

UTILIZATION OF DIGITALIZATION AND INNOVATION FOR THE DEVELOPMENT OF MSMES IN THE DIGITAL ERA

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Abstract

The purpose of this study is to investigate the role of digitalization and innovation in the growth and development of MSMEs. Digitalization is essential in the global era, where human resources are required to adapt to digitalization developments. Innovation is closely related to digitalization in its optimization. However, in reality, this has not yet occurred comprehensively in various aspects of MSMEs. The background to this research is the many MSMEs that still lack adequate capabilities in terms of digitalization and innovation. The research method employed is a literature review, examining previous studies that analyze the use of digitalization and innovation for the development of MSMEs. The results show that the use of digitalization and innovation has a significant influence on improving MSME development. Indicators and aspects of digitalization are also necessary for more optimal MSME development. The recommendations from this study are the need for collaboration, training, and digital literacy in innovation and digitalization as an effort to develop MSMEs that are globally competitive in the digital era.

Keywords: Digitalization, Innovation, MSME Development

1. Introduction

Micro, Small, and Medium Enterprises (MSMEs) have an important role in the country's economy, including in Indonesia. This sector not only functions as bone back in absorption power work, but also contributes to the Gross Domestic Product (GDP) and equity income. Digitalization can open opportunities in the development of MSMEs, such as market expansion, increased operational efficiency, and access to financing. Research results show that the adoption of digital technology can increase MSME competitiveness and significant contribution to the growth national economy. Digitalization has become an integral part of the transformation of businesses in various sectors, including Micro, Small, and Medium Enterprises (MSMEs). Digitalization has become a key element in the transformation of business, in particular for Micro, Small, and Medium Enterprises (MSMEs). The COVID-19 pandemic has pushed many MSMEs to switch to digital platforms as a method to survive and thrive. This creates an opportunity for innovation in business and marketing models (Wilestari et al., 2023).

With digitalization, MSMEs can expand their market reach in a way significantly. The use of online platforms allows them to reach consumers in various previous locations, at no affordable (Pramesworo et al., 2024). Digitalization supports the improvement of efficiency in business processes, such as recording finance and managing inventory, which were previously done manually. For example, businesses like Sanfresh have succeeded in implementing a system for recording finance digitally that makes it easier to analyze sales (Harto et al., 2023).

However, facts in the field show that only around 20% of MSMEs have adopted digital technology, some big caused by a lack of knowledge and skills among MSME actors. This shows the need for training and improving competence in the use of digital (Arnu et al., 2024). Many MSMEs face challenges related to internet quality and accessibility to adequate technology. This can hinder their ability to operate in a way effective in the digital (Wilestari et al., 2023). With many businesses that are switching to digital, competition becomes more intense. MSMEs need to keep going, innovate, and adapt with market trends to still compete (Pramesworo et al., 2024).

In line with digitalization, innovation does change goods in the form of addition or extension of products and services, marketing, and changes intended for changing devices for a specific organization in the context of MSMEs is something new. By applying innovation here, it is hoped that MSMEs can repair and improve the various efforts they make, create new development for society, improve the market for consumers, enlarge the capabilities and coverage efforts made, as well as strengthen the Power competition. Various studies show that innovation in many MSMEs relates to the level of growth, profitability, and resilience to economic turmoil. Research (Putri & Widadi, 2024) shows that Innovation plays a crucial role in the development of MSME business models in the digital era. With innovation, MSMEs can increase their Power competitiveness, operational efficiency, and market penetration. However, for reaching effective innovation, support from various parties is very necessary. Research (Sendy Pratama et al., 2024) implementation of innovation and utilization strategies, technology accurate information can have an impact on improving performance and capabilities of MSMEs, as well as allowing they can compete and grow, become more successful both in the era of digitalization and globalization.

In the middle role of innovation. In this regard, MSMEs are faced with various problems that hinder growth and power competition, such as insufficient capital that is not sufficient, limited access to the market, low-level education and skills power work, and high-level competition. Amid market shifts and developments, fast technology, capabilities, adaptation, and innovation carried out by MSMEs have become determinant in sustainability in business. The risks faced without existing innovation are stagnation, loss of relevance, and failure to utilise opportunities presented changing landscape of business.

Related to the matter said, although potential innovation in pushing development of MSMEs is considered big, a lot of MSME actors who even not yet adopted innovation do not consider innovation is important thing. Often, constraints like a lack of knowledge for innovation, access to technology and information, as well as management risk, become the main inhibitors. This is ultimately making the implementation of innovation for the development of MSMEs experience stagnation. Focus mainly on studying. There are find factors, drivers, and inhibitors of innovation as well as formulate proactive steps to increase the Power of innovations owned by MSMEs. Understanding the issue gives room for designing appropriate policies and programs for the empowerment of MSMEs in the future.

Digitalization and innovation are important steps for MSMEs to survive and thrive in this modern era. Even though there is a significant challenge, the opportunities offered by digital transformation can help MSMEs improve their operational competitiveness and efficiency operational they. Therefore, it is necessary to conduct research related to developing digitalization and innovation so that MSMEs can develop optimally. This

research was done to analyze the utilization of digitalization and innovation in the development of MSMEs in the current digital era.

2. Theoretical Background

2.1 Innovation as a Strategic Driver for MSMEs

Innovation is widely recognized as a critical driver for the competitiveness and sustainability of MSMEs. In the digital era, innovation extends beyond new products to encompass novel business models, processes, and marketing strategies enabled by technology. According to González-Varona et al. (2021), sustainable digitalization within businesses is fundamentally underpinned by organizational learning and continuous knowledge development, suggesting that innovation is not merely a technological output but a capability cultivated through learning. This is corroborated by empirical findings from Chen and Guo (2024), who demonstrate that advancements in financial technology (fintech) significantly catalyze innovative activities among micro and small enterprises (MSEs), particularly by facilitating investments in research & development (R&D) and enhancing human resource capabilities. Thus, innovation in the MSME context is a multidimensional construct, driven by both external technological enablers and internal learning processes.

2.2 Digitalization as a Transformative Enabler

Digitalization refers to the comprehensive process through which MSMEs adopt and integrate digital technologies to transform their operations, strategies, and value creation. It is a foundational enabler for modern business development. A meta-analysis by Nazaruddin et al. (2024) synthesizes that digital platforms are instrumental for MSMEs in three primary areas: (1) expanding market reach beyond geographical constraints, (2) automating operational processes to improve efficiency, and (3) facilitating data-driven decision-making. The roles of digitalization can be further distilled into two key functions: operational and strategic. Operationally, it automates tasks and improves efficiency in marketing, data analysis, internal communication, and customer service (Nambisan et al., 2019). Strategically, it enables business model innovation and supports international expansion (Dung & Dung, 2024).

Specific technologies act as key drivers of this transformation. Cloud computing, e-commerce platforms, artificial intelligence (AI), and big data analytics are identified as pivotal in creating structural and strategic changes within small and medium-sized businesses, allowing them to compete more effectively in a globalized market (Kraus et al., 2021).

2.3 The Synergistic Relationship: Digitalization and Innovation

The literature reveals a synergistic, rather than independent, relationship between digitalization and innovation. Digital technologies provide the tools and infrastructure necessary for innovation, while the drive to innovate often dictates the direction and depth of digital adoption. Dung and Dung (2024) conceptualize this interplay by proposing an innovation model as a mediator between digital technology adoption and international expansion. Their research recommends an iterative and strategic approach to digitalization, where technology adoption is continuously aligned with and refined by innovative business objectives. This suggests a dynamic cycle where digital capabilities enable innovation, and the pursuit of innovation, in turn, demands more sophisticated digital solutions.

2.4 Future Research Directions and Emerging Considerations

While the benefits are clear, the path to effective digitalization and innovation is fraught with challenges that open avenues for future research. Key directions identified in the literature include:

- 1) Capability Development: Investigating effective strategies and educational programs to enhance the digital literacy and innovative capacities of MSME owners and employees (Kraus et al., 2021).
- 2) Technology Adoption: Exploring the adoption and impact of next-generation technologies, such as blockchain for supply chain transparency or smart contracts, on MSME operations and trust mechanisms.
- 3) Ethical and Governance Implications: Examining the ethical implications, data privacy concerns, and digital security risks that arise as MSMEs become increasingly data-dependent, and developing frameworks for responsible digital governance (Nambisan et al., 2019).

3. Methods

3.1 Research Design

This study employs a systematic literature review design with a qualitative-dominant mixed methods approach. The primary objective is to synthesize existing scholarly knowledge to investigate the role of digitalization and innovation in the development of MSMEs. While the core analysis is qualitative aimed at interpreting themes and relationships quantitative elements are incorporated to summarize and visualize the landscape of the existing research, such as the distribution of studies by theme or methodology.

3.2 Research Scope and Object of Analysis

The scope of this review is defined by literature focusing on digitalization, innovation, and their impact on MSME development within the context of the global digital era. The temporal scope primarily includes literature published within the last decade (2014-2024) to ensure relevance to contemporary technological advancements.

The object of analysis is the corpus of academic literature meeting the inclusion criteria. There is no traditional population or sample of human subjects; instead, the "sample" consists of peer-reviewed journal articles, conference proceedings, and seminal book chapters that form the evidential basis for the synthesis.

3.3 Data Collection Techniques

Data collection was executed through a structured and replicable search process:

- 1) Source Identification: Primary searches were conducted in major academic databases, including Scopus, Web of Science, Google Scholar, and JSTOR.
- 2) Search Strategy: A combination of keywords and Boolean operators was used. Key search terms included: ("Micro, Small, and Medium Enterprises" OR "MSMEs" OR "SMEs") AND ("digitalization" OR "digital transformation") AND ("innovation" OR "business model innovation") AND ("development" OR "growth" OR "performance").
- 3) Screening and Selection: Identified articles were screened based on title and abstract relevance. Final inclusion was determined by assessing the full text against pre-defined criteria: (a) empirical or conceptual focus on MSMEs, (b) explicit discussion of digitalization and/or innovation, and (c) clear implications for business development or strategy.

3.4 Data Analysis Technique

The analysis followed a Qualitative Thematic Synthesis. The core of the analysis involved an inductive thematic analysis. The findings and discussions of the selected literature were systematically coded to identify recurring themes, patterns, challenges, and recommended strategies. These codes were then grouped into broader analytical themes (e.g., "Barriers to Digital Adoption," "Innovation as a Mediator," "Policy Support Mechanisms") to construct a coherent narrative that answers the research objective.

4. Results and Discussion

4.1 Results

4.1.1 A Study on the Utilization of Digitalization for MSME Development

The development of digitalization activities in Indonesia is marked by the proliferation of digital products used in commercial activities. The literature review and market analysis reveal four primary domains of digital adoption by MSMEs, which collectively drive business development. Figure 1 illustrates the progression of this digital transformation.



Figure 1. Development of MSME Digitalization
(Source: Literature analysis, 2024)

The key applications identified are:

- 1) E-commerce Platforms: MSMEs leverage local and global online marketplaces to sell products, significantly expanding their consumer reach and increasing sales volume.
- 2) Digital Payments: The adoption of e-wallets, QRIS, and mobile banking facilitates faster, more secure transactions, aids in financial management, and simplifies transaction tracking.
- 3) Online Marketing: Utilizing social media and targeted online advertising allows MSMEs to promote their products effectively, build brand identity, and attract new customers.
- 4) Business Management Applications: Cloud-based software for inventory, finance, and customer relationship management (CRM) helps MSMEs improve operational efficiency and productivity.

The synthesized literature confirms that digitalization acts as a powerful driver for MSME development, not only enhancing operational efficiency but also unlocking global market opportunities and accelerating innovation. For instance, Wang & Zhang (2025)

find that digitalizing production processes and integrating big data can boost innovative outputs, though its effectiveness hinges on internal R&D readiness. International studies, such as one in Mexico by Santos-Jaén et al. (2023), affirm that e-commerce is crucial for improving operational efficiency and overall business performance. Successful digitalization is framed as a strategic, holistic process requiring synergy between technology, skilled human resources, and external support from entities like universities (Proietti & Magnani, 2025).

However, significant barriers persist. A systematic review by Restrepo-Morales et al. (2024) identifies key challenges: financial constraints, internal resistance to change, a lack of digital skills, and weak innovative culture. Despite these, MSMEs demonstrate resilience through "bricolage" creatively using limited resources to adapt technology for survival and growth (Yordanova et al., 2024). Furthermore, business model innovation is highlighted as a critical mediator that connects digitalization to business scaling and market expansion (Dung & Dung, 2024).

The impact of digitalization also varies by business scale. Research in Europe shows micro-enterprises focus on operational efficiency, while medium-sized enterprises leverage it more for product and process innovation (Radicic & Petković, 2023). Underpinning all successful transformation is the development of organizational capabilities like knowledge management and an innovation orientation (González-Varona et al., 2021). Additionally, fintech development is proven to accelerate digital adoption by providing inclusive funding and services (Chen & Guo, 2024). The drivers of adoption are well explained by theoretical models. The Technology Acceptance Model (TAM) suggests that adoption is driven by Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). The Technology Readiness Index (TRI) further identifies that readiness depends on four dimensions: Optimism, Innovativeness, Discomfort, and Insecurity. MSMEs with high optimism and innovativeness adopt faster, while discomfort and insecurity are barriers. This underscores the need for user-friendly technology and initiatives to boost digital literacy and trust.

Empirical data from Indonesia supports these findings. An INDEF (2024) survey reveals the main reasons for digitalization: practicality of online selling (79.13%), broader market reach (72.83%), and potential for faster business growth (69.69%). Digital platforms are reported to universally increase sales (100%), strengthen customer relationships (99.21%), and attract new customers (98.82%).

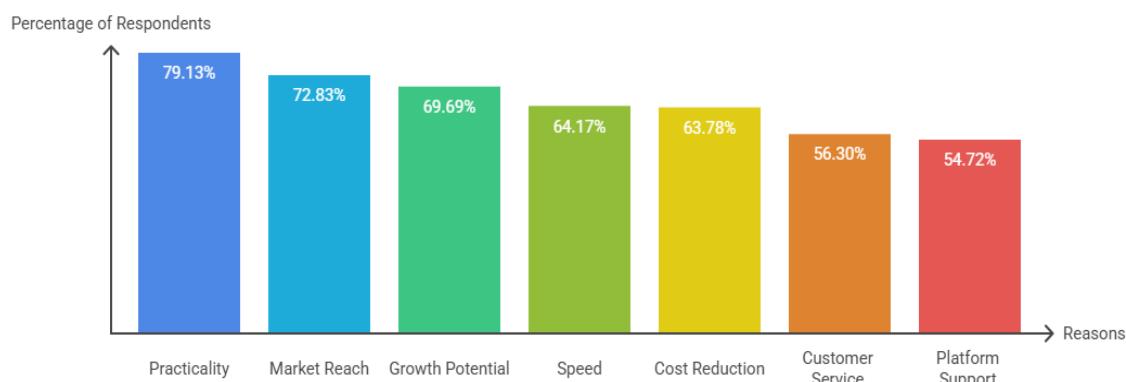


Figure 2. Reasons For Digitalization Adoption
(Source: INDEF, 2024)

The synthesized findings lead to a strategic framework for MSME development through digitalization, visualized in Figure 3.



Figure 3. Utilization of Digitalization for MSME Development
(Source: Literature analysis, 2024)

The framework outlines five strategic pillars:

- 1) Digital Transformation via E-commerce & Marketing: Expanding market reach through online platforms and cost-efficient digital marketing (SEO, social media ads).
- 2) Digital Payment Systems: Enhancing transaction efficiency, security, and financial record-keeping.
- 3) Business Management Software: Using cloud-based applications for inventory, finance, and CRM to save time, reduce costs, and minimize errors.
- 4) Digital Skills Training: Providing education in digital literacy, cybersecurity, and digital marketing to build confidence and capability.
- 5) Collaboration within the Digital Ecosystem: Partnering with marketplaces, fintech, digital banks, and government for better access to capital, marketing, and legal security.

In conclusion, digitalization offers immense opportunities but is accompanied by challenges related to infrastructure, digital literacy, security concerns, and capital. A holistic, collaborative approach is essential for MSMEs to maximize the benefits of digital technology and build a competitive, sustainable business in the digital economy.

4.1.2 A Study on the Utilization of Innovation for MSME Development

Innovation for MSMEs encompasses the development or implementation of new ideas in products, processes, marketing, or business models to enhance value and competitive advantage. The literature identifies multifaceted benefits, as synthesized in Table 1.

Table 1. Benefits of Innovation for MSME Development

No.	Benefit Category	Specific Impact
1	Adaptability & Competitiveness	Enables quick adaptation to market/tech changes; increases competitiveness in global markets.
2	Growth & Efficiency	Drives business growth and economic sustainability; increases sales; improves operational efficiency and reduces costs.
3	Market & Customer Relations	Facilitates market expansion; increases customer satisfaction.
4	Socio-Economic Impact	Creates new jobs; contributes to national economic growth.

Source: Thematic synthesis of literature (2024).

In the Indonesian context, digital-based operational innovations (e.g., digital POS, cloud inventory, CRM) have been shown to increase efficiency, expand market share, and improve service quality, thereby strengthening competitiveness (Tarigan et al., 2025). Sustainability-Oriented Open Innovation (SOOI) in sectors like batik empowers MSMEs through external collaboration, enhancing long-term economic and social outcomes (Kurniawati et al., 2022). International studies corroborate that data-driven decision-making, powered by data science, big data, and AI, enriches productivity and service innovation (Tawil et al., 2023). A structured framework for AI adoption can systematically boost MSME efficiency and market power (Hussain & Rizwan, n.d.).

Financial innovation also plays a key role. In Indonesia, innovative and inclusive Islamic financing models contribute to MSME growth and income by strengthening financial access (Suhada et al., 2025). Government support and user innovation significantly influence the intention to adopt fintech like peer-to-peer lending, which expands capital access and operational capacity (Alvin, 2022).

Ultimately, business model innovation integrating digitalization, e-commerce, and fintech can increase income by 25–30%, expand markets, and build business resilience (Sutrisman, 2025). The foundation for this is digital capability development, where organizational knowledge and collective learning are keys to sustaining digital innovation (González-Varona et al., 2021).

The innovation process in MSMEs can be conceptualized as a continuous cycle, as shown in Figure 4.

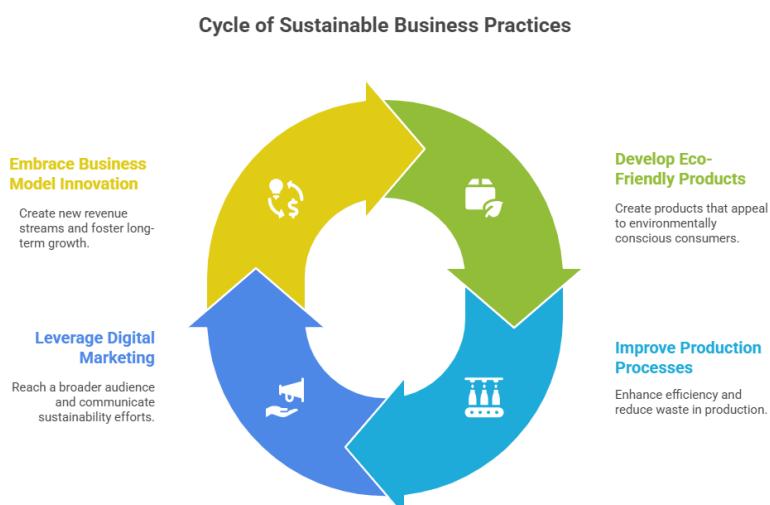


Figure 4. Innovation Cycle in Micro, Small, and Medium Enterprises
 (Source: Author's conceptualization, 2024)

This cycle is fueled by four types of innovation:

- 1) Product Innovation: Developing eco-friendly/organic products, creating new variants, and improving quality/design.
- 2) Process Innovation: Applying digital tech in production, automating stages, and implementing quality management systems.
- 3) Marketing Innovation: Using digital platforms and social media for marketing (MSMEs Go Online), branding, and content strategies.
- 4) Business Model Innovation: Developing franchise systems, collaborating with larger firms, or implementing subscription-based models.

4.2 Discussion

The results demonstrate that digitalization and innovation are deeply interconnected and inseparable drivers of MSME development. Digitalization provides the infrastructure and tools (*how*), while innovation defines the strategic application and value creation (*why*). For example, adopting an e-commerce platform (digitalization) enables product and marketing innovation by reaching new customers and testing new product variants. This relationship is symbiotic: advanced digital capabilities pave the way for more radical forms of innovation, and conversely, the drive to innovate creates demand for more sophisticated digital solutions.

The major challenges such as limited capital, low digital literacy, and access to technology are common barriers to both domains. This indicates that solutions must be integrated. Training programs should not only teach digital skills (e.g., using software) but also foster an innovative mindset (e.g., using data from that software to improve products or processes). The finding on the critical role of business model innovation as a mediator (Dung & Dung, 2024) underscores this; business model innovation is the key mechanism that translates digital tools into sustainable competitive advantage and market expansion. Without innovation in the business model, technology adoption will only yield marginal efficiency gains, not deep transformation.

The variation in impact based on business scale (Radicic & Petković, 2023) implies that support policies and programs must be tailored. Micro-enterprises may require more foundational support in adopting basic digital tools for operational efficiency, while medium-sized enterprises can be guided toward more complex, innovation-focused digital integration. A "one-size-fits-all" approach will be less effective. Furthermore, the diversity of geographical and sectoral contexts in Indonesia such as the differences between MSMEs in urban centers with good internet access and those in remote areas necessitates different implementation strategies, even if the conceptual framework remains the same.

The theoretical implications of this synthesis reinforce the need for an ecosystem approach to studying MSME transformation. Theories such as the Resource-Based View (RBV) should be expanded to consider how digital resources and innovation capabilities are built not only internally but also through external networks and collaborations (Network Theory). The Technology-Organization-Environment (TOE) framework is also relevant for analyzing how technological factors (e.g., ease of use), organizational factors (e.g., innovation culture), and environmental factors (e.g., government regulations and ecosystem support) interact to influence adoption and innovation outcomes.

Therefore, the path forward requires building a synergistic ecosystem. MSME actors, the government, educational institutions, and the private sector must collaborate to create

an environment that simultaneously provides accessible digital infrastructure, fosters innovation through knowledge sharing and funding, and builds human capital. The government's role is crucial in creating supportive policies (such as fiscal incentives for technology adoption and data protection), providing equitable digital infrastructure, and facilitating partnership linkages. Educational and training institutions must design curricula that align technical digital skills with entrepreneurial and innovation competencies.

By addressing digital and innovative aspects in tandem, MSMEs can achieve not just incremental improvement but transformative growth. This transformation will ensure their business resilience, enhance their contribution to the national economy, and position Indonesia competitively in the global digital landscape. Future research can empirically test the proposed integrated framework, explore specific dynamics across various industries, and measure the long-term impact of mentoring programs that combine digital training and innovation catalysts.

5. Conclusion

This study, through a systematic literature review, has established that digitalization and innovation are pivotal, interdependent forces driving the growth and sustainability of Micro, Small, and Medium Enterprises (MSMEs) in the digital era. The research successfully synthesized existing knowledge to address its central objective: to investigate the role and interplay of these factors in MSME development.

The findings confirm that digitalization manifested through e-commerce, digital payments, online marketing, and management software serves as a critical enabler. It expands market reach, enhances operational efficiency, and improves financial management. However, its full potential is unlocked only when coupled with innovation across products, processes, marketing, and business models. Innovation acts as the strategic engine that translates digital tools into sustained competitive advantage, market differentiation, and long-term value creation. The study identifies key mediating mechanisms, particularly business model innovation and the quality of digital capabilities, which determine how effectively technological adoption translates into improved performance and resilience.

The research also highlights significant barriers, including limited financial resources, gaps in digital literacy, and infrastructural challenges, which hinder holistic adoption. Importantly, the impact varies with the scale of the enterprise, necessitating tailored support strategies.

In answering the research objectives, this study concludes that the synergistic integration of digitalization and innovation is non-negotiable for MSMEs aiming for competitiveness and sustainability. To achieve this, a multi-stakeholder, ecosystem-based approach is essential. This involves collaborative efforts from MSMEs, government bodies, educational institutions, and the private sector to provide accessible technology, foster a culture of continuous learning and innovation, and develop supportive policies and infrastructure. Ultimately, nurturing this digital-innovative synergy is fundamental to building resilient, inclusive, and globally competitive MSME sectors, which are crucial for economic vitality in the digital age.

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