

Digital Transformation of MSMEs: Driving Innovation, Enhancing Competitiveness, and Advancing Inclusive Economic Development- A Conceptual Study

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Type: Article Received: 08 May 2026 Revised: 19 June 2026 Accepted: 15 July 2026 Published: 10 Aug 2026	Digital transformation has emerged as a critical pathway for Micro, Small, and Medium Enterprises (MSMEs) to respond to changing market conditions, technological developments, and increasing competitive pressures. This conceptual study examines how digital transformation can drive innovation, enhance competitiveness, and advance inclusive economic development among MSMEs. The study is based on a comprehensive review and synthesis of 39 relevant studies addressing digital technologies, MSME performance, innovation, competitiveness, digital inclusion, and sustainable development. The literature indicates that digital transformation extends beyond the adoption of individual technologies and involves the integration of digital tools into business processes, organizational capabilities, strategic decision-making, customer engagement, and business models. The review demonstrates that e-commerce, cloud computing, digital payments, automation, data analytics, and digital platforms enhance operational efficiency, market access, customer engagement, innovation, and competitiveness. Digital transformation also supports employment, income growth, financial inclusion, regional development, and sustainable economic growth. However, these benefits remain uneven due to digital literacy gaps, inadequate infrastructure, financial constraints, skill shortages, organizational resistance, and urban-rural disparities that limit effective technology adoption among businesses and communities. The proposed framework integrates technological, human, organizational, financial, infrastructural, and institutional factors, linking MSME digital transformation with innovation, competitiveness, and inclusive economic development. It concludes that coordinated digital capabilities, supportive policies, infrastructure, skills development, financing, and collaborative digital ecosystems are essential for transforming technological adoption into sustainable and inclusive MSME development. Keywords: Digital Transformation; MSMEs; Innovation; Competitiveness; Inclusive Economic Development

How to Cite This Article

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Introduction

Micro, Small, and Medium Enterprises (MSMEs) constitute an important foundation of economic activity because they contribute to employment generation, entrepreneurship, market development, and regional economic growth. However, the business environment in which MSMEs operate has changed considerably with the rapid emergence of digital technologies. The increasing use of cloud computing, e-commerce, digital payments, data analytics, customer relationship management systems, automation, and digital financial tools has changed how enterprises communicate with customers, manage operations, access markets, and create value. Consequently, digital transformation is increasingly viewed not simply as the adoption of technology but as a broader organizational and strategic process capable of reshaping business models, operational practices, and competitive positioning (Marczewska & Weresa, 2023; Yani et al., 2025).

The digital transformation can provide MSMEs with opportunities to overcome some of the traditional disadvantages associated with their smaller size. Digital technologies can improve operational efficiency, reduce transaction and operating costs, strengthen customer engagement, facilitate access to wider markets, and support the development of innovative products and business models. Yani et al. (2025), for example, highlight the role of e-commerce, social media, cloud-based systems, and automation in improving market access, customer engagement, and operational performance. Similarly, Tarigan et al. (2025) demonstrate that digital operational innovations, including digital point-of-sale systems, cloud-based inventory management, and customer relationship management, can improve service quality and competitiveness. Evidence from other studies also indicates that digital strategies involving e-commerce, digital marketing, and digital financial management can make a substantial contribution to MSME growth (Goestjahjanti et al., 2025). Digital transformation is also closely connected with innovation. Rather than merely improving existing processes, digital technologies can enable MSMEs to redesign business models, develop new customer interfaces, create digitally enabled products and services, and respond more quickly to changing market conditions. Yani et al. (2025) argue that digital technology supports business model innovation and contributes to greater adaptability and sustainable growth. Similarly, Ly and Duy (2025) find that digital transformation strengthens both innovation capability and SME competitiveness, with innovation capability playing an important mediating role. Kurnianingrum et al. (2025) further show that technological capability can strengthen digital transformation and innovation, which subsequently contribute to sustainable MSME performance. Despite these opportunities, digital transformation is not equally accessible to all MSMEs. The literature repeatedly identifies digital literacy, inadequate technological infrastructure, financial constraints, limited access to training, resistance to organizational change, and cybersecurity concerns as major barriers. Singh and Anees (2025) identify structural, behavioral, and infrastructural constraints that restrict digital adoption, while Pichén-Moreno (2025) emphasizes the importance of technological infrastructure and digital readiness. In India, Yash (2025) identifies a significant urban-rural divide in digital maturity and emphasizes the need for regionally appropriate digital-skilling and financial support. These findings suggest that technology adoption alone cannot guarantee inclusive outcomes.

The human and organizational dimensions of digital transformation are therefore equally important. Safi et al. (2025) emphasize employee motivation, organizational culture, emotional support, and resistance to change as important determinants of successful digital transformation among Indian MSMEs. Hanoebon et al. (2025) similarly demonstrate that human resource quality complements digital transformation by strengthening efficiency, innovation, and competitive advantage. Pandey (2026) argues that MSME resilience emerges through the alignment of internal capabilities with supportive institutional and policy environments rather than through technology alone. The policy and institutional ecosystem consequently becomes critical to achieving inclusive digital transformation. Government schemes, digital infrastructure, financial support, training, and collaboration among government agencies, technology providers, financial institutions, academic institutions, and business communities can help reduce adoption barriers. Mahesh et al. (2023) highlight the contribution of government initiatives and digital innovations such as ONDC, OCEN, and NDEA to MSME development, while Thakur and Garg (2024) demonstrate the potential of technology-oriented initiatives such as Tech-Saksham to bridge digital gaps among Indian MSMEs. Widyawan et al. (2025) further emphasize collaboration among government agencies, technology providers, financial institutions, and business advisory organizations as an important mechanism for improving digital literacy and technology adoption.

Literature Review

The literature on digital transformation and MSMEs has expanded considerably, particularly after 2020. The reviewed studies collectively demonstrate that digital transformation is becoming a strategic necessity for MSMEs rather than an optional technological investment. The literature can broadly be organized around four interconnected themes: digital transformation and operational performance, digital transformation and innovation, digital transformation and competitiveness, and digital transformation as a mechanism for inclusive and sustainable economic development.

A major stream of research focuses on the operational benefits of digital transformation. Yani et al. (2025) report that digital technologies enable MSMEs to expand market access through e-commerce, improve customer engagement through social media, and optimize operations through cloud-based systems and automation. Their findings suggest that digital transformation can reduce operational costs while making business models more adaptive. Similarly, Tarigan et al. (2025) identify digital point-of-sale systems, cloud-based inventory management,

and customer relationship management as important tools for improving operational efficiency and service quality. Kurnianingrum et al. (2025) provide further evidence that technological capability supports digital transformation and innovation, which subsequently improve sustainable MSME performance. Their findings are important because they indicate that technology capability does not necessarily generate performance improvements directly; rather, its value can emerge through effective digital transformation and innovation. Putri et al. (2025) similarly demonstrate that IT infrastructure capabilities, business and IT planning capabilities, and proactive attitudes toward IT significantly influence digital transformation, which subsequently improves productivity, operational efficiency, and customer relationships. The literature therefore suggests that digital transformation should be understood as a process of converting technological resources into organizational capabilities. Merely possessing digital tools does not automatically produce improved performance. MSMEs need the skills, planning capabilities, organizational readiness, and strategic orientation necessary to integrate these technologies into daily business processes.

Innovation represents another major theme in the reviewed literature. Digital technologies provide MSMEs with opportunities to redesign existing processes and develop new business models, products, services, and customer experiences. Yani et al. (2025) specifically identify digital technology as an important driver of business model innovation, showing that e-commerce, social media, cloud systems, and automation enable MSMEs to become more flexible and responsive to market requirements. Ly and Duy (2025) provide stronger evidence by establishing a significant relationship between digital transformation, innovation capability, and SME competitiveness. Their study indicates that innovation capability partially mediates the relationship between digital transformation and competitiveness. This suggests that digitalization produces competitive outcomes partly because it strengthens an enterprise's ability to innovate. Similarly, Kurnianingrum et al. (2025) find that digital transformation and innovation have positive effects on sustainable MSME performance. Utami et al. (2025) extend this argument to digital entrepreneurship and the creative economy. Their findings indicate that digital platforms can improve market reach, operational efficiency, and customer engagement while supporting product innovation. However, successful innovation depends on market responsiveness, digital literacy, access to financing, and engagement with digital communities. Thus, innovation should not be treated as an automatic consequence of technology adoption; it is an organizational capability that must be developed and continuously supported.

Competitiveness is one of the most frequently identified outcomes of MSME digital transformation. Singh and Anees (2025) argue that digital transformation is essential for competitiveness, resilience, and long-term sustainability, while identifying technological readiness, market dynamics, institutional support, and firm-level capabilities as important drivers. Syaifullah et al. (2025), through bibliometric analysis, similarly identify innovation, sustainability, and technology adoption as central themes in the literature linking digital transformation with MSME competitiveness. The systematic review by Nafisah et al. (2025) provides a broader conceptual understanding by identifying five digital transformation pathways: digital capability, digital orientation, digital integration, digital strategy alignment, and operational technology utilization. These pathways influence outcomes such as sales growth, customer retention, market expansion, and competitive advantage. Their findings also highlight the relevance of innovation capability, dynamic capability, organizational culture, and competition intensity in determining the outcomes of digital transformation. Goestjahjanti et al. (2025) demonstrate the practical importance of specific digital strategies. Their study finds that digital marketing, e-commerce platforms, and digital financial management tools positively influence MSME growth, with these strategies explaining 69.4% of the variance in MSME growth. Effendi et al. (2025), meanwhile, integrate digital transformation with customer value creation and green innovation and conclude that all three contribute to sustainable competitive advantage. Their findings indicate that competitiveness increasingly depends on combining technological transformation with customer-oriented and sustainability-oriented innovation. The evidence consequently supports a shift from viewing competitiveness as simply a consequence of lower costs toward understanding it as the outcome of improved efficiency, innovation, customer value, adaptability, and market responsiveness. Although the benefits of digital transformation are widely documented, the literature consistently highlights substantial barriers to adoption. Digital literacy and technical skills are among the most frequently reported constraints. Singh and Anees (2025), Pichén-Moreno (2025), and Purnomo et al. identify inadequate skills, limited resources, and infrastructure deficiencies as significant barriers. Kargas et al. (2025) further identify limited financial resources, shortages of skilled personnel, and organizational resistance to change.

Infrastructure is another important constraint. Khimani and Singhal (2024) emphasize the role of digital infrastructure in transforming “digital deserts” into technology-enabled business environments. Llanos Ayola et al. (2025) similarly identify limited connectivity, insufficient technical knowledge, resistance to change, and financial constraints as barriers among SMEs in Colombia. Pozo Benites et al. (2025) observe comparable disparities across Latin American SMEs, where digital maturity varies according to public policies, infrastructure, institutional capabilities, talent availability, and financing conditions. The Indian evidence is particularly relevant to the inclusive dimension of the present study. Yash (2025) identifies an urban-rural divide in digital maturity, while Thakur and Garg (2024) demonstrate how targeted technology-skilling initiatives can help bridge the digital divide. These findings suggest that digital transformation may reproduce existing inequalities if access to technology, skills, finance, and infrastructure remains uneven.

The literature increasingly recognizes that MSME digital transformation occurs within a broader institutional ecosystem. Mahesh et al. (2023) emphasize the role of government initiatives and digital innovations in supporting productivity, financial technology, e-commerce, employment, and economic development. Their discussion of ONDC, OCEN, and NDEA illustrates how public and digital infrastructures can create opportunities beyond the capabilities of individual firms. Widyawan et al. (2025) similarly argue that collaboration among government agencies, technology providers, financial institutions, and business advisory organizations can improve digital literacy and technology adoption. Bright (2025) also emphasizes the need for a supportive digital ecosystem involving financial access, payments, operations, management, and skilling services. These findings indicate that inclusive digital transformation requires more than enterprise-level investment. Pandey (2026), in a systematic literature review of 58 articles and reports, provides an important conceptual contribution by proposing the MSME Resilience Cube. The framework emphasizes the interaction between barriers, internal capabilities, and policy support. This perspective reinforces the argument that digital technologies alone cannot guarantee resilience or inclusive development.

Table 1. Literature Review Summary Table

Literature Theme	Key Studies	Major Findings	Key Challenges / Conditions
Digital Transformation and Operational Efficiency	Yani et al. (2025); Tarigan et al. (2025); Putri et al. (2025)	Digital technologies improve productivity, operational efficiency, automation, inventory management, and customer relationships.	Lack of digital skills, inadequate infrastructure, and weak strategic planning.
Digital Transformation and Innovation	Yani et al. (2025); Ly & Duy (2025); Kurnianingrum et al. (2025); Utami et al. (2025)	Digital transformation supports business-model innovation, product innovation, innovation capability, and organizational adaptability.	Low digital literacy, financing constraints, and limited innovation capabilities.
Digital Transformation and Competitiveness	Singh & Anees (2025); Syaifullah et al. (2025); Nafisah et al. (2025)	Digital transformation strengthens competitive advantage, market expansion, customer retention, resilience, and sustainability.	Unequal technological readiness, organizational resistance, and resource limitations.
Digital Strategies and MSME Growth	Goestjahjanti et al. (2025); Bright (2025)	Digital marketing, e-commerce, digital financial management, and digital ecosystem services contribute to MSME growth.	Limited access to technology, finance, training, and digital capabilities.
Digital Infrastructure	Khimani & Singhal (2024); Pichén-Moreno (2025); Llanos Ayola et al. (2025)	Strong digital infrastructure improves connectivity, technology utilization, market participation, innovation, and competitiveness.	Digital divide, poor connectivity, and inadequate technological infrastructure.
Human Capital and Organizational Readiness	Hanoebioen et al. (2025); Safi et al. (2025); Kargas et al. (2025)	Skilled employees, employee motivation, organizational culture, and digital readiness support successful technology adoption.	Resistance to change, inadequate training, shortage of skilled personnel, and weak organizational culture.
Government and Institutional Support	Mahesh et al. (2023); Thakur & Garg (2024); Widyawan et al. (2025)	Government initiatives, technology-skilling programs, financial institutions, and collaborative ecosystems facilitate MSME digital transformation.	Policy gaps, implementation costs, limited institutional coordination, and unequal access.
Digital Transformation and Sustainable Development	Pandey (2026); Yash (2025); Pozo Benites et al. (2025)	Digital transformation can strengthen resilience, sustainable growth, employment, and broader economic participation.	Urban-rural digital gaps, financing constraints, unequal digital maturity, and infrastructure disparities.
Digital Transformation and Financial Performance	Alyani et al. (2023); Purnomo et al. (2025)	Digital transformation improves financial performance, profitability, market reach, and business efficiency.	Limited resources, inadequate technical skills, and dependence on external support.

Digital Transformation and Inclusive Economic Development	Mahesh et al. (2023); Thakur & Garg (2024); Pandey (2026)	Digital empowerment can help MSMEs participate more effectively in the digital economy and contribute to inclusive economic development.	Digital exclusion, skills gaps, limited financing, and unequal access to digital technologies.
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Research Gap and Conceptual Direction

The reviewed literature establishes a strong relationship between digital transformation and MSME performance, but several gaps remain. First, much of the literature concentrates on individual outcomes such as efficiency, market expansion, financial performance, or competitiveness, while fewer studies conceptually integrate innovation, competitiveness, and inclusive economic development into a single framework. Second, the literature is geographically fragmented. Thapaliya and Adhikari (2025), in their global bibliometric review of 986 publications, identify increasing research interest in digital transformation and MSME performance but also note fragmentation, limited cross-regional comparisons, and insufficient outcome-based assessments. Third, micro-enterprises and resource-constrained firms remain relatively underrepresented. Fourth, existing evidence demonstrates that technology, human capital, infrastructure, institutional support, and organizational capabilities interact, but these dimensions are not consistently incorporated into integrated conceptual models. The literature also suggests that digital transformation should be considered a capability-building process rather than a one-time technological intervention. Pandey (2026) emphasizes cumulative capability development, while Putri et al. (2025) and Kurnianingrum et al. (2025) demonstrate the importance of technological readiness and organizational capabilities. Consequently, the conceptual direction of the present study is based on the proposition that digital transformation acts as an enabling mechanism through which MSMEs develop innovation capability, improve competitiveness, and contribute to inclusive economic development. However, these outcomes are conditioned by digital literacy, human capital, infrastructure, financial resources, organizational readiness, and institutional support.

Research Objectives

The present conceptual study is guided by the following objectives:

- To examine the role of digital transformation in driving innovation among MSMEs, particularly through product innovation, process innovation, marketing innovation, business-model innovation, and the development of innovation capabilities.
- To examine how digital transformation enhances the competitiveness of MSMEs through improved operational efficiency, cost reduction, market expansion, customer engagement, business resilience, and sustainable competitive advantage
- To explore the contribution of digital transformation to inclusive economic development through MSMEs, with particular emphasis on employment generation, income growth, financial inclusion, market inclusion, regional and rural development, and sustainable economic participation.
- To identify the major technological, human, organizational, financial, infrastructural, and institutional enablers and barriers influencing digital transformation among MSMEs.
- To develop an integrated conceptual framework explaining the relationship between digital transformation, innovation, competitiveness, and inclusive economic development, while recognizing the influence of contextual factors such as digital literacy, technological readiness, firm characteristics, socioeconomic conditions, and institutional support.

Conceptual Model

The proposed conceptual framework explains how digital transformation can help MSMEs drive innovation, enhance competitiveness, and ultimately contribute to inclusive economic development. The framework is developed from the synthesis of the 39 studies reviewed for this conceptual study. At the beginning of the framework are the enablers of digital transformation, which represent the internal and external conditions required for MSMEs to successfully adopt and utilize digital technologies. These include technological enablers such as cloud computing, e-commerce, mobile technologies, data analytics, and digital payment systems. Human capital is another important enabler because digital literacy, employee skills, training, and motivation determine whether MSMEs can effectively utilize technological resources. The literature also emphasizes organizational readiness, including leadership support, organizational culture, and willingness to manage technological change. Financial resources, infrastructure and connectivity, and government and institutional support further strengthen the digital transformation process (Singh & Anees, 2025; Widyawan et al., 2025). These enablers lead to the central construct of Digital Transformation of MSMEs. In the proposed framework, digital transformation is not restricted to purchasing or adopting digital technologies. It involves the integration of digital technologies into business processes, development of digital capabilities, and formulation and implementation of appropriate digital strategies. This broader perspective is consistent with the literature, which emphasizes that digital transformation requires organizational and strategic changes rather than technological adoption alone (Marczewska & Weresa, 2023; Kargas et al., 2025). Digital transformation is then expected to generate two major outcomes: innovation and competitiveness. Innovation includes product innovation, process innovation, business-model innovation, and marketing innovation. Digital technologies enable MSMEs to

respond more effectively to customer requirements, introduce new products and services, redesign processes, and develop innovative business models. Previous studies confirm the positive relationship between digital transformation and innovation capability (Yani et al., 2025; Ly & Duy, 2025) The second major outcome is competitiveness.

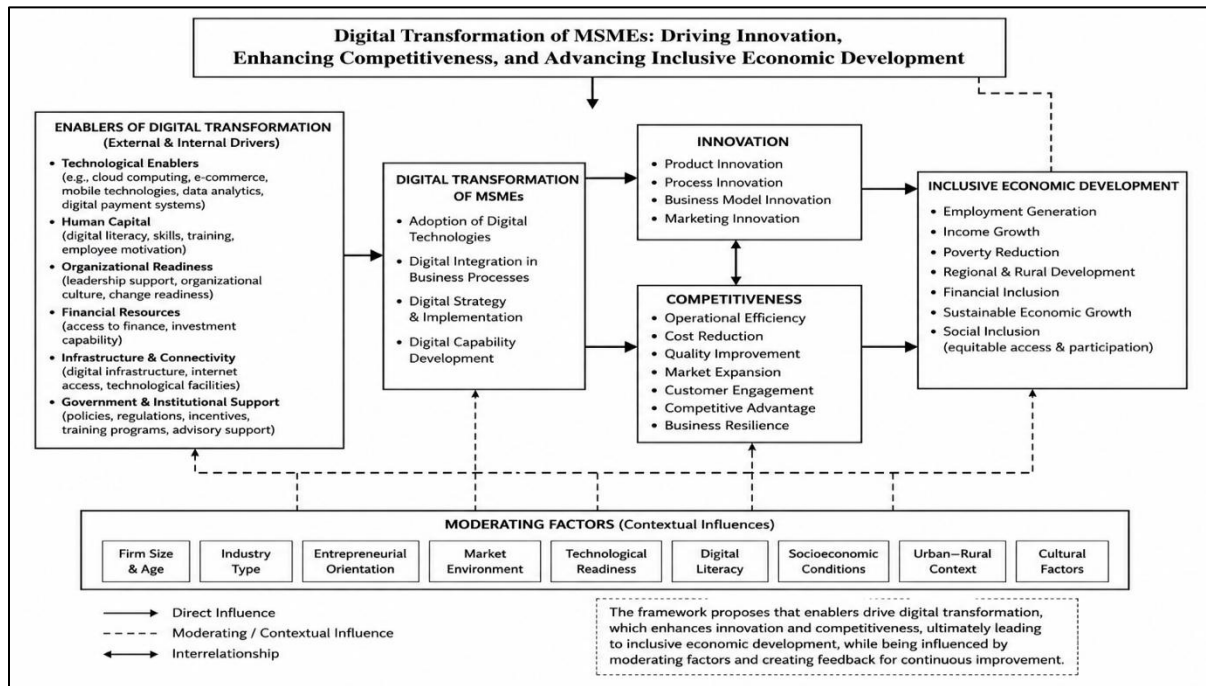


Fig. 1. Conceptual Model

Digital transformation can improve operational efficiency, reduce costs, enhance quality, expand markets, strengthen customer engagement, and improve business resilience. These capabilities enable MSMEs to develop stronger competitive advantages in increasingly digital markets (Nafisah et al., 2025; Putri et al., 2025). The framework further proposes that innovation and competitiveness contribute to inclusive economic development. Successful digital transformation can support employment generation, income growth, financial inclusion, regional and rural development, sustainable economic growth, and broader participation in economic opportunities. However, these outcomes are not automatic. The framework therefore incorporates moderating/contextual factors, including firm size and age, industry type, entrepreneurial orientation, market environment, technological readiness, digital literacy, socioeconomic conditions, urban-rural context, and cultural factors. The framework proposes a logical pathway: enablers → digital transformation → innovation and competitiveness → inclusive economic development, while recognizing that contextual conditions influence the strength and effectiveness of these relationships. This integrated perspective provides the conceptual foundation for understanding digital transformation as both a business competitiveness mechanism and an instrument for inclusive economic development.

Digital Transformation in MSMEs through Driving Innovation

Digital transformation has emerged as an important mechanism for strengthening innovation capabilities among Micro, Small, and Medium Enterprises (MSMEs). Unlike traditional technology adoption, digital transformation involves the integration of digital technologies into business processes, customer interactions, decision-making, and business models. This integration enables MSMEs to identify new market opportunities, respond quickly to changing customer preferences, and develop innovative products and services. Yani et al. (2025) emphasize that technologies such as e-commerce, social media, cloud-based systems, and automation enable MSMEs to redesign their business models and improve their ability to respond to market changes. Digital transformation contributes to different forms of innovation, including product innovation, process innovation, marketing innovation, and business-model innovation. Digital platforms allow MSMEs to experiment with new ways of reaching customers and delivering value, while data-driven tools support better understanding of customer requirements. Tarigan et al. (2025) highlight that digital point-of-sale systems, cloud-based inventory management, and customer relationship management can improve operational processes and service quality, thereby creating an environment conducive to innovation. Similarly, Utami et al. (2025) found that digital entrepreneurship and the use of digital platforms enhance market reach, customer engagement, and product innovation. The relationship between digital transformation and innovation is also important for improving long-term business performance. Ly and Duy (2025) found that digital transformation significantly enhances innovation capability, which subsequently contributes to SME competitiveness. Kurnianingrum et al. (2025) similarly reported that technological capability strengthens digital transformation and innovation, ultimately improving sustainable MSME performance. These findings indicate that technology alone does not automatically

create innovation; MSMEs must develop the organizational capabilities and human skills necessary to convert digital resources into innovative outcomes. However, barriers such as limited digital literacy, inadequate infrastructure, financial constraints, and resistance to change can restrict innovation. Therefore, continuous training, supportive leadership, access to technology, and collaboration with digital ecosystems are essential. Overall, digital transformation can be considered a strategic pathway through which MSMEs develop innovation capabilities, adapt their business models, and create new sources of value and growth.

Table 2. *Digital Transformation of MSMEs and Innovation*

Dimension of Innovation	Role of Digital Transformation	Expected Outcome	Supporting Studies
Product Innovation	Digital technologies help MSMEs identify changing customer needs and develop new or improved products.	New products, improved product quality, and greater customer value.	Yani et al. (2025); Utami et al. (2025)
Process Innovation	Automation, cloud systems, digital POS, and digital inventory systems improve business processes.	Greater efficiency, faster processes, and reduced operational costs.	Tarigan et al. (2025); Kurnianingrum et al. (2025)
Business Model Innovation	E-commerce, digital platforms, and digital services enable MSMEs to redesign how they create and deliver value.	More flexible and adaptive business models.	Yani et al. (2025); Ly & Duy (2025)
Marketing Innovation	Social media, digital marketing, and online platforms create new ways to communicate with customers.	Wider market reach, stronger customer engagement, and improved visibility.	Yani et al. (2025); Goestjahjanti et al. (2025)
Customer-Centric Innovation	Digital tools provide better access to customer information and facilitate personalized interactions.	Improved customer experience and service innovation.	Tarigan et al. (2025); Utami et al. (2025)
Innovation Capability	Digital transformation strengthens the ability of MSMEs to continuously experiment, learn, and adapt.	Greater adaptability, resilience, and sustainable innovation.	Ly & Duy (2025); Kurnianingrum et al. (2025)

Digital Transformation in MSMEs through Enhancing Competitiveness

Digital transformation has become increasingly important for enhancing the competitiveness of MSMEs in domestic and international markets. MSMEs traditionally face limitations related to financial resources, market access, operational capabilities, and economies of scale. Digital technologies can help overcome some of these limitations by improving efficiency, reducing transaction costs, expanding market reach, strengthening customer relationships, and supporting faster decision-making. Singh and Anees (2025) identify technological readiness, market dynamics, institutional support, and firm-level capabilities as important drivers of digital transformation and long-term MSME competitiveness. One of the major contributions of digital transformation is improved operational efficiency. Digital financial management systems, cloud-based inventory systems, automation, and digital communication tools can reduce manual processes and improve resource utilization. Goestjahjanti et al. (2025) found that digital marketing, e-commerce platforms, and digital financial management tools positively influence MSME growth, with digital strategies explaining a substantial proportion of variation in MSME growth. Similarly, Putri et al. (2025) found that digital transformation positively influences productivity, operational efficiency, and customer relationships, demonstrating the importance of technological and strategic capabilities in developing sustainable competitive performance. Digital transformation also enables MSMEs to expand their markets beyond traditional geographical boundaries. E-commerce and digital marketing platforms allow small businesses to reach customers across wider markets without requiring extensive physical infrastructure. Nafisah et al. (2025) identify digital capability, digital orientation, digital integration, digital strategy alignment, and operational technology utilization as important pathways through which digital transformation influences sales growth, customer retention, market expansion, and competitive advantage. Furthermore, competitiveness increasingly depends on innovation and adaptability. Syaifullah et al. (2025) identify innovation, sustainability, and technology adoption as central themes in research on MSME competitiveness. Effendi et al. (2025) further demonstrate that digital transformation, customer value creation, and green innovation can collectively contribute to sustainable competitive advantage. Nevertheless, digital transformation does not produce equal benefits for every MSME. Financial limitations, inadequate infrastructure, low digital literacy, and resistance to change can restrict adoption. Thus, competitiveness requires not only access to digital technologies but also appropriate skills, organizational readiness, strategic planning, and institutional support. Digital transformation should

consequently be viewed as a long-term capability-building process that enables MSMEs to become more efficient, innovative, adaptable, and resilient.

Table 3. *Digital Transformation of MSMEs and Competitiveness*

Competitiveness Dimension	Role of Digital Transformation	Expected Outcome	Supporting Studies
Operational Efficiency	Automation, cloud computing, digital management systems, and digital processes streamline operations.	Higher productivity and efficient resource utilization.	Putri et al. (2025); Tarigan et al. (2025)
Cost Reduction	Digital technologies reduce manual processes, transaction costs, and operational inefficiencies.	Lower operating costs and improved profitability.	Yani et al. (2025); Purnomo et al.
Market Expansion	E-commerce and digital marketing enable MSMEs to reach customers beyond traditional geographical markets.	Wider customer base and increased sales opportunities.	Yani et al. (2025); Goestjahjanti et al. (2025)
Customer Engagement	CRM, social media, and digital communication tools strengthen customer relationships.	Higher customer retention and improved customer satisfaction.	Tarigan et al. (2025); Nafisah et al. (2025)
Competitive Advantage	Digital capability, digital integration, and innovation improve firms' ability to compete.	Stronger market position and sustainable competitive advantage.	Singh & Anees (2025); Nafisah et al. (2025)
Business Resilience	Digital capabilities enable MSMEs to respond more rapidly to market disruptions and changing conditions.	Greater adaptability, continuity, and resilience.	Pandey (2026); Putri et al. (2025)
Sustainable Competitiveness	Digital transformation combined with innovation and customer value creation supports long-term competitiveness.	Sustainable competitive advantage and business growth.	Effendi et al. (2025); Syaifullah et al. (2025)

Digital Transformation in MSMEs through Advancing Inclusive Economic Development

Digital transformation has implications that extend beyond individual business performance and competitiveness. When appropriately supported, digitalization can contribute to inclusive economic development by creating opportunities for employment, income generation, entrepreneurship, financial participation, and broader market access. MSMEs are particularly important in this context because they provide economic opportunities across different regions and socioeconomic groups. Mahesh et al. (2023) emphasize that government initiatives and digital innovations can strengthen MSME productivity, facilitate e-commerce and fintech development, create employment opportunities, and contribute to sustainable and inclusive economic growth. One important pathway toward inclusion is improved access to markets and financial services. Digital platforms can reduce geographical barriers and enable smaller enterprises to connect with customers, suppliers, financial institutions, and other business partners. Government-supported digital initiatives can further strengthen this process. Mahesh et al. (2023) highlight the importance of initiatives such as ONDC, OCEN, and NDEA in supporting MSME productivity, digital commerce, and financial technology. Such digital ecosystems can potentially provide smaller enterprises with opportunities that were previously more accessible to larger organizations. Digital skills and human capital are equally important for ensuring that the benefits of transformation reach underserved MSMEs. Thakur and Garg (2024) demonstrate that the Tech-Saksham initiative can help bridge the digital divide by providing MSMEs with digital skills and technological tools. Similarly, Yash (2025) identifies an urban-rural divide in digital maturity among Indian SMEs and recommends regionally targeted digital skilling and financial support. These findings demonstrate that digitalization can promote inclusion only when enterprises have adequate access to infrastructure, skills, finance, and supportive institutions. The literature also connects digital transformation with resilience and sustainable development. Pandey (2026) argues that digital technologies alone are insufficient for MSME resilience; positive outcomes depend on the alignment of internal capabilities with supportive institutional and policy environments. Pozo Benites et al. (2025) similarly emphasize inclusive ecosystems, public-private partnerships, digital training, and flexible policies for reducing digital inequalities. Therefore, digital transformation should be understood not merely as a strategy for increasing business efficiency but also as a potential instrument for inclusive economic development. When supported by appropriate infrastructure, skills, financing, policies, and collaborative ecosystems, digital transformation can help MSMEs participate more effectively in the digital economy while contributing to employment, income growth, financial inclusion, regional development, and sustainable economic progress.

Table 4. *Digital Transformation of MSMEs and Inclusive Economic Development*

Inclusive Development Dimension	Role of Digital Transformation	Expected Outcome	Supporting Studies
Employment Generation	Digitalization enables MSMEs to expand operations, enter new markets, and create new business opportunities.	Increased employment and livelihood opportunities.	Mahesh et al. (2023); Economic Effects Study (2025)
Income Growth	Digital platforms and improved business efficiency can increase sales and income opportunities.	Higher enterprise income and improved household economic well-being.	Mahesh et al. (2023); Yash (2025)
Financial Inclusion	Digital payments, fintech, and digital financial services improve access to formal financial systems.	Greater financial participation among MSMEs and entrepreneurs.	Mahesh et al. (2023); Bright (2025)
Market Inclusion	E-commerce and digital platforms reduce geographical barriers to market participation.	Wider participation of small and micro enterprises in digital markets.	Yani et al. (2025); Purnomo et al.
Regional and Rural Development	Digital connectivity enables enterprises in less-developed and rural areas to access markets and services.	Reduced regional disparities and stronger rural economic participation.	Yash (2025); Khimani & Singhal (2024)
Digital Skill Development	Training and technology-oriented initiatives improve digital capabilities among MSMEs.	Reduced digital divide and greater technology participation.	Thakur & Garg (2024); Widyawan et al. (2025)
Sustainable Economic Growth	Digital transformation improves productivity, innovation, resilience, and business sustainability.	Long-term and sustainable economic development.	Pandey (2026); Kurnianingrum et al. (2025)
Social Inclusion	Wider access to digital markets, finance, information, and entrepreneurial opportunities supports participation by underserved groups.	More equitable participation in economic activities.	Pozo Benites et al. (2025); Pandey (2026)
Institutional Inclusion	Government support, public digital infrastructure, partnerships, and enabling policies facilitate MSME participation.	Stronger digital ecosystem and more inclusive enterprise development.	Mahesh et al. (2023); Widyawan et al. (2025)

Conclusion

Digital transformation has become an increasingly important strategic mechanism for the development and sustainability of Micro, Small, and Medium Enterprises (MSMEs). The present conceptual study, based on the synthesis of 39 studies, demonstrates that digital transformation should not be understood simply as the adoption of new technologies. Rather, it represents a broader organizational and strategic transformation involving the integration of digital technologies into business processes, customer relationships, decision-making, business models, and organizational capabilities. The literature reviewed in this study provides substantial evidence that effective digital transformation can enable MSMEs to become more innovative, competitive, resilient, and inclusive. The first major conclusion concerns the role of digital transformation in driving innovation. Digital technologies provide MSMEs with new opportunities to develop products, redesign processes, introduce innovative marketing practices, and create new business models. E-commerce, social media, cloud computing, automation, customer relationship management, digital payment systems, and data-driven technologies enable enterprises to respond more effectively to customer requirements and changing market conditions. The reviewed literature indicates that digital transformation can strengthen innovation capability and organizational adaptability. However, technology itself does not automatically generate innovation. MSMEs require appropriate human skills, organizational readiness, strategic orientation, and learning capabilities to convert digital resources into innovative outcomes. Therefore, investment in digital technology should be accompanied by employee training, managerial support, experimentation, and continuous capability development. The second major conclusion relates to enhancing competitiveness. Digital transformation provides MSMEs with opportunities to overcome several traditional disadvantages associated with small scale, including limited market reach, restricted resources, operational inefficiencies, and difficulties in accessing customers. Digital tools can

improve productivity, reduce operational and transaction costs, strengthen customer engagement, improve quality, facilitate faster decision-making, and enable enterprises to access wider markets. The literature also indicates that digital transformation can strengthen business resilience by enabling MSMEs to respond more rapidly to market disruptions and changing customer expectations. Competitiveness is therefore increasingly dependent not only on cost efficiency but also on digital capability, innovation, customer value, adaptability, and organizational resilience. The third and broader conclusion concerns inclusive economic development. MSMEs play an important role in employment generation, entrepreneurship, income creation, and regional economic activity. Digital transformation can expand these contributions by reducing geographical barriers, improving access to markets and financial services, and creating new entrepreneurial opportunities. Digital platforms and digital financial services can enable smaller enterprises to participate in markets that were previously difficult to access. Government-supported digital initiatives and collaborative ecosystems can further improve access to technology, finance, skills, and business support. Consequently, digital transformation has the potential to contribute not only to individual enterprise performance but also to broader economic participation and sustainable development. At the same time, the study emphasizes that digital transformation can produce unequal outcomes when access to digital resources is uneven. The reviewed literature identifies digital literacy, inadequate infrastructure, financial constraints, shortage of skilled personnel, resistance to organizational change, cybersecurity concerns, and urban-rural disparities as important barriers. These challenges are particularly significant for micro-enterprises and resource-constrained MSMEs. Therefore, simply encouraging technology adoption is insufficient. Digital transformation policies must ensure that enterprises possess the infrastructure, financial resources, knowledge, skills, and organizational capabilities required to utilize digital technologies effectively. The conceptual framework developed in this study therefore proposes a connected pathway from digital transformation to innovation and competitiveness, and ultimately to inclusive economic development. The framework also recognizes the importance of technological enablers, human capital, organizational readiness, financial resources, infrastructure and connectivity, and government and institutional support. Contextual factors such as firm size and age, industry type, entrepreneurial orientation, market environment, technological readiness, digital literacy, socioeconomic conditions, urban-rural context, and cultural factors can influence the strength of these relationships. This integrated perspective addresses an important gap in existing literature, where innovation, competitiveness, and inclusive development are often examined separately rather than within a unified MSME framework. The study further highlights the importance of institutional and ecosystem-level support. Governments, financial institutions, technology providers, educational institutions, industry associations, and business-support organizations have complementary roles in creating an enabling digital environment. Policies should focus not only on technology infrastructure but also on affordable financing, digital-skilling programs, cybersecurity awareness, entrepreneurship development, and access to digital platforms. Public-private collaboration can help ensure that the benefits of digital transformation reach enterprises located in rural and underserved areas as well as those with limited financial and technological capabilities. Overall, the study concludes that digital transformation can serve as a powerful catalyst for MSME development when technology adoption is combined with organizational capability, innovation orientation, human capital, institutional support, and inclusive policies. Its significance extends beyond improving individual business performance because digitally capable MSMEs can contribute to wider employment opportunities, market participation, financial inclusion, regional development, and sustainable economic growth. The central proposition emerging from this conceptual study is therefore that digital transformation becomes most valuable when it is transformed from a technology-adoption exercise into a comprehensive capability-building process. The study contributes conceptually by bringing together three interconnected outcomes innovation, competitiveness, and inclusive economic development within a single framework. Future empirical research can validate the proposed relationships across different MSME sectors, geographical regions, firm sizes, and levels of digital maturity. Such research can further examine the relative influence of digital capabilities, human capital, infrastructure, financial access, organizational readiness, and institutional support. In this way, the conceptual framework can provide a foundation for developing evidence-based strategies and policies that enable MSMEs to participate meaningfully in the digital economy while ensuring that digital transformation contributes to broader and more equitable economic development.

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