2), with an adjusted R^2 of 0.785, indicating substantial influence.

Hypothesis Testing

The hypotheses in this study are tested through bootstrapping in SmartPLS, following established guidelines. A t-statistic greater than the critical t-value of 1.96, at a 5% significance level (p-value < 0.05), indicates statistical significance. The Table 9 and 10 provide a condensed overview of the analytical findings.

Business Strategy and Digital Technology

The PLS analysis results confirm the acceptance of the first hypothesis, with a β_{value} of 0,379 and a $\mathbf{P}_{values}$ of 0.000, illustrating a positive and significant relationship between business strategy and digital technology (Table 9). This implies that an increase in business strategy components enhances digital technology advancement. Continuous implementation of business strategies across areas like marketing, HR, operations, and finance is crucial. These results align with previous studies (Sitorus et al. 2023; Latifah et al. 2021small and medium enterprises (MSMEs; Chen et al. 2024), emphasizing that businesses with well-defined strategies are more inclined to adopt digital technologies. As argued by Cunningham et al. (2023), a strategic approach to technology adoption fosters value creation, especially for MSMEs.

Technopreneurship and Digital Technology

The PLS analysis revealed a strong, positive link between technopreneurship and digital technology, as indicated by a β_{value} of 0,527 and a $\mathbf{P}_{values}$ of 0.000 (Table 9). This result validates the hypothesis and the crucial role technopreneurs play in propelling technological progress. Technopreneurs actively use state-of-the-art digital tools and platforms, as would be expected given their innate propensity for innovation and technology. These findings support earlier research by Gebrekidan et al. (2023), Rafiki (2024), and Bala & Arora (2023), highlighting the importance of technopreneurship in technological advancement.

Business Strategy and MSME Performance

The third hypothesis is supported by the PLS analysis results, which show a significant positive correlation between MSME performance and business strategy (βvalue = 0,553, Pvalues = 0.000) (Table 9). Given that it facilitates efficient resource allocation, market opportunity identification, and risk management, this implies that a well-crafted business strategy is crucial for enhancing MSME performance. These results

support the importance of strategic management in promoting MSME success and are consistent with earlier research (Latifah et al. 2021; Riza et al. 2022; Susanti et al. 2023).

Technopreneurship and MSME Performance

Contrary to our fourth hypothesis, which anticipated a significant positive relationship between embracing technology in entrepreneurship (technopreneurship) and MSME success, our analysis revealed otherwise. The beta coefficient of 0.039 and the P-value of 0.687, far exceeding the 0.05 significance level, demonstrate that this effect was not statistically significant. It seems the direct influence of technopreneurship on MSME performance might be overshadowed by other factors. Limited access to the necessary capital for technological investments and the burden of regulatory hurdles could be playing a significant role. Furthermore, the lack of good digital infrastructure prevents technology-focused entrepreneurial efforts from easily translating into better performance. Digital technology becomes a key intermediary here, allowing these activities to drive measurable business success. Although previous research, such as the work by Oyero & Oyedele (2022) and Gebrekidan et al. (2023), suggests a positive link between technopreneurship and success, it's important to remember that factors like the industry, the state of the market, and the sophistication of the technology involved can influence these results. Therefore, while technopreneurship could still benefit MSME performance, this study's findings, aligning with Rumijati & Hakim (2023) and Susanti et al. (2023), suggest that the effect may not be statistically substantial.

Digital Technology and MSME Performance

The PLS analysis findings support the acceptance of the fifth hypothesis, indicated by a βvalue of 0,338 and a Pvalues of 0.000, both of which are below the 0.05 significance threshold. This suggests that digital technology significantly and positively influences MSME performance. Such a strong correlation aligns with the existing literature on digital transformation, corroborated by findings from He et al. (2023), Le et al. (2024), and Chen et al. (2024), all of which highlight the advantageous effects of digital technology on diverse facets of business performance. Consequently, it can be inferred that MSMEs that adeptly utilize digital technologies are predisposed to attain enhanced performance. This study highlights digital technology's transformative impact on MSMEs, mediated by business strategy and technopreneurship.

Table 8. Adjusted R-Square

	R-square	R-square adjusted
Digital Technology	0.764	0.759
MSME Performance	0.791	0.785

Table 9. Direct Relationship among Variables

Hypothesis Path	β_{value}	T_{value}	P_{values}	Results
H1: Business Strategy → Digital Technology	0.379	3.651	0.000	Significant
H2: Technopreneurship → Digital Technology	0.527	5.599	0.000	Significant
H3: Business Strategy → MSME Performance	0.553	5.224	0.000	Significant
H4: Technopreneurship → MSME Performance	0.039	0.403	0.687	Not Significant
H5: Digital Technology → MSME Performance	0.338	3.549	0.000	Significant

Table 10. Indirect Relationship among Variables

Hypothesis Path	β_{value}	T_{value}	P_{values}	Results
H6: Business Strategy → Digital Technology → MSME Performance	0.128	2.105	0.025	Significant
H7: Technopreneurship → Digital Technology → MSME Performance	0.178	2.785	0.002	Significant

Digital Technology Mediates Influences of Business Strategy on MSME Performance

The PLS analysis provides strong evidence that digital technology acts as a mediator between business strategy and MSME performance. A significant βvalue of 0,128 (Pvalues < 0.05) indicates that a robust business strategy, coupled with effective digital technology adoption, leads to enhanced MSME success. The mediation analysis reveals that digital technology significantly strengthens the indirect relationship between business strategy, technopreneurship, and MSME performance. While the direct effect of business strategy on MSME performance is β = 0.553 (p = 0.000), the indirect effect through digital technology is β = 0.128 (p = 0.025), demonstrating that digital adoption enhances strategic effectiveness. Similarly, the direct effect of technopreneurship on MSME performance is insignificant (β = 0.039, p = 0.687), but the indirect effect via digital technology is β = 0.178 (p = 0.002), confirming its mediating role in translating technopreneurial efforts into improved performance. These findings corroborate previous research (He et al. 2023; Le et al. 2024; Chen et al. 2024), emphasizing the pivotal role of digital transformation in driving business performance. By harnessing digital tools and platforms, MSMEs can optimize operations, expand market reach, and elevate customer satisfaction, contributing to improved overall performance.

Digital Technology Mediates Influences of Technopreneurship on MSME Performance

Strong support from our PLS analysis confirms our seventh hypothesis: digital technology significantly mediates the relationship between technopreneurship and MSME performance. A β value of 0.178 (P = 0.005) indicates that digital technology enables technopreneurial activities to substantially enhance MSME performance. This finding echoes previous research by Oyero & Oyedele (2022) and Gebrekidan et al. (2023), which also highlights the positive effects of technopreneurship on MSMEs. Consequently, MSMEs that adopt technopreneurial practices and effectively utilize digital technology are better positioned for innovation, market adaptation, and sustained growth.

Managerial Implication

According to research, there are several important things the government and MSMEs should keep in mind. One key finding is that how well a business strategizes directly impacts its business model. This suggests that MSME owners need to be able to develop and improve their current ways of doing business. The research points to using digital tech, putting customers first, and building a culture of innovation as examples (Indriyaningrum & Fachrunnisa, 2021). Digital transformation isn't just a nice-to-have; it's now a crucial part of any business strategy. It helps MSMEs become more efficient, expand their market, and adapt quickly in our fast-changing digital economy. Think about it – a well-thought-out plan that includes things like e-commerce and using data to make decisions can boost customer engagement, make operations smoother, and drive long-term success. For SMEs looking to strengthen their business approach, adopting digital platform-based models, such as e-commerce or online marketplaces, is becoming a key recommendation (Riza et al. 2022). Furthermore, leveraging innovative tech like mobile applications or social media can open doors for developing fresh products and services (Yuningsih et al. 2023). The advice is clear: digitalizing business models can lead to smoother transactions, wider market access, and better service by effectively using customer data. This move doesn't just improve how things run and who businesses can reach; it also makes customers more satisfied, which ultimately helps MSMEs perform better overall (Sitorus et al. 2023).

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

In conclusion, this study aimed to clarify how business strategy and technopreneurship interact to influence MSME performance in Demak Regency, with digital technology acting as a central mediator. The research supports the idea that a clear business strategy is essential for MSMEs to adopt digital technology and improve their performance. Well-defined strategies seem to encourage greater uptake of digital tools, consistent with prior research. Additionally, the study found a strong positive relationship between technopreneurship and the adoption of digital technology, highlighting the significant role of technopreneurs in introducing and promoting technology use within the MSME sector. While our model didn't reveal a strong direct link between technopreneurship and MSME performance, we suspect that technopreneurship might influence MSME success in more subtle ways. Perhaps digital

technology acts as an intermediary, even if this differs from some previous research. Digital technology plays a vital role in shaping how well MSMEs perform today, highlighting its transformative power. The way digital technology connects business strategy, technopreneurship, and MSME performance offers a valuable new insight. These results strongly suggest that for MSMEs to thrive, a well-defined strategic vision must go hand-in-hand with the adoption of digital technologies. Moreover, policymakers should prioritize the creation of an ecosystem that nurtures digital skills, strengthens infrastructure, and encourages technopreneurial endeavors. To gain deeper insights, future research could usefully analyze the evolving nature of these relationships, considering the potential influence of firm size and industry sector.

Recommendations

To genuinely equip MSMEs in Demak Regency for what's coming, we need a real change in perspective about technology. It's more than just getting them on the internet; it's about empowering them to truly understand and leverage the digital world. Our research strongly suggests that when it comes to strategic growth, digital tools aren't a luxury they're an absolute necessity. So, it's really up to policymakers to develop digital strategies that are joined up and make sense. Think about things like making internet access more affordable, giving a real push to tech innovation through things that encourage it, and making sure everyone can get a good digital education. Setting up local centers for digital skills training and business incubators will also spark entrepreneurship and empower tech-minded individuals to turn their ideas into real-world impact. MSMES must look beyond the basic application of digital tools. They should strategically consider how these technologies can be fundamental in building value, enabling rapid adaptation to market dynamics, and fostering a culture of innovation. For tech innovators to thrive, governments and organizations must craft genuinely responsive policies, ensure funding is readily available, and drastically simplify the regulatory landscape they navigate. Future studies could take a closer look at how emerging technologies such as artificial intelligence, blockchain, and financial technology are being used or could be used by small businesses in local communities. Understanding this can provide valuable insights into how MSME development can become more inclusive, technology-oriented, and practically efficient, especially in settings where digital access and literacy remain uneven. By bringing together digital transformation with clear goals and entrepreneurial drive, everyone involved can help MSMEs move beyond just surviving and become powerful engines of economic growth for the region. This study suggests we need a comprehensive, locally relevant, and innovation-focused approach to digitally empower MSMEs, especially in today's unpredictable economic climate.

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