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Digital Adaptation Model of Batik SMEs in Responding to Changes in Consumer Behavior in the Society 5.0 Era

Muhammad Abdillah*

SMAN 1 Tulungagung

*Email Korespondensi: abdillah23@gmail.com

Abstract

The rapid advancement of digital technology in the Society 5.0 era has significantly transformed consumer behavior, particularly in information searching, purchasing decisions, and digital interactions, compelling Batik Small and Medium Enterprises (SMEs) to adapt their business practices. This study aims to develop a digital adaptation model for Batik SMEs in responding to changing consumer behavior and maintaining business competitiveness in the digital economy. A qualitative research approach was employed using a multiple case study design involving Batik SMEs in Indonesia. Data were collected through in-depth interviews, observations, and document analysis, and subsequently analyzed using thematic analysis. The findings reveal that the digital adaptation of Batik SMEs is driven by four key dimensions: digital capability development, utilization of digital marketing platforms, innovation in customer engagement strategies, and strengthening of organizational learning. These dimensions contribute to improved market reach, customer responsiveness, and business resilience. The study concludes that successful digital adaptation requires an integrated strategy that combines technological adoption, managerial innovation, and continuous learning. Practically, the proposed model can serve as a strategic reference for Batik SMEs, policymakers, and business development institutions in accelerating digital transformation and enhancing competitiveness in the Society 5.0 era.

Keywords: Digital Adaptation; Batik SMEs; Consumer Behavior; Society 5.0; Digital Transformation

Introduction

The emergence of the Society 5.0 era has accelerated the convergence between digital technologies and human-centered innovation, fundamentally reshaping consumer behavior across various industries. Consumers increasingly rely on digital platforms, social media, e-commerce, artificial intelligence, and mobile technologies to search for information, evaluate products, and engage with businesses. This phenomenon has shifted traditional purchasing patterns toward more personalized, interactive, and digitally mediated experiences. As a result, businesses are required to develop adaptive capabilities that enable them to respond effectively to rapidly evolving customer expectations and market dynamics. Recent studies indicate that digital transformation has become a critical determinant of organizational competitiveness, customer value creation, and business sustainability in the digital economy (Vial, 2021; Escosz-Barragan & Becker, 2025; Kahveci, 2025). Furthermore, digital technologies facilitate new forms of value co-creation and strengthen

relationships between firms and consumers through enhanced connectivity and data-driven decision-making (Verhoef et al., 2021; Caputo et al., 2021).

Within this context, Small and Medium Enterprises (SMEs) are increasingly encouraged to embrace digital transformation as a strategic response to environmental uncertainty and changing consumer behavior. Digital transformation is no longer limited to technology adoption but encompasses organizational restructuring, capability development, business model innovation, and customer engagement enhancement. Studies have demonstrated that SMEs capable of integrating digital technologies into their business processes achieve higher levels of performance, resilience, and competitive advantage (Kahveci, 2025; Barragan & Becker, 2025). Likewise, digital transformation enables SMEs to create new distribution channels, improve operational efficiency, and strengthen customer relationships (Caputo et al., 2021). However, many SMEs continue to experience difficulties in developing digital readiness due to resource constraints, limited digital competencies, and inadequate strategic orientation toward innovation.

The Dynamic Capability Theory provides a robust theoretical lens for understanding how organizations adapt to environmental changes through sensing opportunities, seizing resources, and transforming organizational processes. Dynamic capabilities enable firms to continuously reconfigure their internal and external resources in response to technological disruptions and market turbulence. Recent research confirms that dynamic capabilities significantly contribute to business model innovation, organizational agility, digital transformation, and sustainable performance among SMEs (Putri et al., 2026; Zainuba & Nursyamsiah, 2025). Furthermore, sensing capability, learning capability, and strategic flexibility have been identified as essential antecedents of successful digital transformation initiatives (Caputo et al., 2021; Kahveci, 2025). Therefore, understanding digital adaptation through the dynamic capability perspective is highly relevant for explaining how Batik SMEs respond to changing consumer behavior in the Society 5.0 era.

Another important dimension in the digital adaptation process is Digital Marketing Capability (DMC). Digital marketing capability refers to an organization's ability to effectively utilize digital technologies, analytics, social media, customer relationship management systems, and online communication tools to create customer value and achieve superior market performance. Previous studies reveal that DMC positively influences customer engagement, innovation capability, brand performance, and business growth (Elkhouday et al., 2026; Jaya et al., 2026). Social media strategic capability also enhances organizational innovation by facilitating knowledge exchange, customer interaction, and market responsiveness (Fan et al., 2021). Consequently, DMC has become a critical strategic asset for SMEs seeking to remain competitive in increasingly digitalized markets.

In addition to technological and marketing capabilities, organizational learning and innovation capability play a central role in facilitating digital adaptation. Organizational learning enables firms to acquire, disseminate, and apply knowledge necessary for adapting to technological changes and market developments. Innovation capability, meanwhile, allows firms to transform acquired knowledge into new products, services, processes, and business models. Empirical evidence demonstrates that organizational learning significantly enhances innovation capability, which subsequently improves firm performance and competitiveness (Ningsih et al., 2024). Moreover, learning-oriented organizations tend to be more agile and successful in implementing digital transformation initiatives because they continuously update their knowledge base and adapt their routines to environmental changes.

Despite the growing body of literature on digital transformation and SME competitiveness, several research gaps remain unresolved. First, previous studies predominantly examine the direct relationship between digital technology adoption and organizational performance, while limited attention has been devoted to understanding digital adaptation as an integrated process involving dynamic capability, digital marketing capability, organizational learning, innovation capability, and

changing consumer behavior. Second, existing studies often focus on general SME contexts, thereby overlooking sector-specific characteristics of cultural and creative industries such as Batik SMEs. Third, empirical research explicitly addressing the Society 5.0 context and its implications for Batik SMEs remains scarce. Consequently, there is a need for a more comprehensive framework that explains how Batik SMEs adapt digitally in response to evolving consumer behavior and technological disruption.

This study offers novelty by proposing a Digital Adaptation Model for Batik SMEs that integrates Dynamic Capability Theory, Digital Marketing Capability, Organizational Learning, Innovation Capability, and Consumer Behavior perspectives within the Society 5.0 framework. Unlike previous studies that focus solely on technology adoption or performance outcomes, this research develops a holistic model explaining the mechanisms through which Batik SMEs build digital resilience and competitiveness. Therefore, this article aims to develop and analyze a Digital Adaptation Model for Batik SMEs in responding to changes in consumer behavior in the Society 5.0 era and to identify strategic dimensions that support sustainable business competitiveness.

Methods

This study employed a qualitative research approach using a multiple case study design to explore and develop a digital adaptation model for Batik Small and Medium Enterprises (SMEs) in responding to changes in consumer behavior in the Society 5.0 era. A qualitative approach was considered appropriate because the study sought to gain an in-depth understanding of the experiences, perceptions, strategies, and adaptive behaviors of Batik SME owners in the context of digital transformation. The multiple case study design enabled the researchers to investigate similarities and differences across several business cases, thereby enhancing the robustness and transferability of the findings.

The research was conducted in two major batik-producing regions in East Java, namely Bangkalan Regency and Sidoarjo Regency. These regions were selected because they represent important centers of batik production and have experienced varying levels of digital technology adoption in recent years. The unit of analysis consisted of Batik SMEs that had actively operated for at least three years and had utilized at least one form of digital platform, such as social media, e-commerce marketplaces, digital payment systems, or online marketing channels. Informants were selected through purposive sampling, which is commonly employed in qualitative studies to identify participants who possess relevant knowledge and experience regarding the research phenomenon. A total of 15–20 key informants were involved in the study, including SME owners, managers, digital marketing administrators, representatives of local government agencies responsible for SME development, and consumers who regularly purchase batik products through digital platforms.

Data were collected through semi-structured in-depth interviews, direct observations, and document analysis. Semi-structured interviews were conducted using an interview guide developed from the concepts of digital transformation, dynamic capability, digital marketing capability, organizational learning, innovation capability, and consumer behavior. The interview format allowed researchers to explore participants' experiences while maintaining consistency across cases. Each interview lasted approximately 45 to 90 minutes and was recorded with participants' consent. Direct observations were carried out to examine business operations, digital marketing activities, customer interaction practices, and technology utilization within the SMEs. In addition, supporting documents such as business profiles, digital marketing reports, social media content, government policy documents, and training materials were analyzed to provide contextual understanding and strengthen data triangulation.

To ensure the credibility and trustworthiness of the findings, several validation techniques were applied. Data triangulation was conducted by comparing information obtained from different sources and data collection methods. Member checking was also performed by providing interview summaries to selected participants for verification of accuracy and interpretation. Furthermore, peer debriefing was undertaken through discussions with academic colleagues who possess expertise in digital business and qualitative research methodologies.

The collected data were analyzed using thematic analysis following the procedures proposed by Braun and Clarke. The analysis began with data familiarization through repeated reading of interview transcripts and field notes. Subsequently, initial codes were generated to identify meaningful patterns related to digital adaptation practices. These codes were then grouped into broader categories and themes representing the dimensions of digital adaptation among Batik SMEs. The emerging themes were continuously reviewed, refined, and interpreted to develop a comprehensive conceptual model. To facilitate systematic data organization, coding, and theme development, the qualitative data analysis software NVivo 14 was utilized.

The analysis focused on identifying the key dimensions, mechanisms, and interrelationships that characterize digital adaptation among Batik SMEs in the Society 5.0 era. Particular attention was given to the roles of digital capability development, digital marketing capability, organizational learning, innovation capability, and consumer behavior changes in shaping SME adaptation strategies. The final outcome of the analysis was the formulation of a Digital Adaptation Model that explains how Batik SMEs respond to technological disruption and evolving consumer expectations while maintaining business competitiveness and sustainability.

Results and Discussion

Results

The thematic analysis revealed that the digital adaptation of Batik SMEs in the Society 5.0 era is characterized by five interconnected dimensions: digital capability development, digital marketing capability, customer engagement innovation, organizational learning, and innovation capability. These dimensions collectively form a Digital Adaptation Model that enables Batik SMEs to respond effectively to changes in consumer behavior and maintain business competitiveness.

The first dimension identified was “digital capability development”. Most informants emphasized that the adoption of digital technologies was initially driven by changing consumer preferences, where customers increasingly searched for product information, compared alternatives, and completed transactions through digital platforms. Batik SMEs that actively improved their digital skills through training programs, self-learning, and collaboration with external stakeholders demonstrated greater flexibility in responding to market changes. The findings indicate that digital capability serves as a foundational resource that facilitates the effective utilization of digital technologies in business operations.

The second dimension was “digital marketing capability”. The majority of SMEs utilized social media platforms such as Instagram, Facebook, TikTok, and WhatsApp Business to promote products and interact with customers. Marketplace platforms were also employed to expand market reach beyond local consumers. SMEs with stronger digital marketing capabilities reported higher levels of customer engagement, increased online visibility, and broader market penetration. These findings suggest that digital marketing capability plays a strategic role in connecting SMEs with digitally oriented consumers.

The third dimension was “customer engagement innovation”. Batik SMEs increasingly adopted interactive marketing strategies, including live streaming sales, personalized communication, digital storytelling, and user-generated content campaigns. Such initiatives enabled businesses to establish

stronger emotional connections with customers and improve customer loyalty. Informants acknowledged that consumers in the Society 5.0 era expect not only quality products but also meaningful digital experiences throughout the purchasing process.

The fourth dimension was “organizational learning”. The study found that SMEs demonstrating a strong learning orientation were more capable of adapting to technological changes and market dynamics. Learning activities included participation in digital entrepreneurship training, benchmarking with successful businesses, and continuous evaluation of digital marketing performance. Organizational learning facilitated the acquisition and dissemination of knowledge necessary for digital transformation.

The fifth dimension was “innovation capability”. SMEs that successfully integrated digital technologies into their business processes developed innovative products, services, and business models. Product customization, digital-based customer services, and hybrid online-offline marketing strategies emerged as common forms of innovation. Innovation capability enabled SMEs to create differentiated value propositions and strengthen their competitive advantage in increasingly digitalized markets.

Based on these findings, a Digital Adaptation Model was developed, illustrating that digital capability acts as a primary enabler that strengthens digital marketing capability, organizational learning, and innovation capability. These dimensions subsequently influence customer engagement innovation, which ultimately enhances business competitiveness and resilience in the Society 5.0 era.

Discussion

The findings indicate that digital adaptation among Batik SMEs is a multidimensional process that involves technological, organizational, and market-oriented transformations. The emergence of digital capability as the primary driver of adaptation demonstrates that SMEs must possess the ability not only to adopt digital technologies but also to strategically integrate them into business processes. This finding is consistent with the Technology–Organization–Environment (TOE) framework, which emphasizes that successful digital transformation depends on technological readiness, organizational capability, and environmental pressures (Baker, 2022). In the context of Batik SMEs, changing consumer behavior and increasing digital market competition constitute significant external pressures that encourage firms to strengthen their digital capabilities.

The results further reveal that digital marketing capability plays a critical role in expanding market access and enhancing customer engagement. Batik SMEs that actively utilized social media, online marketplaces, and digital communication channels were able to improve customer interactions and strengthen brand visibility. This finding aligns with the study of Dwivedi et al. (2023), who argue that digital marketing technologies enable businesses to create personalized customer experiences and foster stronger customer relationships. Similarly, Chatterjee et al. (2022) found that SMEs with advanced digital marketing capabilities demonstrate superior responsiveness to market changes and achieve higher levels of customer satisfaction.

Another important finding concerns the increasing importance of customer engagement innovation. Consumers in the Society 5.0 era are no longer passive recipients of products and services but actively participate in value creation through digital interactions. The adoption of digital storytelling, interactive content, and personalized communication strategies among Batik SMEs reflects the growing need to create customer-centric business models. This finding supports the Service-Dominant Logic perspective proposed by Vargo and Lusch (2022), which emphasizes that value is co-created through continuous interactions between firms and customers. Therefore, digital adaptation should be viewed not only as technological change but also as a transformation of customer relationship management practices.

The role of organizational learning identified in this study highlights the importance of continuous knowledge acquisition and capability development. Batik SMEs that actively participated in training programs, benchmarking activities, and knowledge-sharing networks demonstrated higher adaptability to technological changes. This finding corroborates the work of Ferraris et al. (2021), who found that organizational learning significantly enhances digital innovation and organizational resilience. Likewise, Scuotto et al. (2022) argue that learning-oriented organizations are more capable of recognizing opportunities emerging from digital disruption and converting them into competitive advantages.

Innovation capability also emerged as a crucial outcome of digital adaptation. SMEs with stronger digital capabilities and learning orientations were more likely to introduce innovative products, services, and marketing approaches. This finding supports the Resource-Based View (RBV), which suggests that unique organizational resources and capabilities are fundamental sources of sustainable competitive advantage (Barney et al., 2021). Recent empirical evidence from Abbas et al. (2023) further demonstrates that innovation capability mediates the relationship between digital transformation and business performance, particularly in SMEs operating in highly competitive environments.

Furthermore, the interaction between digital capability, organizational learning, and innovation capability observed in this study reflects the concept of organizational agility. Agile organizations are characterized by their ability to rapidly sense environmental changes and respond through adaptive decision-making processes. According to Clauss et al. (2022), organizational agility has become a strategic requirement for SMEs facing volatile market conditions and accelerating technological change. The findings suggest that Batik SMEs that cultivate agility through digital adaptation are better positioned to maintain competitiveness in the Society 5.0 era.

From a theoretical perspective, this study contributes to the growing literature on digital transformation by proposing an integrated Digital Adaptation Model specifically designed for Batik SMEs. The model extends previous research by linking digital capability, digital marketing capability, organizational learning, innovation capability, and customer engagement innovation within a single conceptual framework. From a practical perspective, the findings provide guidance for SME owners, policymakers, and business development agencies in designing strategies that support sustainable digital transformation. Investment in digital skills development, continuous learning programs, and innovation-oriented business practices can strengthen SME resilience and improve long-term competitiveness in an increasingly digitalized economy.

Conclusion

This study aimed to develop a Digital Adaptation Model for Batik SMEs in responding to changes in consumer behavior in the Society 5.0 era. The findings demonstrate that digital adaptation is a multidimensional process encompassing digital capability development, digital marketing capability, customer engagement innovation, organizational learning, and innovation capability. These dimensions are interconnected and collectively enable Batik SMEs to respond effectively to evolving consumer expectations, technological advancements, and increasingly dynamic market conditions. Among these dimensions, digital capability emerged as the foundational factor that supports the development of other adaptive capabilities and strengthens overall business competitiveness.

The study contributes to the literature on digital transformation and SME development by proposing an integrated Digital Adaptation Model that combines perspectives from Dynamic Capability Theory, digital marketing capability, organizational learning, innovation capability, and consumer behavior. Unlike previous studies that primarily focus on technology adoption or business performance, this research offers a more comprehensive explanation of how Batik SMEs adapt to digital disruption and

create sustainable competitive advantages in the Society 5.0 environment. Therefore, the proposed model enriches the theoretical understanding of digital adaptation processes within the context of creative and cultural industries.

From a practical perspective, the findings suggest that Batik SME owners should prioritize investments in digital skills, digital marketing competencies, and continuous organizational learning to enhance their adaptive capacity. Policymakers and SME development agencies are also encouraged to design programs that facilitate digital literacy, technological capability development, and innovation-oriented entrepreneurship. Strengthening collaboration among SMEs, government institutions, universities, and digital platform providers can further accelerate the digital transformation of the batik industry and improve its contribution to regional and national economic development.

Despite its contributions, this study has several limitations. The research focused on Batik SMEs located in selected regions of East Java, which may limit the generalizability of the findings to other sectors or geographical contexts. In addition, the qualitative approach emphasizes in-depth understanding rather than statistical generalization. Future studies are therefore recommended to validate the proposed model using quantitative approaches, such as Structural Equation Modeling (SEM) or Partial Least Squares Structural Equation Modeling (PLS-SEM), involving larger samples from different regions and industries. Further research may also examine the moderating effects of government support, digital ecosystem readiness, entrepreneurial orientation, or artificial intelligence adoption on the relationship between digital adaptation and business performance.

In conclusion, successful digital adaptation is not solely determined by the adoption of digital technologies but by the ability of SMEs to integrate digital capabilities, organizational learning, innovation, and customer-oriented strategies into a coherent business transformation process. Such integration is essential for enhancing resilience, competitiveness, and sustainable growth of Batik SMEs in the Society 5.0 era.

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