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# Digital Transformation Journey of SMEs in Indonesia During the Post Pandemic Era

Agung Rizky[1], Ahmad Gunawan[2], Ramiro Santiago Ikhsan[3*]
[1]Faculty of Economy and Business, University of Raharja, Indonesia
[2]Faculty of Economics and Business, Pelita Bangsa University, Indonesia
[3]Faculty of Economic and Business, Ilearning Incorporation, Colombia
[1]agungrizky@raharja.info, [2]ahmadgunawan@pelitabangsa.ac.id, [3]santiagosan199@ilearning.co
***Corresponding Author**

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**ABSTRACT**

**The COVID-19 pandemic marked** a significant turning point for small and medium enterprises (SMEs) in Indonesia, compelling many to rapidly transition from traditional offline operations to digital business models. **This study aims to analyze** the digitalization journey of SMEs in the post-pandemic era by examining the opportunities and challenges they encounter during this transformation. **A descriptive qualitative approach** was employed, using secondary data sourced from official reports such as BPS, the Ministry of Cooperatives and SMEs, and the economy SEA Report, complemented by relevant academic literature. The findings reveal that digitalization has opened substantial opportunities for SMEs, including expanded market reach, improved operational efficiency, and enhanced customer engagement through e-commerce platforms, digital payment systems, and social media marketing. However, persistent barriers remain, such as limited digital literacy, uneven internet infrastructure, high implementation costs, and consumer trust issues in online transactions. **This study concludes** that while digitalization offers a vital pathway for SME growth and resilience, addressing these barriers requires collaborative efforts among business owners, policymakers, and digital platform providers. Future research should employ quantitative methods and explore sector-specific case studies to deepen understanding of digital transformation strategies.



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## 1. INTRODUCTION

Small and medium enterprises (SMEs) play a vital role in Indonesia's economy, contributing over 60% to the national GDP and providing employment for more than 97% of the workforce [1, 2]. Before the COVID-19 pandemic, most SMEs relied heavily on offline transactions, traditional marketing methods, and face-to-face interactions with customers [3, 4]. However, the pandemic caused severe disruptions to this conventional model, leading to a sharp decline in revenue and forcing SMEs to quickly adapt to survive [5, 6]. Restrictions on physical mobility accelerated the urgent need for digital adoption, particularly through the use of e-commerce platforms, digital payment systems, and social media marketing [2, 7]. This marked the beginning of a significant digital transformation for many SMEs across the country [8, 9].

In the post-pandemic era, digitalization has become a strategic necessity for SME sustainability [10, 11]. Consumers are increasingly accustomed to online shopping and digital financial transactions, making it

essential for SMEs to adopt digital tools to remain competitive [5, 12]. Various government initiatives, such as the *UMKM Go Digital* program, along with support from private digital platforms, have created opportunities to accelerate this transition [13, 14]. Despite these advancements, several challenges remain, including unequal levels of digital readiness, gaps in infrastructure, and limited digital literacy among business owners [15, 16]. These challenges highlight the risk of a widening digital divide between SMEs that can adopt technology and those left behind.

The digitalization of SMEs is closely linked to the United Nations' Sustainable Development Goals (SDGs). Specifically, this transformation directly supports Goal 8, which promotes decent work and sustained, inclusive economic growth, by creating new opportunities for entrepreneurship, improving job quality, and boosting productivity. At the same time, it addresses Goal 10, which aims to reduce inequalities within and among countries, by providing rural and underserved communities with access to digital markets and financial tools. Conversely, failure to address disparities in digital access could exacerbate income and regional inequality, making SDG alignment essential to ensure that the benefits of digitalization are shared equitably.

Previous studies on SME digitalization have primarily focused on global or regional trends, with limited attention to the unique context of Indonesian SMEs [7, 17]. Moreover, most existing research emphasizes the pandemic period, while fewer studies examine the long-term digitalization journey during the post-pandemic recovery phase [18–20]. This creates a research gap in understanding how SMEs continue to adapt and sustain digital practices after the immediate crisis response has ended [21, 22]. By aligning this research with SDGs, particularly Goals 8 and 10, it becomes possible to evaluate not only the economic impact of digitalization but also its contribution to inclusive and sustainable development.

To address this gap, this study aims to answer two research questions:

1. How has the digitalization journey of SMEs in Indonesia evolved in the post-pandemic era? and
2. What opportunities and challenges do SMEs face during this transformation process?

By answering these questions, this paper seeks to provide a comprehensive understanding of SME digitalization in Indonesia, while offering practical insights for business practitioners, policymakers, and digital platform providers to strengthen the national digital ecosystem in alignment with sustainable development objectives [23–25].

## 2. LITERATURE REVIEW

### 2.1. SMEs in Indonesia

Small and medium enterprises (SMEs) are the backbone of Indonesia's economy, contributing more than 60% to the national GDP and employing over 97% of the workforce [26]. According to the Ministry of Cooperatives and SMEs, there are more than 65 million SMEs operating across diverse sectors, ranging from retail and manufacturing to services [10, 27, 28]. Despite their significant role, SMEs face persistent structural challenges such as limited access to financing, low levels of technological adoption, and relatively weak market competitiveness compared to larger enterprises [12, 29, 30]. Before the COVID-19 pandemic, most Indonesian SMEs operated primarily through offline channels, relying on physical stores and traditional marketing strategies [31, 32]. These limitations underscored the urgent need for digital transformation to enhance resilience and competitiveness in an increasingly dynamic business environment [33–35].

### 2.2. Digital Transformation in SMEs

Digital transformation involves the integration of digital technologies into business processes [36], operations, and customer engagement to drive innovation and improve performance [15, 37]. For SMEs, digitalization has become not only a tool for improving operational efficiency but also a critical factor for survival in highly competitive markets [38, 39]. Scholars emphasize that adopting tools such as e-commerce platforms [17, 40], cloud computing services [41], and social media marketing can lower operational costs [42], expand customer reach, and foster innovation in product and service offerings [20, 43, 44]. However, the transformation journey for SMEs is typically more challenging than for large corporations due to limited resources [45], lack of digital expertise, and restricted access to advanced technologies [23, 46, 47]. In the ASEAN region, studies have shown that SMEs in countries such as Vietnam and Malaysia are also facing similar challenges, highlighting the need for regional collaboration and policy harmonization to support SME digital adoption [48–50].

### 2.3. Impact of COVID-19 on SMEs

The COVID-19 pandemic acted as a catalyst for accelerating SME digitalization worldwide [51, 52]. Lockdowns, mobility restrictions, and declining offline sales compelled many SMEs to pivot to digital platforms as their primary sales and operational channels [53]. In Indonesia, SMEs rapidly adopted online marketplaces such as Tokopedia, Shopee, and Bukalapak, while others turned to social media platforms like Instagram, Facebook, and WhatsApp Business for marketing and customer engagement [54, 55]. Simultaneously, the use of digital payment systems, including e-wallets and the Quick Response Code Indonesian Standard (QRIS), grew significantly during the pandemic [56]. These rapid shifts not only helped SMEs survive during the crisis but also established a foundation for sustained digital adoption in the post-pandemic recovery phase [57]. Comparative studies from other ASEAN nations reveal similar patterns, though the pace and scale of digitalization vary depending on infrastructure readiness and government support mechanisms.

### 2.4. Drivers and Barriers of Digitalization

Several factors influence the adoption of digital technologies by SMEs. Key drivers include evolving consumer behavior, competitive market pressures, government incentives, and the increasing availability of affordable digital tools and platforms. However, SMEs also face substantial barriers in their digitalization journey. Common challenges include limited digital literacy among business owners, inadequate internet infrastructure particularly in rural areas high implementation costs, and consumer trust issues related to online transactions. These factors highlight a dual reality: while digitalization offers significant opportunities for growth and innovation, systemic obstacles continue to hinder equitable and inclusive adoption. Addressing these challenges requires comprehensive strategies that combine infrastructure development, capacity-building initiatives, and supportive regulatory frameworks.

### 2.5. Theoretical Frameworks for Technology Adoption

The process of technology adoption among SMEs can be examined using established theoretical frameworks such as the Technology Acceptance Model (TAM), the Unified Theory of Acceptance and Use of Technology (UTAUT), and the Diffusion of Innovation (DOI). The TAM emphasizes two critical determinants of adoption: perceived usefulness and perceived ease of use. The UTAUT builds on this by incorporating additional factors such as social influence and facilitating conditions, making it particularly relevant for understanding organizational-level adoption among SMEs. Meanwhile, the DOI framework explains how innovations spread within social systems over time, offering insights into the role of early adopters and network effects in digital transformation. These frameworks provide a strong theoretical basis for analyzing the drivers and barriers of SME digitalization in the post-pandemic era, particularly within the Indonesian and broader ASEAN contexts.

## 3. RESEARCH METHODOLOGY

### 3.1. Research Approach and Scope

This study employs a mixed-method approach that integrates descriptive qualitative analysis with quantitative secondary data. The qualitative component captures the broader context of how Indonesian SMEs experienced digital transformation during and after the COVID-19 pandemic, while the quantitative component provides empirical evidence to support and validate these findings. This dual approach is particularly relevant because it allows the research to address both measurable indicators, such as the number of SMEs adopting digital tools and e-commerce transaction growth, and the broader implications of these changes for SME resilience and competitiveness in the post-pandemic era.

The scope of this research includes SMEs across multiple sectors that have adopted digital platforms such as e-commerce marketplaces (Tokopedia, Shopee, Lazada), digital payment systems (QRIS, e-wallets, online banking), and social media marketing channels (Instagram, TikTok, WhatsApp Business). SMEs are the focus of this study because they account for more than 99% of Indonesian enterprises and contribute over 60% to the national GDP. By examining SMEs from diverse industries rather than focusing on a single sector, this research provides a holistic understanding of digitalization trends in the Indonesian economy. The research period spans from 2019 to 2024, representing three key phases: the pre-pandemic baseline (2019), the pandemic disruption (2020–2021), and the post-pandemic recovery and acceleration phase (2022–2024). This timeline enables a chronological comparison to trace how digitalization evolved from initial crisis-driven adaptation to long-term transformation.

### 3.2. Data Sources and Collection

The study relies entirely on secondary data from authoritative and verifiable sources. The primary datasets were obtained from the Ministry of Cooperatives and SMEs (Kemenkop UKM) and Bank Indonesia (BI). Kemenkop UKM provides official statistics on SMEs integrated into digital ecosystems, while Bank Indonesia supplies data on QRIS merchant adoption and national e-commerce transaction values. These datasets are widely recognized and frequently used in policy formulation and academic studies.

To enrich the analysis, additional information was drawn from peer-reviewed academic journals, international organizations such as the OECD and World Bank, and industry reports like the Google-Temasek-Bain economy SEA report. This triangulation of government and non-government sources enhances data reliability and minimizes bias. Data collection was conducted through desk research, in which official reports were systematically reviewed and compiled. For example, updates on digitalized SMEs were retrieved from Kemenkop UKM's 2024 reports, while statistics on e-commerce transactions and QRIS merchant growth were gathered from Bank Indonesia's publications. The combined use of these sources ensures a comprehensive and credible foundation for the study.

### 3.3. Variables, Analysis, and Presentation

Three key variables were examined to measure SME digitalization: the number of SMEs officially integrated into digital ecosystems, QRIS merchant growth as a proxy for digital payment adoption, and the total value of national e-commerce transactions, which captures the scale of digital economic activity and SME participation. These variables were selected because they are measurable, nationally reported, and widely referenced in both academic and industry analyses.

The data were analyzed using trend analysis to identify patterns and growth rates across the 2019–2024 period. Particular attention was given to inflection points such as the rapid spike in digital activity during 2020 and 2021 and the stabilization observed in subsequent years. Descriptive comparison techniques were also applied to contrast the three phases of the timeline pre-pandemic, pandemic, and post-pandemic offering both longitudinal and contextual insights. To ensure clarity, the results are presented in both tabular and graphical formats. Tables provide precise numerical values, while graphs and visualizations highlight trends and patterns for easier interpretation. This dual presentation enhances the readability of the findings and allows readers to clearly observe shifts in SME behavior over time.

Table 1. Official Secondary Data on SME Digitalization

| Data Source | Indicator | Value / Trend | Year / As of |
|---|---|---|---|
| Kemenkop UKM | SMEs connected to digital ecosystems | 25.5 million SMEs | July 2024 |
| Bank Indonesia | QRIS merchants | 29.6 million (92% are SMEs) | Oct 2023 |
| Bank Indonesia | National e-commerce transaction value | Rp 205.5 T (2019) → Rp 401.1 T (2021) → Rp 487 T (2024) | 2019–2024 |

As shown in Table 1, the number of SMEs integrated into digital ecosystems has increased significantly over the study period. However, micro-enterprises still dominate the SME sector, while small and medium-sized enterprises represent only a small fraction. This uneven distribution highlights the varying levels of digital readiness and adoption challenges faced by different SME categories.

### 3.4. Validity, Reliability, and Limitations

The validity of this study is reinforced by the use of official national datasets that are widely cited in both academic research and government policy development. Kemenkop UKM and Bank Indonesia are considered highly credible sources, and their data were cross-verified with independent reports, such as the 2023 economy SEA report, to further strengthen reliability. By triangulating multiple datasets, the study minimizes the risk of misrepresentation and ensures that the findings accurately reflect the state of SME digitalization in Indonesia.

Despite these strengths, several limitations remain. The research relies exclusively on secondary data, which means it lacks primary validation through fieldwork methods such as surveys, interviews, or direct observations that could provide richer, more nuanced insights into the experiences of SMEs. Additionally, the data

are presented at a national aggregate level and are not broken down by SME size, sector, or geographic location. As a result, while the findings provide a broad overview of digitalization trends, they may not fully capture variations between urban and rural SMEs or between micro, small, and medium-sized enterprises. These limitations also make it difficult to identify specific challenges faced by particular sectors, such as agriculture or manufacturing, which may require tailored digital solutions. Future research could address these gaps by incorporating region-specific or sector-specific studies and employing mixed methods that combine primary and secondary data, enabling a more comprehensive understanding of the drivers, barriers, and long-term impacts of SME digitalization in Indonesia.

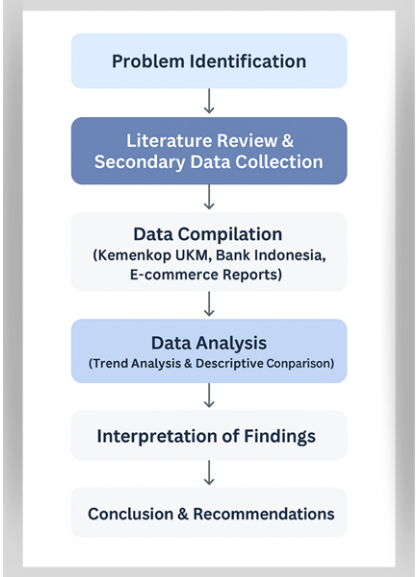


Figure 1. Research Flowchart

As illustrated in Figure 1, the research process begins with a comprehensive literature review to establish the theoretical foundation. This is followed by systematic data collection and analysis using the selected variables, and finally, qualitative validation through contextual interpretation. This process ensures that the results are both statistically sound and contextually meaningful.

## 4. RESULTS AND DISCUSSION

### 4.1. Digitalization Penetration among SMEs

Indonesia has approximately 64.2 million SMEs, contributing 61% to the national GDP and providing 97% of total employment. However, by mid-2024, only about 25.5 million SMEs (39.7%) had integrated into the digital ecosystem. This represents substantial growth compared to only 9 million SMEs in 2019 but also highlights that more than 60% of SMEs remain offline. Table 2 summarizes the growth of digitalized SMEs over the study period.

Table 2. Growth of SMEs Integrated into Digital Ecosystems (2019–2024)

| Year | Digitalized SMEs (million) | Percentage of Total SMEs |
|---|---|---|
| 2019 | 9.0 | 14.0% |
| 2020 | 12.8 | 20.0% |
| 2021 | 17.5 | 27.2% |
| 2022 | 21.4 | 33.3% |
| 2023 | 23.7 | 36.9% |
| 2024 | 25.5 | 39.7% |

Table 2 demonstrates a steady increase in the number of SMEs adopting digital platforms from 2019 to 2024. However, more than half of SMEs remain offline, pointing to significant potential for further digital

expansion. The adoption rate is uneven, with urban-based SMEs being more digitized compared to rural areas, where internet infrastructure and affordability pose major constraints. This digital divide impacts rural SMEs' market access and exacerbates income inequality, aligning with Sustainable Development Goals (SDG) 8 (Decent Work and Economic Growth) and SDG 10 (Reduced Inequalities).

Cultural and generational factors also influence adoption. Older SME owners remain reluctant to transition online, citing concerns about fraud, costs, and unfamiliarity with digital tools. Meanwhile, younger entrepreneurs are quicker to adopt digital platforms such as TikTok and Instagram for marketing, rather than relying solely on traditional methods. This shift underscores that digitalization hinges not only on infrastructure but also on digital literacy, trust-building, and changing mindsets.

### 4.2. E-Commerce Transaction Trends (2019–2024)

The value of e-commerce transactions in Indonesia has shown dramatic fluctuations over the research period. Table 3 illustrates the annual growth and contraction patterns observed between 2019 and 2024.

Table 3. E-Commerce Transaction Value in Indonesia (2019–2024)

| Year | Transaction Value (Rp trillion) | Growth Rate (%) |
|---|---|---|
| 2019 | 205.5 | – |
| 2020 | 266.3 | +29.6 |
| 2021 | 401.1 | +50.7 |
| 2022 | 476.3 | +18.7 |
| 2023 | 453.8 | -4.7 |
| 2024 | 487.0 | +7.3 |

Table 3 shows that e-commerce transaction values increased rapidly during the pandemic years of 2020 and 2021, driven by COVID-19 lockdowns that forced both consumers and SMEs to shift quickly to online platforms. The transaction value surged from Rp 266.3 trillion in 2020 to Rp 401.1 trillion in 2021, representing a 50.7% increase one of the fastest growth rates in Indonesia's digital economy history. However, as physical mobility was restored, the market entered a Stabilization Phase in 2022–2023, during which some consumer spending reverted to offline channels, leading to a slight contraction of -4.7% in 2023. This indicates that while online commerce had become essential, it had not yet fully replaced offline sales.

The Renewed Growth Phase in 2024 shows a 7.3% increase in transaction values, suggesting that e-commerce is consolidating as a permanent component of Indonesia's economy rather than a temporary pandemic-driven trend. Figure 2 visually illustrates this trajectory, emphasizing how the pandemic served as a catalyst for rapid digital adoption. SMEs that embraced digital tools early were able to strengthen their market positions and gain a competitive advantage, while those that delayed adoption risked falling behind in an increasingly digital-driven marketplace.


Figure 2. Growth of E-Commerce Transactions in Indonesia (2019–2024)

### 4.3. Digital Payment Adoption: The QRIS Case Study

The Quick Response Code Indonesian Standard (QRIS) has emerged as a key enabler of SME digitalization. By October 2023, there were 29.6 million registered QRIS merchants, of which 92% were SMEs. Table 4 highlights the expansion of QRIS adoption between 2019 and 2023.

Table 4. QRIS Merchant Growth in Indonesia (2019–2023)

| Year | Total Registered QRIS Merchants (million) |
|---|---|
| 2019 | 4.2 |
| 2020 | 10.8 |
| 2021 | 18.5 |
| 2022 | 24.1 |
| 2023 | 29.6 |

Table 4 shows that QRIS merchant registrations grew sevenfold between 2019 and 2023, reflecting rapid adoption of digital payments among SMEs. This growth highlights the critical role of digital financial services in enabling cashless transactions and modernizing small businesses. QRIS has become a key tool for promoting financial inclusion by helping SMEs that previously relied solely on cash transactions to track sales, access microloans, and integrate with online platforms. It also offers a cost-effective alternative to traditional point-of-sale systems, making digital payments more accessible to micro and small enterprises. In addition, the widespread use of QRIS builds consumer trust and normalizes digital payment habits, creating a strong foundation for complementary services such as e-wallets and PayLater schemes.

Despite this progress, several barriers continue to hinder universal adoption. Limited internet connectivity in rural areas restricts access for many SMEs, while transaction fees and concerns about data security reduce adoption rates among both businesses and consumers. Addressing these challenges requires coordinated policy support and infrastructure development to ensure that the benefits of QRIS adoption are distributed equitably. By overcoming these barriers, QRIS can further accelerate financial inclusion and drive sustainable digital transformation across Indonesia's SME sector.

### 4.4. Persistent Challenges in SME Digitalization

Despite rapid growth, significant barriers continue to limit inclusive SME digital transformation. Table 5 summarizes the most pressing challenges identified in this study.

Table 5. Persistent Challenges Facing SME Digitalization

| Challenge | Description |
|---|---|
| Digital Divide | Uneven internet penetration, especially in rural regions, restricts affordable and reliable connectivity for SMEs. |
| Skills Gap | Low digital literacy among SME owners, particularly older entrepreneurs, hinders the effective use of digital platforms. |
| Platform Dependence | Heavy reliance on a single marketplace exposes SMEs to risks from platform fee increases or sudden policy changes. |
| Competitive Pressure | Dominance of large brands in online platforms reduces visibility for SMEs, increasing marketing costs and competition challenges. |

Table 5 illustrates that the digital divide and lack of skills are the most fundamental barriers to overcome. Without intervention, these issues risk excluding vulnerable SMEs from the digital economy. Addressing them requires integrated policies, including digital infrastructure development, training programs, and fair platform regulations to ensure equitable participation.

### 4.5. Discussion of Key Drivers

The digital transformation of SMEs in Indonesia was driven by several interrelated factors. The first was the pandemic-induced behavioral shift, which compelled consumers and businesses to rely on online platforms. The second factor was strong policy and platform support, such as government-led campaigns like Gerakan Nasional UMKM Go Digital and private-sector initiatives from Shopee, Tokopedia, Gojek, and TikTok Shop.

Technological innovations also played a critical role. The availability of e-wallets, PayLater schemes, and live shopping platforms blurred the lines between commerce and entertainment, supporting the vision of Society 5.0, which integrates cyberspace with physical spaces. Finally, an ecosystem effect emerged, whereby SMEs adopting one digital tool, such as QRIS, were more likely to adopt complementary tools such as digital bookkeeping and online advertising, creating a self-reinforcing cycle of digital growth.

## 5. MANAGERIAL IMPLICATIONS

This study offers valuable insights for stakeholders driving the digital transformation of SMEs in Indonesia, focusing on SME owners, policymakers, and digital platform providers. By implementing these recommendations, stakeholders can ensure sustainable and inclusive digitalization, aligning with SDGs, especially Goal 8 (Decent Work and Economic Growth) and Goal 10 (Reduced Inequalities).

### 5.1. Implications for SME Owners and Managers

This study highlights the need for SME owners and managers to view digitalization as a long-term strategy, not just a response to crises like COVID-19. SMEs should invest in improving digital literacy through training, workshops, and mentorship on e-commerce, QRIS-based payments, and social media marketing. By adopting scalable digital solutions, SMEs can streamline operations, reduce costs, and expand into broader markets, supporting SDG Goal 8 by promoting economic growth and decent work. Digitalized SMEs can create jobs, offer flexible working conditions, boost employee productivity, and use data analytics to enhance competitiveness and resilience.

### 5.2. Implications for Policymakers

The results of this study highlight several key roles for policymakers in reducing structural barriers to digitalization. Expanding digital infrastructure must be a top priority, particularly in rural and underserved areas, to bridge the rural-urban digital divide. Reliable internet access, stable electricity, and affordable digital services are essential to ensure equitable participation in the digital economy. Without these foundational improvements, many SMEs will remain excluded from the benefits of digital transformation.

In addition to infrastructure, policymakers should implement supportive measures such as financial incentives, tax reductions, or low-interest loans to help SMEs invest in digital tools and training. National initiatives like *UMKM Go Digital* should be strengthened and tailored to address sector-specific challenges, such as those faced by SMEs in agriculture, manufacturing, and retail. These policies align with SDG Goal 10 by reducing inequalities, enabling SMEs from various regions and socioeconomic backgrounds to access similar opportunities for growth.

Policymakers must also create regulatory frameworks that ensure fair competition in digital markets. Transparent rules on platform fees, data privacy, and consumer protection are critical to prevent exploitation and to maintain a healthy digital ecosystem where SMEs can compete alongside larger corporations.

### 5.3. Implications for Digital Platform Providers

Digital platforms act as intermediaries connecting SMEs to consumers and play a central role in accelerating digitalization. To better support SMEs, platforms should focus on developing user-friendly interfaces that simplify the onboarding process, especially for first-time adopters with limited technical experience. Clear and transparent pricing structures are vital for building trust and reducing the risk of SMEs becoming overly dependent on a single platform.

Collaboration between digital platforms, government bodies, and educational institutions is necessary to provide comprehensive digital training and mentorship programs. Such initiatives not only enhance SME capabilities but also foster an ecosystem where innovation and experimentation are encouraged. Additionally, platforms should ensure equitable visibility for SMEs by offering fair algorithms and affordable promotional tools, helping smaller businesses compete against larger, well-funded brands.

### 5.4. Alignment with SDGs

Integrating SME digitalization strategies with the SDGs provides a roadmap for sustainable and inclusive development. Digital transformation directly supports SDG Goal 8 by increasing productivity, fostering innovation, and creating high-quality employment opportunities. At the same time, it contributes to SDG Goal 10 by reducing regional and income disparities through equal access to digital tools, financial services, and markets.

To measure progress, stakeholders should monitor indicators such as the number of rural SMEs participating in e-commerce, the growth of women-led digital businesses, and the adoption rates of digital payment systems like QRIS. Tracking these indicators allows policymakers and business leaders to evaluate the inclusiveness and effectiveness of digitalization initiatives. This approach ensures that digital transformation benefits are distributed equitably, empowering SMEs to become key drivers of sustainable economic growth.

### 5.5. Conclusion of Managerial Implications

In conclusion, the managerial implications of this study highlight that SME digitalization is not merely a technological upgrade but a comprehensive socioeconomic transformation. By working collaboratively, SMEs, policymakers, and digital platform providers can create a robust digital ecosystem that enhances competitiveness while promoting equity and sustainability. Aligning digitalization strategies with SDG Goal 8 and Goal 10 ensures that the rapid growth of the digital economy translates into meaningful progress toward decent work, reduced inequalities, and sustainable national development.

## 6. CONCLUSION

The digitalization journey of SMEs in Indonesia during the post-pandemic era demonstrates a major transformation in how businesses operate and adapt to external disruptions. The COVID-19 pandemic accelerated the shift from traditional offline models to online platforms, with SMEs increasingly adopting e-commerce channels, QRIS-based digital payment systems, and social media marketing to maintain operations and reach broader markets. This transition has been vital for ensuring business continuity, improving competitiveness, and strengthening resilience. However, disparities remain evident, particularly among micro and small enterprises that face barriers such as limited digital literacy, inadequate infrastructure, and financial constraints, while medium-sized SMEs adapt more easily due to stronger resources and managerial capabilities. These gaps highlight the urgent need for inclusive strategies that provide access to training, affordable tools, and targeted policy support to prevent the digital divide from widening further.

Digital transformation offers both opportunities and challenges for Indonesia's SME sector and has direct implications for achieving the United Nations' SDGs. In particular, it contributes to Goal 8 (Decent Work and Economic Growth) by creating quality jobs, fostering innovation, and improving productivity, while supporting Goal 10 (Reduced Inequalities) by enabling rural and underserved SMEs to participate in digital markets. To maximize these benefits, a coordinated effort among government agencies, private sector actors, and SME associations is essential. By aligning digitalization initiatives with SDG targets and promoting cross-sector collaboration, Indonesia can transform SME digitalization from a crisis-driven survival strategy into a sustainable pathway for equitable economic growth, social inclusion, and global competitiveness.

## 7. DECLARATIONS

### 7.1. About Authors

Agung Rizky (AR) https://orcid.org/0009-0006-7046-8639

Ahmad Gunawan (AG) https://orcid.org/0000-0003-2379-2576

Ramiro Santiago Ikhsan (RS) https://orcid.org/0009-0005-3957-8576

### 7.2. Author Contributions

Conceptualization: RS; Methodology: AR, AG, and RS; Software: RS; Validation: AR and AG; Formal Analysis: AR and RS; Investigation: RS; Resources: RS; Data Curation: RS; Writing Original Draft Preparation: AR and RS; Writing Review and Editing: AR and AG; Visualization: AG; All authors, AR, AG, RS, and RS, have read and agreed to the published version of the manuscript.

### 7.3. Data Availability Statement

The data presented in this study are available on request from the corresponding author.

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### 7.5. Declaration of Conflicting Interest

The authors declare that they have no conflicts of interest, known competing financial interests, or personal relationships that could have influenced the work reported in this paper.

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