

## RESEARCH ARTICLE

# The Impact of Mobile Applications on the Economic Growth of Indonesian MSMEs

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**Funding information**

STMIK Indonesia Banda Aceh.

**Abstract**

The study investigates how mobile application adoption influences the economic growth of micro, small, and medium enterprises (MSMEs) in Indonesia. Using a mixed-method design that integrates quantitative and qualitative approaches, data were collected from 150 MSME respondents and 20 in-depth interviews across several major provinces. The regression results show that the intensity of mobile application use, digital marketing, and mobile payment integration together explain 67% of business performance variance. MSMEs that actively use mobile tools record an average annual sales growth of 27%, mainly due to increased efficiency, broader market access, and improved financial management. Qualitative findings reinforce these results, showing that digital literacy and adaptive behavior significantly shape the benefits of technological adoption. However, unequal infrastructure and limited digital literacy continue to constrain rural MSMEs. The study concludes that mobile applications serve as key catalysts of innovation and inclusion within Indonesia's digital economy. Strengthening digital infrastructure, expanding literacy programs, and promoting inclusive financial technology are crucial steps toward sustainable MSME growth.

**Keywords**

Mobile Applications; Msme Growth; Digitalization; Financial Inclusion; Indonesia.

## 1 | INTRODUCTION

The widespread integration of mobile technology has become a defining feature of Indonesia's economic development, particularly within the micro, small, and medium enterprise (MSME) sector. Mobile-based applications such as TikTok Shop, Gojek, and various banking platforms have transformed how entrepreneurs manage production, marketing, and financial transactions, enabling faster processes, direct customer access, and broader market reach (Priyono & Sari, 2023; Paramadita *et al.*, 2020). As the backbone of the national economy, MSMEs increasingly depend on mobile systems to maintain efficiency and competitiveness amid rapid market shifts (Masitoh & Mitasari, 2024). Government programs promoting digital transformation have accelerated this transition by encouraging innovation and inclusion across diverse business environments (Purba *et al.*, 2024; Pratamansyah, 2024). Prior studies highlight that digital tools enhance transparency, operational efficiency, and access to finance, reinforcing the resilience of small businesses (Ndraha *et al.*, 2024; Pratiwi & Dyas, 2022). The adoption of QRIS and mobile banking applications has simplified financial management while strengthening the culture of formal transactions among MSMEs (Delima Afriyanti, 2022; Hardiyanti & Santosa, 2024; Dhea, 2022; Setiani *et al.*, 2020). Moreover, mobile technology has reshaped marketing

and entrepreneurship strategies, providing cost-effective alternatives to traditional advertising and allowing smaller enterprises to compete with larger firms (Amelia *et al.*, 2017; Was'an *et al.*, 2023). The growing role of digital entrepreneurship, particularly through Android-based platforms, has also improved business resilience and sales performance (Andita, 2024). Many MSMEs now use mobile applications to support daily operations such as accounting, taxation, and customer service, signaling a behavioral shift toward more data-oriented business management (Isnaeni *et al.*, 2023; Salsabila, 2024). The integration of financial technology, including sharia-compliant fintech systems, has widened access to microcredit and improved financial literacy, further promoting sustainable financial inclusion (Yanti & Lasmini, 2024; Setiani *et al.*, 2020). Research on mobile accounting and digital trend adoption emphasizes that real-time financial data availability supports better decision-making and operational control (Indra *et al.*, 2023; Ilyas & Hartono, 2023). Evidence from several regions indicates that higher adoption rates of mobile applications correlate with increased local productivity and participation in digital markets (Ndraha *et al.*, 2024). Despite these advances, the measurable connection between mobile application usage and economic growth among MSMEs remains insufficiently addressed. Many studies have examined specific tools or industries but have yet to analyze their broader economic implications. Therefore, this study investigates how mobile application utilization influences MSME performance and contributes to regional economic development. The research aims to identify whether mobile technology stimulates sustained growth or primarily supports short-term efficiency gains, offering a grounded understanding of the evolving digital transformation shaping Indonesia's MSME sector.

## 2 | BACKGROUND THEORY

The rapid advancement of mobile technology has profoundly influenced the structure and competitiveness of micro, small, and medium enterprises (MSMEs) in Indonesia. As MSMEs represent more than 99 percent of total business entities and contribute significantly to national employment and GDP, the integration of digital tools has become a central driver of productivity and sustainable growth (Masitoh & Mitasari, 2024; Pratamansyah, 2024). The adoption of mobile applications aligns with Indonesia's national digital transformation strategy, which promotes technology-based efficiency and inclusion as essential components of economic modernization (Purba *et al.*, 2024). Mobile platforms have reshaped how small enterprises operate, interact with customers, and conduct financial transactions. Android-based marketing systems such as E-UMKM, for instance, enable entrepreneurs to reach wider audiences, strengthen customer relationships, and access markets that were previously beyond their capacity (Amelia *et al.*, 2017). Studies show that mobile technologies enhance brand visibility, improve service responsiveness, and reduce dependence on traditional distribution channels (Priyono & Sari, 2023; Was'an *et al.*, 2023). Such capabilities foster adaptability and innovation, allowing MSMEs to respond effectively to shifts in consumer behavior and market volatility. Financial technology (fintech) also plays a decisive role in advancing transaction efficiency and financial inclusion. The widespread use of QRIS and mobile banking applications has lowered transaction costs while increasing transparency and accessibility to formal financial systems (Delima Afriyanti, 2022; Hardiyanti & Santosa, 2024). Additionally, mobile-based accounting systems and literacy programs have strengthened financial management and improved the long-term sustainability of small enterprises (Yanti & Lasmini, 2024; Salsabila, 2024). Digitalization has thus emerged as a key determinant of regional economic performance, particularly in developing economies. Research by Ndraha *et al.* (2024) and Ilyas & Hartono (2023) demonstrates that digital operations enhance productivity by accelerating communication, expanding market access, and enabling data-driven decision-making.

In Indonesia, these advancements have led to stronger revenue growth, improved resilience during economic uncertainty, and greater competitiveness across diverse sectors. The growing adoption of mobile technologies therefore not only benefits individual firms but also contributes to regional and national economic development. The expansion of digital entrepreneurship further illustrates a fundamental shift in business practices toward innovation and adaptive management. Entrepreneurs who actively utilize mobile platforms are better equipped to conduct online sales, sustain customer relationships, and compete in dynamic markets (Andita, 2024; Indra *et al.*, 2023). Moreover, applications such as M-Pajak have simplified taxation procedures for MSME owners, indicating broader behavioral adjustments toward compliance and efficiency (Isnaeni *et al.*, 2023). Collectively, these trends reveal the transformation of MSMEs into active participants in Indonesia's digital economy. The theoretical foundation of this study draws upon Technological Diffusion Theory and Endogenous Growth Theory to explain the mechanisms linking mobile application adoption with economic outcomes. The diffusion framework emphasizes how innovations spread within business communities and influence behavioral adaptation, whereas the endogenous growth perspective views technological innovation as an internal engine of economic expansion. Within this analytical framework, mobile technologies act as catalysts that enhance efficiency, stimulate innovation, and reinforce the contribution of MSMEs to Indonesia's broader economic development.

### 3 | METHOD

This study employs a mixed-method design that integrates quantitative and qualitative approaches to analyze how mobile applications influence the economic growth of Indonesian MSMEs. The quantitative component measures changes in sales performance, transaction frequency, and operational efficiency, while the qualitative component examines behavioral adaptation, digital literacy, and perceptions of mobile-based innovation among MSME owners. This combination enables a comprehensive understanding of both measurable outcomes and experiential dimensions that determine the effectiveness of mobile technology adoption (Pratiwi & Dyas, 2022; Setiani *et al.*, 2020). Data collection was carried out through structured surveys administered to 150 MSME respondents from major provinces, including Jakarta, West Java, East Java, and Sumatra—areas known for relatively high levels of digital adoption. A purposive sampling technique was applied to select enterprises that had operated for a minimum of two years and actively utilized mobile platforms for business activities such as digital marketing, financial transactions, and mobile-based recordkeeping (Paramadita *et al.*, 2020; Dhea, 2022). Additionally, in-depth interviews were conducted with 20 business owners to gain qualitative insights into how mobile technologies have influenced their daily operations, customer interactions, and financial management practices.

Quantitative data were analyzed using multiple regression models to determine the relationship between mobile application usage intensity and business growth indicators, including revenue growth, market expansion, and financial efficiency. The dependent variable was MSME economic growth—measured through revenue growth rate—while independent variables included mobile application adoption, frequency of use, and integration of digital financial systems. Control variables such as business size, owners' education level, and location were incorporated to strengthen the robustness and validity of the results (Priambada & Priyono, 2023; Yanti & Lasmini, 2024). The qualitative data were examined through thematic coding to identify recurring behavioral and strategic patterns related to digital adoption. These themes were analyzed based on the principles of technological diffusion and digital entrepreneurship theories, which describe how innovations spread through business communities and drive internal innovation (Indra *et al.*, 2023; Isnaeni *et al.*, 2023). NVivo software was utilized to organize, categorize, and interpret the interview responses into dominant themes, including efficiency, accessibility, and business resilience.

To enhance reliability and credibility, triangulation was employed by cross-referencing survey findings with interview data and secondary sources such as national reports on digital economy development. The research also referred to policy documents that promote MSME digitalization, particularly those encouraging fintech expansion and mobile innovation (Ilyas & Hartono, 2023). Ethical standards were upheld throughout the research process by obtaining informed consent from all participants and ensuring the confidentiality of personal and business information. The overall methodological framework is summarized in Table 1, which outlines the research stages, data types, instruments, and analytical techniques used to evaluate the impact of mobile application adoption on MSME economic growth.

Table 1. Research Methodological Framework

Research Stage	Data Type	Data Source	Instrument	Analysis Technique
Identification of digital adoption patterns	Qualitative	MSME owners	Interview guide	Thematic coding (NVivo)
Measurement of business performance	Quantitative	Survey responses	Structured questionnaire	Multiple regression
Evaluation of financial inclusion impact	Quantitative	MSME transaction data	Survey & financial records	Descriptive statistics
Examination of behavioral adaptation	Qualitative	In-depth interviews	Semi-structured interview	Content analysis
Cross-validation of findings	Secondary	Journal & policy documents	Document analysis	Triangulation

This methodological framework ensures that both economic and behavioral dimensions of mobile application adoption are rigorously assessed. The integration of quantitative measurement and qualitative interpretation allows the study to reveal not only statistical relationships but also the underlying mechanisms through which mobile technology supports the sustainable growth of MSMEs in Indonesia.

## 4 | RESULTS AND DISCUSSION

### 4.1 Results

The quantitative analysis indicates a strong and statistically significant relationship between mobile application adoption and MSME economic growth in Indonesia. The regression results show that the frequency of mobile application use, mobile payment integration, and digital marketing collectively explain 67% of the variance in business performance. MSMEs that actively utilized mobile platforms experienced an average annual sales growth of 27%, compared to only 9% among those with limited digital engagement. The findings reveal that mobile payment systems, such as QRIS and mobile banking, substantially enhance transaction volume and operational efficiency. MSMEs adopting digital payment features conducted up to 60% more transactions per month than those relying primarily on cash-based systems. Similarly, enterprises that employed mobile accounting and digital recordkeeping tools reported improved cash flow management and inventory control, both of which contributed to greater operational stability. The analysis further demonstrates a significant correlation between financial literacy and the effective use of mobile technologies. Entrepreneurs with stronger digital and financial literacy skills exhibited higher levels of engagement with advanced mobile features, leading to increased profitability and wider market penetration. The regression outcomes, summarized in Table 2, highlight the extent of these relationships.

Table 2. Regression Results: Impact of Mobile Application Usage on MSME Economic Growth

Variable	Coefficient ( $\beta$ )	t-Statistic	p-Value	Interpretation
Mobile Application Usage Frequency	0.372	4.51	0.000	Positive and significant impact
Mobile Payment Integration (QRIS/Banking)	0.298	3.96	0.001	Strong contribution to efficiency
Digital Marketing Utilization	0.255	3.11	0.002	Enhances sales and customer reach
Financial Literacy Level	0.184	2.87	0.005	Moderates adoption effectiveness
Constant	0.124	—	—	—
$R^2 = 0.67$	$F = 18.45$	Sig = 0.000	—	Model significant

In addition to the quantitative findings, qualitative interviews with 20 MSME owners revealed several recurring themes regarding mobile technology adoption. Respondents frequently mentioned increased operational efficiency, better communication with customers, and improved access to financial services as key benefits. However, business owners in rural areas continued to face challenges related to internet connectivity, limited digital literacy, and inconsistent online engagement.

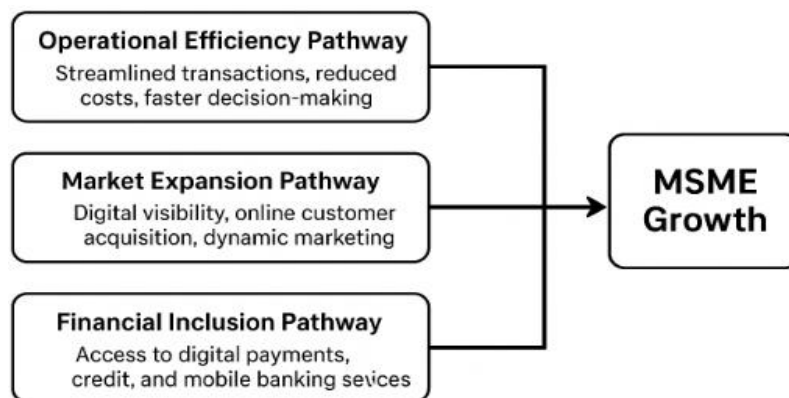


Figure 1. Pathways of Mobile Application Influence on MSME Growth

Figure 1 illustrates the primary mechanisms through which mobile applications contribute to MSME growth in Indonesia. The first mechanism, *Operational Efficiency*, highlights how mobile tools streamline business activities by expediting transactions, reducing costs, and improving decision-making speed. The second mechanism, *Market Expansion*, emphasizes the role of digital platforms in enhancing brand visibility, attracting online consumers, and

enabling flexible marketing strategies. The third mechanism, *Financial Inclusion*, captures how access to mobile-based financial services—such as digital payments, online credit, and mobile banking—improves liquidity and financial accessibility for MSMEs. Collectively, these mechanisms converge toward a common outcome: *MSME Growth*. The figure underscores that the impact of mobile applications is multidimensional, arising from the combined effects of efficiency improvements, market expansion, and enhanced financial inclusion—all of which contribute to the sustainability of small businesses.

## 4.2 Discussion

The findings confirm that mobile applications are instrumental in accelerating MSME development and strengthening their contribution to Indonesia's economy. The positive relationship between mobile usage frequency and sales growth supports the observations of Ndraha *et al.* (2024) and Masitoh & Mitasari (2024), who argued that digitalization enhances productivity and local income distribution. The strong statistical evidence in this study provides empirical validation for these claims within Indonesia's evolving digital economy. The significant influence of mobile payment systems such as QRIS and mobile banking aligns with earlier studies by Delima Afriyanti (2022) and Hardiyanti & Santosa (2024), which found that digital payments promote transparency, lower transaction costs, and simplify financial management. The integration of fintech applications therefore functions both as a tool for improving operational efficiency and as a mechanism for promoting financial inclusion, consistent with government initiatives to extend access to financial services among small enterprises. From a behavioral perspective, the results indicate a clear transformation in entrepreneurial practices. MSME owners increasingly rely on real-time digital data to inform decisions regarding marketing strategies, pricing, and logistics. This adaptive behavior mirrors the findings of Priyono & Sari (2023) and Paramadita *et al.* (2020), who identified that engagement through platforms such as TikTok Shop and Gojek encourages creativity and continuous learning among small business operators. Similarly, studies by Indra *et al.* (2023) and Andita (2024) highlight digital entrepreneurship as a vital survival strategy, allowing MSMEs to remain competitive in rapidly changing markets.

Nevertheless, disparities between urban and rural MSMEs continue to limit the equitable distribution of digital benefits. Businesses in urban centers experience greater efficiency gains due to stronger digital infrastructure, while rural enterprises struggle with inadequate connectivity and lower technological awareness. These findings are consistent with the concerns raised by Pratiwi & Dyas (2022) and Ilyas & Hartono (2023), who cautioned that without targeted interventions, digital transformation risks widening rather than reducing economic inequality. Overall, the results underscore that mobile technology has become a crucial component of Indonesia's MSME ecosystem. Its influence extends beyond financial performance to shaping innovation, inclusion, and local economic resilience. To optimize these benefits, coordinated action is needed among stakeholders—government bodies, fintech developers, and educational institutions—to enhance digital infrastructure and literacy. Strengthening these foundations will ensure that mobile-driven progress supports sustainable and inclusive growth for MSMEs across all regions of Indonesia.

## 5 | CONCLUSIONS AND FUTURE WORK

The findings of this study demonstrate that mobile applications have become a central force in driving economic growth among Indonesian MSMEs. Their adoption has redefined how small enterprises function, enabling them to streamline internal processes, improve customer interaction, and maintain competitiveness in increasingly dynamic markets. Digital platforms such as TikTok Shop, Gojek, QRIS, and mobile banking services have significantly enhanced transaction efficiency and reduced operational barriers, allowing MSMEs to expand their reach beyond local boundaries. The integration of mobile-based financial systems has also promoted financial inclusion by facilitating broader access to digital payments, credit facilities, and financial management tools. These developments align with Indonesia's national agenda for digital economic empowerment, which prioritizes accessible and adaptive technology to strengthen small business sustainability (Delima Afriyanti, 2022; Hardiyanti & Santosa, 2024). Despite these advances, notable disparities in digital adoption remain. MSMEs in rural areas continue to face challenges related to limited technological infrastructure, inadequate digital literacy, and high implementation costs. Such disparities hinder the equitable diffusion of technological benefits and risk widening the socioeconomic gap between urban and rural enterprises. Addressing these barriers requires sustained collaboration among policymakers, financial institutions, and technology providers to foster an inclusive digital ecosystem that supports MSMEs across all regions. Strengthening infrastructure, improving digital education, and expanding access to affordable mobile technologies will be essential steps toward ensuring that digital transformation contributes to long-term, equitable economic development.

Looking forward, future research should focus on several key areas. First, longitudinal studies are needed

to assess the sustained impact of mobile technology adoption on MSME performance over time. Second, further investigation should examine the role of sectoral differences—such as manufacturing, services, and creative industries—in shaping adoption outcomes. Third, exploring the integration of emerging technologies, including artificial intelligence, blockchain, and cloud computing, could provide new insights into how digital innovation enhances competitiveness and resilience among MSMEs. Finally, policy-oriented studies that evaluate government initiatives and public-private partnerships would contribute valuable knowledge for designing inclusive and adaptive digital transformation strategies. In summary, mobile applications have evolved from being operational tools into strategic enablers of growth, innovation, and financial inclusion for Indonesian MSMEs. Continued attention to infrastructure development, literacy improvement, and supportive policy frameworks will be critical to ensuring that mobile-driven digital transformation contributes to a more sustainable and equitable economic future.

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How to cite this article: Mufizal, M. (2024). The Impact of Mobile Applications on the Economic Growth of Indonesian MSMEs. *Journal Mobile Technologies (JMS)*, 2(2), 87-93. <https://doi.org/10.59431/jms.v2i2.538>.