

# Direction on Digital Technology Adoption for SMEs Before, During and After the Pandemic Covid-19: An Insight from Indonesian SMEs

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## Abstract

*This study explores the digital transformation strategies adopted by small and medium enterprises (SMEs) in Indonesia's creative industries before, during, and after the COVID-19 pandemic. Through a qualitative approach involving semi-structured interviews with five SME owners and managers in Yogyakarta, this research examines how SMEs adapted their business models and operations to ensure resilience amid unprecedented disruptions. Findings indicate that, initially, SMEs showed limited digital engagement due to perceived value challenges and digital literacy gaps. However, during the pandemic, the necessity to survive led to rapid digital adoption, including e-commerce platforms, digital payments, and customer relationship management tools. Collaborative partnerships with logistics and marketing providers became essential for business continuity, demonstrating the value of ecosystem-based strategies. In the post-pandemic phase, SMEs increasingly viewed digital transformation as a core strategy, investing in digital skills, infrastructure, and long-term digital strategies for scalability and growth. This study contributes to the literature by offering a phased perspective on digital transformation, highlighting how a crisis-driven response can evolve into a sustainable growth strategy. Policy implications suggest that digital literacy programs, financial incentives, and public-private partnerships could further support SME digitalization in developing economies. This research emphasizes that digital transformation serves as a crisis-response mechanism and a strategic asset, equipping SMEs with resilience and adaptability for future challenges.*

**Keywords:** *Digital Transformation, SMEs, Resilience, COVID-19, Ecosystem Strategies, Indonesia.*

## Introduction

The COVID-19 pandemic has caused unprecedented disruptions across global economies, with small and medium enterprises (SMEs) among the hardest hit (Ritter & Pedersen, 2020). In Indonesia, where SMEs form a vital part of the economic fabric and contribute significantly to employment and GDP, the pandemic underscored the urgent need for adaptability and resilience among these enterprises. Many SMEs faced severe challenges, including disrupted supply chains, shifting consumer behavior, and restrictions on physical operations. While larger corporations may have resources to buffer against such disruptions, SMEs are more vulnerable due to limited financial reserves and operational flexibility (Chopra & Khan, 2022; Amankwah-Amoah et al., 2021). In this context, digital transformation has emerged as a critical pathway for survival and resilience, offering SMEs tools and strategies to navigate and recover from such crises (Kraus et al., 2020; Alves et al., 2020).

Existing research has highlighted digital transformation as a viable strategy for SME resilience, particularly in crises. Studies indicate that digitalization allows SMEs to streamline operations, reduce costs, and maintain customer engagement despite physical constraints (Bohnsack & Pinkse, 2021; Cueto et al., 2022). The transition to digital platforms has also been associated with increased market reach, improved customer interactions, and enhanced operational efficiency, making it an attractive option for SMEs striving to adapt to new business norms (Almeida et al., 2020). However, much of the current literature focuses on digital adoption during the pandemic, largely centered on businesses' immediate, reactive responses to counteract lockdowns and economic restrictions. This focus, while valuable, leaves a gap in understanding the sustainability and evolution of digital transformation strategies as SMEs transition from pandemic response to long-term resilience and growth (Priyono et al., 2020; Bartik et al., 2020).

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Furthermore, most digital transformation studies have been conducted in developed economies, where digital infrastructure, financial support, and technological literacy are more accessible. This has led to a lack of comprehensive insights into the unique challenges and adaptive strategies in developing countries like Indonesia. SMEs may face additional barriers, such as limited access to digital tools, lower levels of digital literacy, and constrained financial resources (Verhoef et al., 2021; Maglakelidze & Erkomashvili, 2021). The context of a developing economy introduces complex variables that impact how digital transformation is adopted and sustained among SMEs, necessitating a tailored examination of these dynamics.

This study addresses these gaps by providing an in-depth exploration of digital transformation strategies employed by Indonesian SMEs before, during, and after the pandemic. By focusing on SMEs within the creative industries of Yogyakarta, this study captures the nuanced and evolving nature of digital adoption in a developing economy context. Through qualitative methods, we aim to examine how Indonesian SMEs have adapted their business models, operational structures, and customer engagement strategies through digital transformation (Bohnsack & Pinkse, 2021). The research also considers the broader implications for business resilience, investigating whether these digital strategies serve as temporary crisis measures or if they lay the groundwork for sustained growth and adaptability in the post-pandemic landscape (Chopra & Khan, 2022; Cabarellero-Morales, 2021).

## Literature Review

### *Digital Transformation in SMEs*

Digital transformation, broadly defined as integrating digital technology into business processes, has become increasingly significant for SMEs, especially in navigating crises and competitive environments (Verhoef et al., 2021). Unlike larger corporations with greater resources and access to digital infrastructure, SMEs often face challenges in digital adoption, such as limited financial and technological resources and lower levels of digital literacy (Almeida et al., 2020). Despite these challenges, digital transformation offers SMEs opportunities to enhance operational efficiency, improve customer engagement, and increase market reach (Ritter & Pedersen, 2020).

The literature indicates that while SMEs recognize the potential benefits of digital tools, many approach digitalization incrementally rather than through comprehensive, immediate transformation (Kraus et al., 2020). Before the COVID-19 pandemic, research highlighted that SMEs in emerging economies often relied on basic digital tools for marketing and communication without fully integrating digital solutions into their core operations (Priyono et al., 2020). This incremental approach reflects a hesitancy to invest in unfamiliar technologies and a perceived lack of necessity among many SMEs, especially in traditional industries (Bohnsack & Pinkse, 2021).

### *Impact of the COVID-19 Pandemic on Digital Transformation*

The COVID-19 pandemic acted as a catalyst for digital transformation worldwide, pushing SMEs to adopt digital solutions for survival amidst lockdowns and social distancing measures (Chopra & Khan, 2022). With physical interactions restricted, digital channels became essential for SMEs to maintain business continuity. Studies during the pandemic demonstrated that SMEs increasingly turned to e-commerce platforms, digital payment systems, and social media to sustain customer engagement and sales (Duarte-Alonso et al., 2020). Digital payment solutions, such as GoPay and OVO in Indonesia, were especially crucial, enabling contactless transactions that complied with health guidelines and facilitated faster financial processes (Chopra & Khan, 2022).

In this period, the literature identifies the “reactive digital adoption” concept, where SMEs rapidly adopted digital tools in response to immediate pressures rather than long-term strategic goals (Ritter & Pedersen, 2020). This reactive adoption was particularly evident in SMEs’ increased use of CRM systems, which allowed businesses to gather customer feedback, personalize services, and strengthen customer relationships, thereby supporting short-term resilience (Bohnsack & Pinkse, 2021). Studies also indicate

that SMEs with pre-existing digital capabilities adapted more quickly, leveraging their foundational digital knowledge to scale operations and develop new customer engagement strategies (Kraus et al., 2020).

### *Post-Pandemic Digital Strategy and Long-Term Resilience*

As the pandemic receded, many SMEs recognized the long-term advantages of maintaining digital operations. The shift from crisis-driven adoption to strategic digital integration has been widely discussed in recent literature, which notes that digital transformation now serves as a survival tool and a pathway for sustainable growth (Verhoef et al., 2021). Researchers argue that the pandemic underscored the strategic importance of digital resilience—embedding flexibility, scalability, and adaptability into business models to prepare for future uncertainties (Nambisan et al., 2019).

Post-pandemic, SMEs have increasingly invested in digital skills development, infrastructure upgrades, and advanced digital tools such as analytics and inventory management systems (Almeida et al., 2020). These investments reflect a shift in SMEs' perspectives on digitalization: rather than viewing digital transformation as an emergency measure, they now consider it a core component of business strategy. This strategic shift aligns with the Resource-Based View (RBV), which posits that firms gain a competitive advantage by developing internal resources, such as digital capabilities, that are valuable, rare, and difficult to imitate (Barney, 1991).

### *The Role of Ecosystem-Based Strategies in Digital Transformation*

Ecosystem-based strategies have gained prominence in the literature as effective approaches for resource-constrained SMEs seeking to expand their digital capabilities. These strategies involve collaborations with external partners—such as technology providers, logistics firms, and industry peers—to share resources, access new markets, and reduce the risks associated with digital investments (Nambisan et al., 2019). Studies indicate that ecosystem partnerships can significantly enhance SME resilience by enabling shared learning, resource pooling, and greater access to digital infrastructure (Chopra & Khan, 2022).

The literature emphasizes that ecosystem-based strategies are particularly valuable in developing economies, where SMEs often face systemic barriers to digital adoption (Verhoef et al., 2021). By partnering with technology providers and other stakeholders, SMEs can bridge capability gaps, access digital platforms, and extend their market reach. For example, during the COVID-19 pandemic, Indonesian SMEs leveraged partnerships with delivery services and digital marketing agencies to reach new customer segments and maintain operations despite logistical challenges (Duarte-Alonso et al., 2020). These partnerships align with the Quadruple Helix Model, which advocates for collaboration among academia, industry, government, and society to foster innovation (Yun & Liu, 2019).

### *Summary and Research Gaps*

While existing literature provides insights into the phases of digital adoption and ecosystem strategies for resilience, a limited focus remains on the comprehensive, phased digital transformation process in SMEs before, during, and after the COVID-19 pandemic. Much of the research has also focused on developed economies, where digital infrastructure and resources are more readily available. This study addresses these gaps by examining how Indonesian SMEs in the creative industries have navigated digital transformation across these phases, capturing the context-specific challenges and strategies employed in a developing economy.

## **Methodology**

### *Research Design*

This study employs qualitative research to explore digital transformation strategies among SMEs in Indonesia's creative industries. Given the nuanced and evolving nature of digital adoption across different phases of the COVID-19 pandemic, a qualitative approach provides the depth required to understand

complex phenomena within their real-world contexts (Yin, 2014). A multiple case study method was chosen, enabling a comparative analysis of diverse digital transformation strategies and capturing each SME's unique challenges and successes in adopting digital tools for resilience (Eisenhardt & Graebner, 2007).

### *Sampling Strategy*

A purposive sampling method was used to select SMEs that best represent the creative industries in Yogyakarta, Indonesia. Five SMEs from different sub-sectors (e.g., arts and crafts, fashion, digital media) were selected to ensure diverse perspectives. These SMEs were chosen based on their level of engagement with digital tools and willingness to share detailed insights into their digital transformation processes. This approach allowed the study to gather data from SMEs with varying degrees of digital maturity, thereby enhancing the richness and diversity of the findings (Patton, 2002).

### *Data Collection*

#### *Semi-Structured Interviews:*

The primary data collection method was semi-structured interviews with owners and managers of the selected SMEs. Each interview lasted 60 to 90 minutes and followed a guided, open-ended question format to allow participants to discuss their digital transformation journeys in depth. The interview questions were designed to elicit insights into (1) *Pre-pandemic Digital Adoption*: Exploring initial attitudes, digital tools used, and barriers faced before COVID-19. (2) *Pandemic-Induced Digital Changes*: Examining rapid adaptations, digital solutions adopted during lockdowns, and immediate challenges encountered. (3) *Post-pandemic Digital Strategy*: Understanding how digital tools are currently used, plans for future digital expansion, and the role of ecosystem partnerships. All interviews were recorded and transcribed verbatim to preserve participants' original statements. This approach provides a rich, textual dataset for thematic analysis (Braun & Clarke, 2006).

#### *Field Observations*

Field observations were conducted to gain contextual insights into each SME's operational environment. Observations focused on (1) *Digital Infrastructure*: Assessing the on-ground setup and utilization of digital tools. (2) *Employee Interaction with Digital Tools*: Observing how employees engage with digital platforms in daily tasks. Field notes were taken during each observation to document specific interactions and behaviors, adding a layer of context that supplements the interview data (Marshall & Rossman, 2016).

#### *Data Analysis*

Data analysis followed a thematic analysis approach to identify patterns within the qualitative data (Braun & Clarke, 2006). The analysis process was conducted in three stages:

*Open Coding*. Initial coding was performed to identify recurring concepts and patterns related to digital adoption across the three pandemic phases (before, during, and after). Codes were derived directly from the data and were repeatedly refined to ensure clarity and consistency.

2. *Axial Coding*. During axial coding, the initial codes were grouped into higher-order themes based on their relevance to each phase of digital transformation. This step helped organize findings into core categories, such as "digital hesitancy," "digital partnerships," and "digital strategy," which correspond to the study's phases of analysis.

*Selective Coding*. In the final stage, selective coding was conducted to refine the major themes and draw connections across the phases of digital adoption. This step allowed the researcher to build a coherent narrative on how digital strategies evolved from initial hesitancy to crisis response and strategic expansion.

### *Validity and Reliability*

To enhance validity and reliability, this study employed the following strategies:

**Triangulation:** Data was triangulated by combining interviews, field observations, and secondary sources (e.g., company documents and online profiles) to validate findings and provide a comprehensive view of each SME's digital transformation journey (Yin, 2014).

**Member Checking:** After initial analysis, participants were invited to review the findings relevant to their responses, allowing for confirmation and clarification of the data (Creswell & Poth, 2018).

**Peer Debriefing:** The qualitative research findings were discussed with colleagues to provide objective feedback and ensure analytical rigor.

### *Ethical Considerations*

This study adhered to ethical guidelines by obtaining informed consent from all participants, ensuring confidentiality, and securing data. Participants were informed of their right to withdraw from the study without penalty. All data was anonymized to protect participant identities and stored securely, following research ethics standards.

## **Results**

The findings of this study provide a timeline view of how SMEs in Indonesia's creative industries adopted digital transformation strategies to enhance resilience across three phases—Before, During, and After the COVID-19 pandemic.

### *Before COVID-19: Initial Digital Hesitancy and Limited Adoption*

**Minimal Digital Infrastructure:** Before the pandemic, most SMEs in Yogyakarta operated with minimal digital infrastructure. Digital tools were primarily used for basic marketing (e.g., social media). At the same time, core business operations remained traditional and in-person, reflecting a general reluctance toward comprehensive digital adoption due to limited resources (Ritter & Pedersen, 2020). Here are sample responses from the respondents, structured according to the before-COVID-19 phase:

*"Before the pandemic, our business was mostly offline. We used social media, but it was more for brand awareness than actual sales,"* shared Respondent 1, the owner of a small arts and crafts shop owner.

Respondent 2, who operates a traditional clothing boutique, remarked, *"We didn't think going digital was necessary. Most of our customers came to the store directly."*

**Challenges in Perceived Value and Digital Literacy:** Many SMEs had low digital literacy and perceived limited value in digital transformation, making traditional customer engagement and sales methods seem sufficient (Almeida et al., 2020). Like other developing economies, the digital gap and hesitancy hindered broader digital adoption (Verhoef et al., 2021). Below are responses from the respondents, structured according to the before-COVID-19 phase:

*"I was skeptical about investing in digital tools. It seemed expensive, and I didn't have the skills,"* said Respondent 3, the manager of a local fashion store, reflecting on the limited perceived value of digital transformation before the pandemic.

Respondent 4, a jewelry business owner, mentioned, *"I thought our traditional methods were enough. Digital seemed complex and risky."*

*Early Digital Experiments by Forward-Looking SMEs:* Some SMEs, particularly those with forward-thinking leadership, had started experimenting with e-commerce platforms and digital payments to extend market reach, albeit at a limited scale, driven by early adopters exploring new customer segments (Priyono et al., 2020). Below are responses from the respondents, structured according to the before-COVID-19 phase:

Respondent 5, who ran a small digital media business, noted, *"We had started using e-commerce platforms, but it was slow. It was not until the pandemic that it really picked up."*

#### *During COVID-19: Rapid Shift to Digital Platforms as a Crisis Response*

*Accelerated Adoption of E-commerce and Social Media:* With physical interactions restricted, many SMEs rapidly adopted e-commerce and social media platforms (e.g., Shopee, Instagram, WhatsApp Business) to maintain customer engagement, allowing SMEs to reach broader audiences despite lockdowns (Bohnsack & Pinkse, 2021). Below are responses from the respondents, structured according to the COVID-19 phase:

*"When lockdowns happened, we had to move online quickly,"* said Respondent 1. *"Instagram became our main platform, and we learned to sell directly to customers through social media."*

Respondent 3 noted, *"We joined Shopee and Lazada. We didn't know much about these platforms before, but suddenly, it was necessary."*

*Integration of Digital Payment Systems:* Digital payment solutions (e.g., GoPay, OVO) were widely adopted, providing contactless transaction options aligned with health protocols and improved transaction efficiency (Chopra & Khan, 2022). Below are responses from the respondents, structured according to the COVID-19 phase:

*"Customers preferred cashless payments due to health concerns, so we adopted GoPay and OVO,"* explained Respondent 2. *"It was new to us, but now, more than half of our sales are digital payments."*

Respondent 4 shared, *"Digital payments made transactions faster and easier to track. It's something we will keep using."*

*Customer Relationship and Retention through Digital Tools:* SMEs utilized customer relationship management (CRM) tools to gather feedback, maintain loyalty, and understand customer needs, demonstrating the importance of digital engagement for customer retention during crises (Ritter & Pedersen, 2020). Here are responses from the respondents, structured according to the COVID-19 phase:

*"We started using WhatsApp to keep in touch with customers and send them updates on new products,"* said Respondent 5. *"It helped us keep them engaged and feel valued, even when they could not visit in person."*

Respondent 1 mentioned, *"We gathered customer feedback online and adjusted our products accordingly. It felt more interactive."*

*Collaborative Digital Partnerships:* SMEs formed partnerships with logistics providers, digital marketing agencies, and other third-party services, allowing them to extend market reach, improve operational efficiency, and overcome internal constraints. This supports the literature on ecosystem-based resilience strategies (Nambisan et al., 2019). The following are responses from the respondents, structured according to the COVID-19 phase:

Respondent 3 noted, *"We partnered with a local logistics provider to handle deliveries. Before, we had no experience with shipping, but it became essential during lockdown."*

*"We hired a digital marketing agency to improve our online visibility,"* explained Respondent 2. *"They helped us reach customers we would not have accessed on our own."*

### *After COVID-19: Consolidation and Strategic Expansion of Digital Transformation*

*Sustained Use of Digital Sales and Marketing Channels:* As markets reopened, SMEs continued using digital platforms as core elements of their business models, finding competitive advantages in digital customer engagement (Bohnsack & Pinkse, 2021). The following are responses from the respondents, structured according to the after-COVID-19 phase:

*"Even after the pandemic, we continue to rely on Instagram and our online store,"* said Respondent 1. *"We saw how much potential there is in digital sales."*

Respondent 4 mentioned, *"Digital marketing has become our primary channel. Our physical store is secondary now."*

*Investment in Digital Skills and Infrastructure:* SMEs recognized the long-term value of digitalization and began investing in employee training, upgrading infrastructure, and adopting tools for inventory management and analytics, reflecting global trends in post-pandemic digital adoption (Verhoef et al., 2021; Almeida et al., 2020). The following are responses from the respondents, structured according to the after-COVID-19 phase:

*"We realized the need for digital skills training,"* stated Respondent 3. *"Our staff attended online workshops to improve their e-commerce skills, and it has made a difference."*

Respondent 2 noted, *"We invested in a better website and a more efficient inventory system. These changes make us more competitive."*

*Focus on Digital Strategy for Long-Term Growth:* Digital transformation shifted from a survival tactic to a strategic priority, with SMEs developing comprehensive digital strategies aimed at scalability and adaptability for future growth (Kraus et al., 2020). The following are responses from the respondents, structured according to the after-COVID-19 phase:

*"Digital transformation is now part of our long-term strategy,"* said Respondent 5. *"We are planning to expand into international markets online, something we had not considered before COVID-19."*

Respondent 1 shared, *"We want to use data to understand customer preferences better and adjust our product offerings accordingly."*

*Building Ecosystems for Resilience:* SMEs increasingly collaborated with other businesses to create resilient digital ecosystems, facilitating mutual support, shared learning, and adaptability for long-term stability (Chopra & Khan, 2022). The following are responses from the respondents, structured according to the after-COVID-19 phase:

*"We continue to collaborate with our delivery partner and are now exploring partnerships with payment platforms,"* Respondent 4 explained. *"These networks help us stay resilient."*

Respondent 3 emphasized, *"Our partnerships with other small businesses and suppliers have created a support system that we can rely on during tough times."*

## **Discussion**

This study confirms that digital transformation within SMEs does not require an immediate, comprehensive overhaul but can follow a phased, modular approach. The findings show that digital adoption initially pursued as a survival strategy during the pandemic, has become essential to customer engagement and business resilience, embedding agility into SMEs' operations (Juergensen et al., 2020). Moreover, partnerships played a critical role for resource-constrained SMEs, highlighting the value of ecosystem-based resilience. Collaborations allowed SMEs to access new markets, share resources, and reduce risks, aligning with research on networked resilience in digital ecosystems (Nambisan et al., 2019).

### *Implications for Practice*

This study provides actionable strategies for a phased approach to digital transformation for SME practitioners. First, adopt incremental digital solutions. By initially focusing on core functions like sales and marketing, SMEs can gain immediate benefits and gradually expand into broader digital strategies (Bohnsack & Pinkse, 2021). Second, leverage partnerships. Collaborating with logistics, digital marketing, and tech firms enables SMEs to overcome resource limitations and reach broader markets (Chopra & Khan, 2022).

### *Implications for Policy*

Policymakers can facilitate SME digital transformation in several ways. First, implementing digital literacy programs. Training, especially in underserved areas, can help SMEs make informed decisions on digital adoption (Verhoef et al., 2021). Second, providing financial incentives. Subsidies for digital infrastructure and tools can ease the financial burden on SMEs (Almeida et al., 2020). Third, encouraging public-private partnerships. Government collaborations with tech firms can facilitate affordable access to digital training and resources, creating a supportive environment for SME resilience (Ritter & Pedersen, 2020).

### *Limitations of the Study*

This study is limited to SMEs in Yogyakarta's creative industries, which may not fully represent other sectors. Future research could explore digital transformation across diverse regions and industries. Additionally, as digital technology evolves rapidly, further studies could examine the adoption of new tools as they emerge.

## **Conclusion**

This study provides a comprehensive view of digital transformation in Indonesian SMEs as a phased pathway for resilience and growth. By framing digital transformation within the Before, During, and After pandemic phases, the research highlights a modular approach other SMEs can use to navigate crises effectively. Digital transformation, initially a crisis-driven response, has become a critical strategy for sustained success, with ecosystem partnerships proving essential for overcoming resource limitations. Overall, this study expands the understanding of digital transformation as a dual-purpose mechanism for crisis response and strategic development. These findings suggest that digital transformation is a survival tool and a sustainable advantage, positioning SMEs for long-term competitiveness in an increasingly digitalized economy (Kraus et al., 2020; Priyono et al., 2020; Verhoef et al., 2021).

## **Acknowledgement**

We extend our sincere gratitude to the Indonesian Ministry of Education, Culture, Research, and Technology (Main Contract Number: 157/E5/PG.02.00.PT/2022; Derivative contract number: 1989.1/LL5-INT/PG.02.00/2022; 004/ST-DirDPPM/70/DPPM/PDKN-KEMDIKBUDRISTEK/V/2022) for generously providing the research grant that made this study possible.

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