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The Impact of Digital Banking Technology Development on MSME Growth in Sidoarjo Regency

Pengaruh Perkembangan Teknologi Perbankan Digital terhadap Pertumbuhan UMKM di Kabupaten Sidoarjo

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ABSTRACT
This study aims to determine the effect of the development of digital banking technology on the growth of Micro, Small, and Medium Enterprises (MSMEs) in Sidoarjo Regency. Digital services such as mobile banking, QRIS, and online loans are considered capable of supporting MSMEs in running business operations more efficiently. This study applies a quantitative approach with a simple linear regression method. Data were collected through questionnaires distributed to 100 MSME players who have utilized digital banking services and were analyzed using SPSS software version 25. The results indicate that digital banking technology has a positive but insignificant effect on MSME development, with a significance value of 0.387 (> 0.05) and an R^2 of 0.008. This implies that the adoption of banking technology has not yet had a substantial impact on the growth of MSMEs in Sidoarjo.
Keywords: *Banking Technology, MSMEs, Digitalization, Sidoarjo*

ABSTRAK
Penelitian ini bertujuan untuk mengetahui pengaruh perkembangan teknologi perbankan digital terhadap pertumbuhan Usaha Mikro, Kecil, dan Menengah (UMKM) di Kabupaten Sidoarjo. Layanan digital seperti mobile banking, QRIS, dan pinjaman online dianggap mampu membantu UMKM dalam menjalankan operasional bisnis secara lebih efisien. Penelitian ini menggunakan pendekatan kuantitatif dengan metode regresi linier sederhana. Data dikumpulkan melalui kuesioner yang diberikan kepada 100 pelaku UMKM yang telah memanfaatkan layanan perbankan digital, kemudian dianalisis menggunakan perangkat lunak SPSS versi 25. Hasil penelitian menunjukkan bahwa teknologi perbankan digital berpengaruh positif namun tidak signifikan terhadap perkembangan UMKM, dengan nilai signifikansi sebesar 0,387 (> 0,05) dan R^2 sebesar 0,008. Hal ini berarti pemanfaatan teknologi perbankan belum memberikan dampak nyata terhadap pertumbuhan UMKM di Sidoarjo.
Kata Kunci: Teknologi Perbankan, UMKM, Digitalisasi, Sidoarjo

1. Introduction

The development of digital technology has transformed the global paradigm in various aspects of life, including the economic and financial services sectors. Digitalization facilitates public access to technology-based services such as banking, online payments, and digital investments. Bank Indonesia (2020) emphasizes that the digitalization of payment systems is a key strategy for promoting efficiency and financial inclusion. This is reinforced by the World Bank (2021), which states that the adoption of financial technology can stimulate economic growth, particularly in developing countries. In this context, digital transformation presents significant opportunities for business actors to expand market reach and enhance competitiveness, including for micro, small, and medium enterprises (MSMEs) (Lee & Trimi, 2023; Ahmad et al., 2020).

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Indonesia, the world's fourth most populous country, continues to face challenges in achieving equitable economic development. Data from the Ministry of Cooperatives and SMEs (2024) shows that MSMEs contribute approximately 61.07% to the national Gross Domestic Product (GDP) and absorb 97% of the workforce, highlighting their strategic role in sustaining economic stability (Saragih & Prasetyo, 2021; Pratiwi & Iskandar, 2021). In the digital era, MSME competitiveness is strongly influenced by their capacity to adopt new technologies (Kusumawardhani & Wibowo, 2021; Laksmi & Daryanto, 2023). Fitriani (2022) also notes that MSMEs play a critical role in driving local economic growth, but their performance is increasingly dependent on digital adaptation.

The rapid growth of internet users in Indonesia, reaching 230 million in January 2025 with a penetration rate of 74.6% (APJII, 2025), creates vast opportunities for accelerating MSME digital transformation. Digital banking technologies such as mobile banking, internet banking, and QR-based payment systems (QRIS) have been proven to speed up business cash flows and improve the accuracy of financial records (Wicaksono et al., 2022; Sari & Hidayat, 2021; Musyaffi et al., 2024). The ease of transactions also drives MSME revenue growth by enhancing consumer convenience (Aulia et al., 2022; Taufiq & Pabulo, 2023). Studies by Lestari & Kurniawan (2021) and Utami & Syafitri (2023) further confirm that financial technology can increase operational efficiency and market reach for MSMEs.

However, not all MSME actors are ready to embrace digital transformation. Barriers often include low digital literacy, limited technological infrastructure, and cybersecurity risks (Lestari & Ramadhan, 2020; Fachrunnisa et al., 2024). Many MSMEs still lack the knowledge to optimize financial technology for business performance (Utami & Syafitri, 2023; Rahman & Nuraini, 2022). Cultural and organizational factors can also hinder technology adoption (Saragih & Nopriadi, 2019; Prihadyanti et al., 2023). This shows a gap between the availability of technology and MSMEs' ability to adopt it, which can influence local economic growth (Herawati & Yuliana, 2020; Setyowati, 2022).

This gap is also evident in Sidoarjo Regency, one of the regions with the largest number of MSMEs in East Java, with more than 13,000 enterprises operating in processed food, leather crafts, garment manufacturing, and creative industries (Dinas Koperasi & UMKM Sidoarjo, 2023; Susanti & Nugroho, 2021). Its strategic location as an economic buffer for Surabaya makes Sidoarjo a dynamic economic hub (Susilo & Firmansyah, 2021). However, Nugroho & Hartono (2021) report that many MSMEs in the region have not yet optimally utilized digital banking services due to a lack of training and limited integration between financial institutions and local businesses. Digital banking, if properly adopted, could assist MSMEs in cash management, payment processing, and accessing loans based on digital transaction data (Novita & Wijayanti, 2020; Faradina & Ramdani, 2023).

From a research perspective, empirical studies on the influence of digital banking transactions on MSME development in Indonesia remain limited, especially in regions with economic characteristics like Sidoarjo. Previous research has largely focused on financial literacy (Putri & Santoso, 2021; Taufiq & Pabulo, 2023) or on specific aspects such as QRIS implementation or mobile banking (Musyaffi et al., 2024; Sari & Hidayat, 2021) without comprehensively linking digital banking transactions to MSME economic development in such strategic buffer regions. Furthermore, studies applying innovation adoption theories such as Rogers' Diffusion of Innovation (Kebede et al., 2021; Mwangi & Kariuki, 2015; Tadesse & Gillies, 2022) to the MSME banking context in Indonesia are still scarce, indicating a clear research gap.

The novelty of this study lies in its integrative approach, which measures the extent to which the intensity and quality of digital banking transactions affect MSME development indicators—such as revenue growth, operational efficiency, and market expansion—using Sidoarjo Regency as a case study. It also examines both supporting and inhibiting factors for the adoption of digital banking technologies, offering a more comprehensive view compared to earlier studies that tended to be partial (Maulana et al., 2025; Rahman & Nuraini, 2022). The

focus on Sidoarjo's strategic role as an economic buffer for Surabaya adds an applied dimension to the findings, making them relevant for other regions with similar economic dynamics.

Based on this background, the objective of this research is to analyze the influence of digital banking transactions on the economic development of MSMEs in Sidoarjo Regency. The findings are expected to contribute to academic literature and offer practical recommendations for local governments, banking institutions, and MSME actors in formulating strategies to strengthen the digital economy. Ultimately, this study seeks to support the acceleration of MSME digital transformation in strategic regional economies, thereby enhancing their resilience and competitiveness in the evolving digital landscape.

2. Research methods

This study employs a quantitative method with a causal-associative approach to examine the influence of digital banking technology developments on the growth of micro, small, and medium enterprises (MSMEs) in Sidoarjo Regency. Primary data were obtained through a Likert-scale questionnaire, complemented by secondary data from official documentation. The study population comprised MSMEs in Sidoarjo Regency that actively utilize digital banking services such as mobile banking, internet banking, QRIS, and digital lending. Using a purposive sampling technique, 100 respondents were selected based on the criteria of having operated for at least one year and having used digital banking services. Data analysis was conducted using simple linear regression in SPSS, preceded by validity and reliability testing, as well as classical assumption tests including normality, heteroscedasticity, and autocorrelation. The regression model applied was Y=a+bX+eY=a+bX+e, where YY represents MSME development and XX represents the development of digital banking technology. A t-test was employed to assess the statistical significance of the independent variable's effect, while the coefficient of determination (R^2) was calculated to determine the extent to which variations in YY could be explained by XX. The research was conducted between March and May 2025, aiming to provide empirical and measurable insights into the contribution of banking digitalization to regional MSME growth.

3. Results and Discussion

Validity and Reliability Test

Table 1. Results of Variable Validity Test

Variables	Item	r count	Sig.	Information
Development	X1	0.871	0,000	Valid
Technology	X2	0.861	0,000	Valid
Digital	X3	0.882	0,000	Valid
Banking	X4	0.891	0,000	Valid
(X)	X5	0.863	0,000	Valid
Development	Y1	0.871	0,000	Valid
MSMEs (Y)	Y2	0.903	0.001	Valid
	Y3	0.905	0,000	Valid
	Y4	0.928	0,000	Valid
	Y5	0.882	0,000	Valid

Source: Data processed by SPSS (2025)

The results of the validity test show that all items in the variables of digital banking technology development and MSME development have a calculated r value of > 0.1654 with a significance of < 0.05, so they are declared valid.

Table 2. Reliability Test Results

Variables	Cronbach's Alpha	Information
Development Digital Technology Banking (X)	0.921	Reliable
Development of MSMEs (Y)	0.939	Reliable

Source: Data processed by SPSS (2025)

The reliability test results yielded Cronbach's Alpha values of 0.921 for variable X and 0.939 for variable Y, both exceeding the minimum limit of 0.70. Thus, the research instrument was declared reliable and suitable for use.

Classical Assumption Test

1) Normality Test:

Table 3. Results of the Kolmogorov Smirnov normality test

		Unstandardized Residual
N		100
Normal Parametersa,b	Mean	,0000000
	Std. Deviation	3.49383813
Most Extreme Differences	Absolute	.076
	Positive	.076
	Negative	-.055
Test Statistics		.076
Asymp. Sig. (2-tailed)		.159c

Source: Data processed by SPSS (2025)

The Kolmogorov-Smirnov Asymp. Sig. value is 0.159 (> 0.05), and the P-Plot graph shows the data distribution following a diagonal line. This indicates that the data is normally distributed.

2) Heteroscedasticity Test:

Table 4. Results of the Heteroscedasticity test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,756	1,035		2,663	.00
	X	-.001	.062	-.001	-.014	.989

Source: Data processed by SPSS (2025)

The significance value is 0.989 (> 0.05) and the scatterplot graph does not show a particular pattern, so **heteroscedasticity does not occur.

Simple Linear Regression Test

Table 5. Simple regression test results

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14,179	1,684		8,420	.000
	X	.088	.101	.087	.869	.387

Source: Data processed by SPSS (2025)

The regression model is obtained as follows:

Y = 14.179 + 0.088X

These results show a positive relationship between the use of digital banking technology (X) and the development of MSMEs (Y), although the effect is not statistically significant.

t-test

Table 6. Results of the t-test

Model		t	Sig.
1	*(Constant)*	8,420	.000
	X1	.869	0.387

Source: Data processed by SPSS (2025)

The significance value of 0.387 (> 0.05) indicates that there is no significant influence between variable X and Y partially.

Coefficient of Determination (R^2)

Table 7. Results of the coefficient of determination test

Model	R	*R Square*	*Adjusted R Square*	*Standard Error of the Estimate*
1	,087a	,008	-.002	3,512

Source: Data processed by SPSS (2025)

An R^2 value of 0.008 indicates that only 0.8% of the variation in MSME development can be explained by digital banking technology. The remaining 99.2% is influenced by factors outside the model.

Discussion

The performance of MSMEs in Sidoarjo Regency reflects a relatively stable business environment, as most respondents in this study had been operating for more than a year. This finding indicates that local micro and small enterprises have been able to sustain their operations despite various economic challenges, supporting the view that MSMEs play a critical role in maintaining regional economic resilience (Fitriani, 2022; Susanti & Nugroho, 2021). However, the adoption of digital technology, particularly in the financial sector, has not been fully optimized. Many MSMEs still rely on conventional management methods, with limited integration of digital tools for strategic business expansion, consistent with prior findings on the uneven pace of digital transformation among small enterprises in Indonesia (Lestari & Ramadhan, 2020; Kusumawardhani & Wibowo, 2021).

In terms of digital banking utilization, most MSMEs in the study area have adopted mobile banking, internet banking, and QRIS as part of their daily business transactions. These technologies are mainly used for basic activities such as fund transfers, bill payments, and

customer transactions, rather than for more strategic purposes like investment planning, credit risk management, or integration with accounting systems. This pattern of shallow adoption reflects the gap between digital access and meaningful digital transformation, which is consistent with the diffusion of innovation theory where early adoption may be limited to low-complexity features (Ahmad, Ramayah, & Halim, 2020; Kebede, Zielinski, & Wondimagegn, 2021; Lee & Trimi, 2023). Moreover, studies show that the absence of adequate training and technical support limits the ability of MSMEs to exploit digital banking for broader operational efficiency (Laksmi & Daryanto, 2023; Wicaksono, Aditya, & Zulfikar, 2022).

The statistical analysis in this study indicates that the relationship between digital banking technology and MSME development in Sidoarjo Regency is positive but not statistically significant, with a weak regression coefficient. This result suggests that while digital banking services are present, their impact on measurable business growth is minimal. Factors such as low digital literacy, lack of tailored financial products, and inadequate integration of digital banking into core business processes contribute to this limited effect (Aulia et al., 2022; Taufiq & Pabulo, 2023; Pratiwi & Harjanti, 2022). The findings align with previous research showing that digital finance can only enhance MSME performance when coupled with capacity-building programs, improved access to capital, and policy interventions that encourage deeper digital engagement (Hapsari & Rahman, 2022; Nugroho & Hartono, 2021; Maulana, Ruhamak, & Putro, 2025).

Overall, this study reinforces the notion that technology adoption alone does not automatically translate into improved business performance. The effectiveness of digital banking in driving MSME growth depends on the depth of adoption, the availability of supportive infrastructure, and the alignment of technological solutions with the specific needs of small businesses. As emphasized by prior studies, successful digital transformation in the MSME sector requires a holistic approach that combines financial literacy, innovation adoption strategies, and sustained institutional support (Putri & Santoso, 2021; Setyowati, 2022; Suryani & Yulianto, 2021). Without such a framework, digital banking may remain an underutilized tool, providing convenience in transactions but failing to unlock its full potential for sustainable MSME development.

4. Conclusion

Based on the analysis and discussion, this study concludes that the performance of MSMEs in Sidoarjo Regency is relatively strong, as reflected in the increasing number of operating businesses and the dominance of micro-enterprises as a key pillar of the local economy. While MSMEs have begun to adopt digital banking technologies—such as mobile banking, QRIS, and digital lending services—the adoption remains uneven and is largely limited to basic transactional functions.

The statistical analysis reveals that the use of digital banking technology does not have a statistically significant effect on MSME development, although the relationship is positive in direction. This suggests that the current utilization of digital banking services has yet to deliver a substantial impact on business growth. Theoretically, these findings reinforce prior research indicating that technology adoption alone is insufficient without user readiness in terms of financial and digital literacy, as well as the availability of adequate technological infrastructure. Consequently, this study provides both empirical and theoretical contributions to understanding the interplay between financial service digitalization and the strengthening of the MSME sector at the local level.

In light of these findings, it is recommended that MSMEs in Sidoarjo Regency enhance their understanding and capabilities in leveraging digital banking services. The use of technologies such as mobile banking, QRIS, and internet banking should be optimized not only for transaction acceleration but also for strengthening financial record-keeping, expanding

market reach, and improving access to business financing. Active participation in training programs and outreach initiatives on financial digitalization is essential to improve adaptability to technological change and to enhance competitiveness in the digital economy.

For future research, it is advisable to incorporate additional, more complex variables such as financial literacy, product innovation, technological capability, or government policy support, in order to provide a more comprehensive analysis. Employing qualitative or mixed-methods approaches could yield deeper insights into behavioral factors, structural barriers, and social dynamics influencing technology adoption by MSMEs. Furthermore, comparative studies across regions could help identify success patterns and common obstacles in implementing digitalization within the MSME sector, thereby enabling the formulation of more targeted and evidence-based policy recommendations.

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