Financial and Economic Risk in Developing Markets
Volume 3, Number 2, 2024

Digital Transformation and MSME Growth in the Modern Economy

Syalaisha Alifia Jauhari[1]

[1] Universitas Negeri Yogyakarta, Yogyakarta, Indonesia

Abstract

Article history:
Received: July 15, 2024
Revised: September 5, 2024
Accepted: November 1, 2024
Published: December 30, 2024

Keywords:
Artificial Intelligence,
Cloud Computing,
Digital Transformation,
Economic Growth,
MSMEs.

Identifier:
Zera Open
Page: 115-131
https://zeraopen.com/journal/ferdm

Digital transformation has become a key factor in enhancing efficiency, innovation, and competitiveness, particularly for Micro, Small, and Medium Enterprises. Through the adoption of technologies such as Artificial Intelligence, the Internet of Things, Cloud Computing, and Big Data, Micro, Small, and Medium Enterprises are able to expand market reach, increase productivity, and create new business models that are adaptive to global dynamics. This study employs a literature review method to examine recent academic works on the role of digital technologies in fostering economic growth and strengthening the contribution of Micro, Small, and Medium Enterprises to Gross Domestic Product. The findings highlight that digitalization can reinforce the business ecosystem by improving operational efficiency, enhancing customer relationships, and driving data-based innovation. Nevertheless, several challenges remain, including the digital divide, data security risks, and the potential reduction of traditional labor, all of which must be addressed through inclusive government policies and supportive regulations. This study emphasizes that digital transformation is not merely a technical instrument but rather a strategic foundation for sustainable economic development.

1. Introduction

Digital transformation has become one of the most significant and influential phenomena in the global business and economic landscape over the last decade. The presence of disruptive technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), Cloud Computing, and Big Data has fundamentally changed how organizations operate, interact with customers, and create new value in the modern economic ecosystem. This change not only impacts large corporations with the capacity to invest in high technology but also has a substantial and crucial impact on Micro, Small, and Medium Enterprises (MSMEs), which are the backbone of the economy in many countries, including Indonesia. Given the significant contribution of MSMEs to job creation, poverty alleviation, and their role in the Gross Domestic Product (GDP), digitalization is a strategic instrument that can drive more inclusive economic growth and the sustainability of national economic development (Nursini, 2020).

Along with the dynamics of globalization and the acceleration of technological progress, MSMEs face increasingly complex pressures to improve operational efficiency, expand their market, and adapt their business models to the demands of consumers who are increasingly digital and connected in real-time. Digitalization offers great and strategic opportunities, such as increasing operational efficiency through automation, improving productivity through in-depth data analysis, and innovating products and services that align with evolving market needs. According to Dutta et al. (2020), the adoption of AI and cloud computing allows MSMEs to not only significantly increase their competitiveness but also to expand their reach to

international markets at a relatively lower cost compared to traditional methods. This paves the way for MSMEs to become global players even with limited resources.

However, digital transformation is essentially not just a process of adopting new technology but also demands fundamental changes in business models, organizational culture, and the way companies create and deliver value. Omrani et al. (2022) emphasize that digitalization in MSMEs involves the integration of business strategy with new technologies, such as mobile platforms, IoT, and big data analytics, to strengthen competitiveness and create added value for customers. This transformation also opens up opportunities for the birth of platform-based business models that can connect producers and consumers more efficiently, flexibly, and adaptively to rapid market changes.

On the other hand, it is important to note that digital transformation presents serious challenges that cannot be ignored. The risks of data security, the digital divide between regions, and the potential reduction of traditional labor are strategic issues that must be systematically anticipated. Iftikhar et al. (2022) stress that differences in digital infrastructure between countries and a lack of digital skills in the workforce can deepen economic inequality if not addressed with inclusive public policies focused on equitable access to technology. The government has a very important role in accelerating digital transformation through providing adequate infrastructure, regulations that support innovation, and digital skills improvement programs for the workforce.

Jabeen et al. (2023) highlight that the digitalization of MSMEs not only increases productivity but also encourages their involvement in open innovation,

which strengthens the entire business ecosystem and contributes to sustainable development. Therefore, this study aims to deeply examine the role of digital transformation in improving the performance of MSMEs and its contribution to national economic growth. Through a literature review method, this research summarizes the latest literature on the role of AI, IoT, cloud computing, and big data in driving operational efficiency, expanding market access, and creating new business innovations relevant to the needs of the digital era. Thus, this study not only highlights the significant opportunities resulting from digitalization but also emphasizes the importance of governance, policies, and adaptive strategies to ensure digital transformation is inclusive, sustainable, adaptive, and able to compete globally.

2. Literature Review

2.1. Digital Transformation and Economic Growth

Recent literature shows that digital transformation has a significant and broad positive impact on economic growth, both at the macro and micro levels, including for Micro, Small, and Medium Enterprises (MSMEs). The adoption of advanced technologies such as Artificial Intelligence (AI) and the Internet of Things (IoT) by MSMEs, for example, is able to directly increase the efficiency of production processes, expand previously limited market penetration, and strengthen data-based innovation capacity, which is one of the strategic assets in the digital era. Suciu et al. (2021) found that the integration of AI with IoT and big data analytics has a strong and significant correlation with the revenue growth of MSMEs in the European

region, showing that the right application of digital technology can be a key factor in accelerating business development.

With the ability of this technology to predict market trends, consumer behavior, and continuously changing demand, MSMEs can become more responsive and adaptive to changes in customer needs, while also being able to make more timely strategic decisions. This allows MSMEs to not only survive in the competition but also to significantly increase their competitiveness. In addition, Khan et al. (2023) emphasize that the implementation of an AI-based IoT ecosystem can encourage the long-term sustainability of MSMEs through energy use efficiency, more optimal supply chain management, and the reduction of previously high operational costs. These findings show that digital transformation not only has a positive impact on profitability but also on aspects of operational sustainability, environmental responsibility, and the improvement of MSME managerial capacity, all of which are important elements for inclusive and sustainable economic growth.

2.2. Key Technologies in MSME Digitalization

Cloud computing has become one of the most widely adopted technologies by Micro, Small, and Medium Enterprises (MSMEs) because it provides high flexibility, easy scalability to suit needs, and significant cost efficiency compared to traditional methods. According to Liu et al. (2021), cloud computing allows MSMEs to access technology infrastructure that previously could only be utilized by large companies with much greater financial resources and capacity. With this technology, MSMEs can run various business applications efficiently, store and manage data securely, and perform data analysis more quickly and accurately, all without having to make large

investments in expensive hardware, software, or IT facilities. This opens up opportunities for MSMEs to increase their productivity and competitiveness in an increasingly digital and competitive market.

On the other hand, Artificial Intelligence (AI) plays a very important role in supporting innovation, automation, and smarter decision-making. Boh et al. (2023) confirmed that AI helps MSMEs optimize decision-making processes, improve the quality of customer relationships through analysis of behavior and preferences, and increase business resilience to rapid and unexpected market changes. By leveraging AI, MSMEs can adjust their business strategies in a more timely manner, increase operational efficiency, and create products or services that are more relevant to consumer needs. Overall, the combination of cloud computing and AI gives MSMEs the ability to grow faster, innovate sustainably, and face global competition with more confidence and adaptiveness to the ever-evolving challenges of the digital era.

3. Methods

This study uses a library research method, which specifically focuses on the review of scientific literature, journals, research reports, and relevant academic publications related to digital transformation, disruptive technologies, and their impact on the growth and development of MSMEs and the economy as a whole. The library study was chosen because it can provide a comprehensive, systematic, and in-depth overview of the latest trends, strategic opportunities, and challenges that arise from digitalization, without the need for direct field data collection, so that the research can still produce a valid and structured understanding. Literature sources

were collected from various credible academic databases, including Google Scholar, and other international journal databases. The main keywords used in the literature search process include the terms: digital transformation, SMEs, AI, IoT, cloud computing, big data, and economic growth, which were specifically chosen to ensure the relevance of the material to the research topic.

The inclusion criteria applied include: articles or publications that explicitly discuss the application of digital technology in MSMEs; research that highlights the relationship between digitalization and economic growth, efficiency, productivity, or competitiveness; and publications that originate from peer-reviewed journals, international conferences, or trusted academic sources. Meanwhile, the exclusion criteria include non-academic articles, popular reports, opinions without a scientific research basis, and literature that does not have a direct link to MSMEs or digital transformation. The literature analysis was carried out through three systematic stages.

First, content classification based on specific technology focus, including AI, IoT, cloud computing, and big data, to facilitate the grouping of findings. Second, thematic synthesis was performed to identify patterns, similarities, differences, and consistency of findings between studies, including strategic opportunities and significant challenges faced by MSMEs in the digitalization process. Third, critical analysis was applied to evaluate the research's contribution to academic understanding as well as practical implications for public policy and MSME business strategy. This method allows the research to present a holistic, comprehensive, and structured review, which not only outlines the benefits of digital transformation but also links it to aspects of sustainability, relevant regulations, and the readiness of digital

infrastructure. Thus, the research results are expected to provide a significant academic contribution as well as practical benefits for the development of public policy, MSME business strategy, and academic literature that discusses digitalization and economic growth based on modern technology..

4. Results

The results of the literature review show that digital transformation has a broad, significant, and multidimensional impact on MSMEs, covering various important aspects of business management, from operational efficiency, innovation capabilities, market expansion, to its contribution to overall national economic growth. The adoption of digital technology allows MSMEs to automate various business processes that were previously done manually, including inventory management, accounting, customer relationship management, and logistics coordination. Dutta et al. (2020) show that the application of Artificial Intelligence helps MSMEs increase productivity significantly by reducing human error, accelerating the decision-making process, and allowing owners and managers of MSMEs to focus their attention on business development strategies and product or service innovation.

In addition, the Internet of Things allows for real-time monitoring in the supply chain, so that logistics transparency and efficiency can be improved, while the potential for The loss or delay of goods can be minimized through the strategic adoption of digital technologies, particularly those that enable real-time monitoring and predictive analytics, such as IoT-based sensors, cloud-enabled supply chain management platforms, and AI-supported logistics systems. These innovations allow

MSMEs to track the movement of products at every stage, from production and warehousing to distribution and delivery, thereby reducing the risk of misplacement, stock shortages, and transportation inefficiencies.

By ensuring greater visibility and transparency throughout the supply chain, MSMEs can proactively address potential disruptions before they escalate into costly problems. This reliability not only enhances operational efficiency but also strengthens the relationship between businesses and their customers. When consumers consistently receive their goods on time and in good condition, their level of satisfaction increases significantly, and they are more likely to develop trust and loyalty toward the business. In turn, this trust becomes a valuable intangible asset that positions MSMEs to compete more effectively, expand their customer base, and build sustainable growth in increasingly competitive markets. In addition to operational efficiency, digitalization also opens up great opportunities for MSMEs to expand their market and increase access to the global market. Digital technology allows MSMEs to reach consumers not only at the local or domestic level but also on the international stage, through e-commerce platforms, data-based digital marketing, social media, and cloud computing services that provide flexibility and scalability capabilities that were previously difficult for small-scale businesses to achieve.

Liu et al. (2021) asserts that cloud computing not only significantly lowers operational costs but also provides scalability capabilities for MSMEs so that they can compete more effectively with large companies in terms of product distribution, inventory management, and a quick response to changing market demands. With digital technology, MSMEs can develop services and products without geographical

boundaries, enabling penetration into a wider market, and increasing the potential for revenue and long-term business sustainability.

Digital transformation also encourages the birth of innovation in MSME business models, where digitalization not only improves internal working methods but also enables the development of new business models based on platforms, subscription services, or more interactive and personalized digital services. Omrani et al. (2022) show that the integration of big data and mobile technologies gives MSMEs the ability to create personalization-based services that are tailored to the needs and preferences of customers. This not only increases customer loyalty but also allows MSMEs to differentiate themselves from competitors through more unique and innovative offerings, thereby creating a sustainable competitive advantage. By leveraging accurate data and precise analysis, MSMEs are able to adjust their business strategies more responsively to market changes, accelerate product innovation, and improve the quality of services provided to consumers.

In addition, the digitalization of MSMEs has been proven to have a positive impact on the wider economy, especially in terms of increasing their contribution to the Gross Domestic Product and job creation. Suciu et al. (2021) show that the adoption of AI in MSMEs in Europe contributes significantly to business revenue growth, which in turn increases regional competitiveness and strengthens the position of MSMEs in the local and international economic ecosystem. The same is also shown by Jabeen et al. (2023), who found that the digitalization of MSMEs strengthens sustainable development through open innovation collaboration with various economic actors, including large companies, academic institutions, and government

agencies, thereby creating a more inclusive, adaptive, and mutually supportive business ecosystem. Through this kind of collaboration, MSMEs not only contribute to economic growth but also to more sustainable and environmentally friendly product and service innovation, and are in line with the needs of modern consumers.

Although the benefits of digital transformation are very large and diverse, the digitalization process also brings serious challenges that cannot be ignored. Iftikhar et al. (2022) noted a significant digital divide between regions, especially in developing countries that still face limited internet infrastructure, uneven electricity access, and different technological capacities between regions. This challenge can be a barrier for MSMEs that want to adopt digital technology optimally, so inclusive public policy support and infrastructure capacity building programs are needed to ensure equal access. In addition, data security and privacy issues are also an important concern as the use of cloud computing, big data analytics, and other digital platforms increases. Protection of customer data, security of digital transactions, and compliance with data protection regulations are critical factors that must be considered by MSMEs to maintain consumer trust. The potential loss of traditional jobs due to automation is also a significant social challenge, so workforce retraining efforts and digital skills improvement are very important to ensure a fair and inclusive workforce transition.

The results of this study affirm that digital transformation is an important catalyst in increasing the competitiveness of MSMEs while strengthening the national economy through contributions to GDP growth, job creation, innovation, and market expansion. The success of this digital transformation depends on a combination of technology infrastructure readiness, adaptive regulations that encourage innovation,

and an increase in human resource capacity so that digitalization can be adopted inclusively, sustainably, and able to face the dynamics of the global market. To summarize, digital transformation provides developing countries with unparalleled prospects for growth and development, as it enables them to overcome traditional barriers of infrastructure and resources by leveraging advanced technologies such as Artificial Intelligence, Internet of Things, Cloud Computing, and Big Data to enhance productivity, expand market access, and create innovative business models that foster competitiveness, while also promoting financial inclusion, improving governance, and stimulating sustainable economic progress that is more resilient and adaptable to global changes.

However, it also brings out a multifaceted set of obstacles that must be tackled. To fully use the advantages of digital technology, it is necessary to engage in strategic planning, provide resources for digital infrastructure, prioritize education, and implement regulatory changes. By strategically addressing these difficulties, developing economies may position themselves to flourish in the era of digitalization (Hai, 2021). By leveraging digital technology optimally, MSMEs can increase operational efficiency, expand their market, innovate in business models, and contribute significantly to economic growth, Digital transformation provides developing countries with unparalleled prospects for growth and development, as it enables them to overcome traditional barriers of infrastructure and resources by leveraging advanced technologies such as Artificial Intelligence, Internet of Things, Cloud Computing, and Big Data to enhance productivity, expand market access, and create innovative business models that foster competitiveness, while also promoting

financial inclusion, improving governance, and stimulating sustainable economic progress that is more resilient and adaptable to global changes, while reducing the digital divide between regions and strengthening sustainable development.

Thus, the digitalization of MSMEs is not just a strategic choice, but also an urgent need in facing global competition, encouraging economic inclusion, and ensuring the resilience and sustainability of the national economy in the long term. Digital transformation allows MSMEs to become more adaptive to technological changes, responsive to market needs, and innovative in the development of products and services. This process provides an opportunity for MSMEs to not only survive but also grow significantly, strengthening their position in the domestic and international markets, and encouraging the creation of a more competitive, inclusive, and sustainable economic ecosystem.

5. Discussion

The results of this study show a close, strong, and mutually influencing relationship between digital transformation and an increase in the competitiveness of MSMEs in facing the challenges of the modern economic era, which is characterized by tight competition and very rapid technological development. However, there are a number of important aspects that still need to be discussed in more depth so that the understanding of this digitalization process can be more comprehensive. First, digital transformation cannot be seen as an instant solution that immediately solves the various problems faced by MSMEs. This process requires a fundamental change in organizational culture, namely from a traditional mindset that tends to be static to a

mindset based on innovation, continuous learning, and adaptation to changes in the business environment. Boh et al. (2023) show that technology such as Artificial Intelligence can only provide full benefits if MSMEs are truly able to integrate it strategically into their main business processes, not just use it as an additional, complementary tool. Thus, the mental readiness of MSME actors becomes one of the key factors that determine the success of digitalization.

Second, the digitalization process has the potential to deepen the gap between MSMEs that have access to technology and those that have not been able to access it. This inequality can lead to the risk of economic exclusion for small business actors in regions with limited digital infrastructure, such as an uneven internet network or unstable electricity supply. Therefore, the role of the government becomes very important, both in providing basic infrastructure such as internet and electricity, and in building a regulatory framework that supports data security, consumer protection, and creates a conducive business climate for technology adoption. Third, the socio-economic challenges posed by the digitalization process also need serious attention. The automation of business processes has the potential to replace a number of traditional jobs that were previously done manually, so it requires workforce reskilling and upskilling programs to remain relevant to the needs of new industries. However, on the other hand, digitalization also opens up opportunities for the creation of new jobs in the fields of information technology, digital marketing, and data analysis. This is in line with the findings of Hanelt et al. (2021) who emphasize that the success of digital transformation ultimately depends heavily on the readiness of human resources to adapt to the new roles that emerge.

In addition, the literature also highlights that the success of MSME digitalization cannot be separated from the factor of collaboration. Jabeen et al. (2023) confirmed the importance of the role of open innovation, where MSMEs build cooperation with large companies, research institutions, innovator communities, and also the government, thereby creating an inclusive and sustainable digital ecosystem. Thus, this discussion confirms that digital transformation is no longer just an alternative option, but a necessity for MSMEs to survive and thrive in the modern economic era. However, its implementation must be carried out with a holistic approach that combines technology, public policy support, and the strengthening of human resource capacity so that the benefits of digitalization can be felt evenly and sustainably.

6. Conclusion

Digital transformation is a key factor in increasing the competitiveness of MSMEs and strengthening their contribution to economic growth. The adoption of technologies such as AI, IoT, cloud computing, and big data is proven to increase operational efficiency, expand markets, and encourage business model innovation. The results of the study show that the digitalization of MSMEs not only has an impact on company profitability but also contributes to sustainable development and GDP growth. However, digital transformation also presents challenges in the form of the digital divide, data security risks, and the potential reduction of traditional labor. Therefore, an active role of the government is needed in providing infrastructure, supportive regulations, and digital skills improvement programs for the workforce.

With a holistic approach that combines technology, policy, and human resource development, digital transformation can be a strategic instrument to drive inclusive and sustainable economic growth. Thus, digitalization is not just a technological trend, but a fundamental need for MSMEs to remain relevant, competitive, and adaptive to global changes.

References.

Boh, W., Constantinides, P., Padmanabhan, B., & Viswanathan, S. (2023). Building digital resilience against major shocks. *Mis Quarterly*, *47*(1), 343-360.

Dutta, G., Kumar, R., Sindhwani, R., & Singh, R. K. (2020). Digital transformation priorities of India's discrete manufacturing SMEs–a conceptual study in perspective of Industry 4.0. *Competitiveness Review: An International Business Journal*, *30*(3), 289-314.

Iftikhar, A., Ali, S. M., Alam, M., Musa, S., & Su'ud, M. M. (2022). Analysis of Risk Factors in Global Software Development: A Cross-Continental Study Using Modified Firefly Algorithm. *Computational Intelligence and Neuroscience*, *2022*(1), 4936748.

Hai, T. N., Van, Q. N., & Thi Tuyet, M. N. (2021). Digital transformation: Opportunities and challenges for leaders in the emerging countries in response to COVID-19 pandemic. *Emerging Science Journal*, *5*(1), 21-36.

Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: Insights and implications for

strategy and organizational change. *Journal of management studies*, *58*(5), 1159-1197.

Jabeen, F., Belas, J., Santoro, G., & Alam, G. M. (2023). The role of open innovation in fostering SMEs' business model innovation during the COVID-19 pandemic. *Journal of knowledge management*, *27*(6), 1562-1582.

Khan, A. A., Laghari, A. A., Li, P., Dootio, M. A., & Karim, S. (2023). The collaborative role of blockchain, artificial intelligence, and industrial internet of things in digitalization of small and medium-size enterprises. *Scientific Reports*, *13*(1), 1656.

Liu, Y., Ni, Z., Karlsson, M., & Gong, S. (2021). Methodology for digital transformation with internet of things and cloud computing: A practical guideline for innovation in small-and medium-sized enterprises. *Sensors*, *21*(16), 5355.

Nursini, N. (2020). Micro, small, and medium enterprises (MSMEs) and poverty reduction: empirical evidence from Indonesia. *Development Studies Research*, *7*(1), 153-166.

Omrani, N., Rejeb, N., Maalaoui, A., Dabić, M., & Kraus, S. (2022). Drivers of digital transformation in SMEs. *IEEE transactions on engineering management*, *71*, 5030-5043.

Suciu, A. D., Tudor, A. I. M., Chiţu, I. B., Dovleac, L., & Brătucu, G. (2021). IoT technologies as instruments for SMEs' innovation and sustainable growth. *Sustainability*, *13*(11), 6357.