

## DIGITAL TRANSFORMATION AND BUSINESS MODEL INNOVATION: EXAMINING THE IMPACT OF DIGITAL TECHNOLOGIES ON SME COMPETITIVENESS

Daniel Pangaribuan<sup>1</sup>, Riris Hutapea<sup>2</sup>, Ezra Reni Silva Situmorang<sup>3</sup>, Andre M.P Sianturi<sup>4</sup>

<sup>1,2,3,4</sup> Akademi Pariwisata ULCLA

Email: [danielpangaribuan76@gmail.com](mailto:danielpangaribuan76@gmail.com)<sup>1</sup>, [ririshutapea353@gmail.com](mailto:ririshutapea353@gmail.com)<sup>2</sup>, [ezrarenisilvasitumorang@gmail.com](mailto:ezrarenisilvasitumorang@gmail.com)<sup>3</sup>, [andresianturi648@gmail.com](mailto:andresianturi648@gmail.com)<sup>4</sup>

DOI:

Received: November 2024

Revised: December 2024

Accepted: January 2025

### Abstract :

Digital transformation has become a crucial factor in enhancing organizational competitiveness in the digital economy. The rapid development of technologies such as artificial intelligence (AI), big data analytics, cloud computing, and the Internet of Things (IoT) has significantly changed how firms create, deliver, and capture value in business activities. This study aims to examine the relationship between digital transformation, business model innovation, and the competitiveness of small and medium-sized enterprises (SMEs) through a literature review approach. The study employs a qualitative literature review method by analyzing relevant academic publications from 2020 to 2024. The literature sources were collected from reputable journals and academic databases such as Scopus and Google Scholar. The findings indicate that digital transformation acts as a key driver of business model innovation by enhancing digital capabilities, integrating data-driven processes, and utilizing digital platforms in business operations. These innovations enable SMEs to improve operational efficiency, expand market access, and create new value propositions for customers. However, SMEs still face several challenges in implementing digital transformation, including limited digital literacy, financial constraints, and inadequate technological infrastructure. Therefore, supportive policies, digital capacity development, and collaboration among governments, private sectors, and educational institutions are essential to accelerate sustainable digital transformation among SMEs.

**Keywords :** *digital transformation, business model innovation, SME competitiveness*

### Abstrak :

Transformasi digital telah menjadi faktor penting dalam meningkatkan daya saing organisasi di era ekonomi digital. Perkembangan teknologi seperti artificial intelligence (AI), big data, cloud computing, dan Internet of Things (IoT) telah mengubah cara perusahaan menciptakan, menyampaikan, dan menangkap nilai dalam aktivitas bisnis. Penelitian ini bertujuan untuk menganalisis hubungan antara transformasi digital, inovasi model bisnis, dan daya saing usaha kecil dan menengah.

(UKM) melalui pendekatan kajian literatur. Metode yang digunakan adalah literature review kualitatif dengan menganalisis berbagai publikasi ilmiah yang relevan pada periode 2020–2024. Sumber literatur diperoleh dari jurnal bereputasi dan basis data akademik seperti Scopus dan Google Scholar. Hasil kajian menunjukkan bahwa transformasi digital berperan sebagai pendorong utama inovasi model bisnis melalui peningkatan kemampuan digital, integrasi data, serta pemanfaatan platform digital dalam proses bisnis. Inovasi model bisnis yang dihasilkan memungkinkan UKM meningkatkan efisiensi operasional, memperluas akses pasar, dan menciptakan nilai baru bagi pelanggan. Namun demikian, implementasi transformasi digital pada UKM masih menghadapi berbagai tantangan, seperti keterbatasan literasi digital, akses pembiayaan, serta infrastruktur teknologi. Oleh karena itu, dukungan kebijakan, pengembangan kapasitas digital, serta kolaborasi antara pemerintah, sektor swasta, dan institusi pendidikan menjadi faktor penting dalam mempercepat transformasi digital UKM secara berkelanjutan.

**Kata Kunci:** *transformasi digital, inovasi model bisnis, daya saing UKM*

## INTRODUCTION

The rapid advancement of digital technologies has become a major driving force shaping structural transformations in the global economy. The emergence of digital technologies such as artificial intelligence (AI), big data analytics, cloud computing, and the Internet of Things (IoT) has fundamentally altered production systems, value creation processes, and competitive dynamics across industries. These technologies facilitate the integration of data with information and communication technology (ICT), enabling the development of platform-based economic ecosystems and new forms of digital interaction among economic actors (Brusova & Gidayatov, 2024). As a result, digital transformation has become a strategic priority for many countries seeking to enhance productivity, accelerate economic growth, and strengthen their global competitiveness (Magoutas et al., 2024).

Within this context, the concept of the digital economy highlights the central role of data and ICT as key production factors in modern economic systems. The convergence of advanced technologies—including AI, machine learning, cloud computing, IoT, and big data—enables organizations to leverage data analytics for improved operational efficiency, risk management, and evidence-based decision-making (Aliyev, 2023). In particular, AI has emerged as a general-purpose technology capable of transforming economic structures by enabling automation, enhancing productivity, and fostering innovation across multiple sectors. The increasing accessibility of AI technologies and growing private investments in AI development further demonstrate the intensifying global competition in digital innovation ecosystems (Aliyev, 2023).

At the firm level, digital transformation plays a critical role in improving operational efficiency and enhancing innovation capabilities. Prior research indicates that digital technologies not only streamline internal processes but also reshape organizational structures, business strategies, and interactions with stakeholders. Through mechanisms such as improved data integration, enhanced digital capabilities, and dynamic capability development, digital transformation can significantly improve innovation performance and

organizational productivity (Chen, 2023; Fan et al., 2022; Zhao et al., 2023). Moreover, digital technologies enable firms to develop new products, services, and operational processes, which ultimately contribute to sustained competitive advantage in increasingly digitalized markets (He-dan et al., 2022; Mo, 2024).

Small and medium-sized enterprises (SMEs) represent a crucial component of national economies, particularly in developing countries, where they contribute significantly to employment generation, income distribution, and regional economic development. Numerous studies highlight the role of SMEs as engines of economic growth through their capacity to generate innovation, stimulate local economic activity, and strengthen domestic markets (Dauda et al., 2023; Manurung et al., 2024; Rofiq et al., 2023). Despite their economic importance, SMEs often face structural constraints, including limited access to finance, inadequate managerial capabilities, and restricted market networks. In recent years, digital technologies and digital marketing platforms have been recognized as important tools for expanding SMEs' market reach, improving operational efficiency, and enhancing competitiveness in the digital economy (Ardiani & Putra, 2021; Rahman & Sanjaya, 2024).

However, the adoption of digital technologies among SMEs remains uneven and is often hindered by multiple challenges. These challenges include limited digital literacy, insufficient technological infrastructure, financial constraints, and organizational resistance to technological change. Several studies emphasize that many SMEs struggle to implement digital technologies effectively due to limited human resources and inadequate technological capabilities (Aini et al., 2024; Santi et al., 2024). Consequently, the relationship between digital transformation, business model innovation, and competitiveness becomes a critical area of inquiry. Understanding how digital transformation enables business model innovation and enhances SME competitiveness is essential for developing effective managerial strategies and policy frameworks that support sustainable digital transformation in the SME sector.

## RESEARCH METHOD

This study employs a qualitative literature review approach to examine the relationship between digital transformation, business model innovation, and the competitiveness of small and medium-sized enterprises (SMEs) (Fan, et al., 2025). The literature review method was chosen to synthesize and critically analyze existing scholarly works related to digital technologies, organizational transformation, and SME performance in the digital economy (Gede, & Huluka, 2023). Relevant literature was collected from peer-reviewed journal articles, academic publications, and conference papers published between 2020 and 2024 to ensure the relevance and currency of the discussion (Holm, et al., 2025). The sources were obtained from major academic databases such as Scopus, Google Scholar, and other reputable indexing platforms, focusing on studies discussing digital transformation, digital capabilities, business model innovation, and SME competitiveness (Uygun, et al., 2022).

The selected literature was analyzed using a thematic analysis approach,

which involves identifying key themes, concepts, and relationships within the reviewed studies (Rigtering, et al., 2017). The analysis focused on three main dimensions: the role of digital technologies in enabling organizational transformation, the mechanisms through which digital transformation stimulates business model innovation, and the implications of these changes for SME competitiveness (Al-Ansaari, et al., 2015). Through systematic comparison and synthesis of findings from prior studies, this review aims to develop an integrated understanding of how digital transformation contributes to innovation and competitive advantage among SMEs (Ali, 2018). This approach allows the study to highlight key patterns, conceptual relationships, and research gaps in the existing literature regarding digital transformation and SME competitiveness.

## FINDINGS AND DISCUSSION

### Trends of Digital Transformation Adoption in SMEs

The rapid development of digital technologies has significantly influenced the transformation of business operations across industries, including small and medium-sized enterprises (SMEs). In recent years, SMEs have increasingly adopted digital technologies such as cloud computing, digital platforms, artificial intelligence (AI), and big data analytics to enhance operational efficiency and expand market reach. The COVID-19 pandemic also accelerated digital transformation, forcing many SMEs to adopt digital solutions to maintain business continuity and adapt to changing consumer behavior.

Previous studies indicate that digital transformation allows SMEs to improve productivity, enhance customer engagement, and optimize decision-making through data-driven insights. For example, Fan et al (2022) found that firms implementing digital technologies experienced improved operational efficiency and better resource utilization. Similarly, Zhao et al (2023) reported that digital transformation significantly contributes to innovation performance by enabling organizations to integrate digital resources into strategic decision-making processes.

Furthermore, the adoption of digital technologies has been widely recognized as a key factor in strengthening the competitiveness of SMEs. According to Magoutas et al (2024), digital transformation enables SMEs to compete more effectively in global markets by improving access to information, reducing operational costs, and enabling innovative business strategies. However, the level of adoption varies significantly across regions and industries, often influenced by technological infrastructure, managerial capabilities, and institutional support.

Several studies also highlight that SMEs benefit from digital transformation by integrating technologies such as e-commerce platforms, digital marketing tools, and cloud-based systems. These technologies allow SMEs to reach wider markets, improve customer service, and streamline business operations. Nevertheless, despite the potential benefits, many SMEs still struggle to adopt digital technologies due to financial limitations and lack

of digital expertise (Aini et al., 2024; Prakoso et al., 2023).

**Table 1: Summary of Previous Studies on Digital Transformation in SMEs (2020–2024)**

Author	Research Focus	Key Findings
Fan et al (2022)	Digital transformation and firm efficiency	Digital technologies improve operational efficiency and productivity
Chen (2023)	Digital transformation and innovation	Digital capability mediates innovation performance
Zhao et al (2023)	Digitalization and firm performance	Digital transformation enhances innovation and competitiveness
Magoutas et al (2024)	Digital economy and productivity	ICT adoption improves SME competitiveness
Aini et al (2024)	Digital adoption among SMEs	Digital literacy and infrastructure affect adoption

Table 1 presents a synthesis of previous studies examining the impact of digital transformation on SMEs between 2020 and 2024. The findings consistently indicate that digital transformation contributes to operational efficiency, innovation capability, and competitiveness. However, the extent of these benefits often depends on SMEs' digital capabilities and the availability of supporting infrastructure. These findings suggest that digital transformation is not only a technological change but also a strategic process that requires organizational readiness and supportive ecosystems.

### Digital Transformation as a Driver of Business Model Innovation

Digital transformation has fundamentally reshaped how firms create, deliver, and capture value. One of the most significant impacts of digital transformation is its ability to enable business model innovation (BMI). Business model innovation refers to changes in how companies design value propositions, revenue streams, and operational processes in response to evolving technological and market environments.

Research suggests that digital technologies facilitate the redesign of traditional business models into more flexible and customer-oriented structures. For instance, digital platforms allow SMEs to adopt platform-based business models that connect producers and consumers more efficiently. According to He-dan et al (2022) digital transformation significantly enhances firms' ability to develop innovative business models through improved access to data and digital infrastructure.

Similarly, Sun (2023) highlights that digital transformation enhances firms' dynamic capabilities, enabling organizations to reconfigure resources

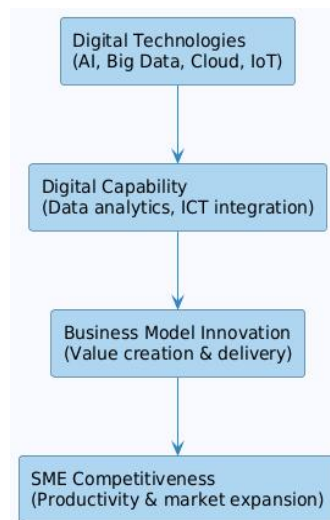
and adapt to changing market conditions. In this context, digital technologies provide the infrastructure necessary for firms to experiment with new business models, such as subscription-based services, digital marketplaces, and service-oriented platforms.

Moreover, Li & Zhou (2023) emphasize that digital transformation allows firms to integrate technological capabilities with strategic innovation processes, leading to more effective business model innovation. By leveraging digital technologies, firms can develop new revenue streams, improve customer experiences, and create more agile organizational structures.

**Table 2: Digital Transformation and Business Model Innovation**

Study	Technology Focus	Business Model Impact
He-dan et al (2022)	Digital platforms & analytics	Enables new value propositions
Sun (2023)	Digital capability	Enhances dynamic capability
Li & Zhou (2023)	Digital networks	Improves value delivery
Wang (2022)	Digital platforms	Supports new revenue models

Table 2 illustrates the relationship between digital technologies and business model innovation. The studies demonstrate that digital transformation enables organizations to redesign their business models by integrating digital technologies into value creation processes. This transformation often leads to improved operational flexibility, enhanced customer engagement, and the creation of new digital revenue streams.



**Figure 1: Digital Transformation and Business Model Innovation Process**

The diagram above illustrates the conceptual relationship between digital transformation, business model innovation, and SME competitiveness. Digital technologies such as artificial intelligence, big data, cloud computing, and IoT form the technological foundation of digital transformation. These technologies enhance firms' digital capabilities by enabling better data

management, information sharing, and decision-making. Enhanced digital capabilities then facilitate business model innovation by enabling firms to redesign value propositions and operational processes. Ultimately, these innovations contribute to improved competitiveness, enabling SMEs to enhance productivity, expand market access, and achieve sustainable growth.

### Impact of Digital Transformation on SME Competitiveness

Digital transformation plays a crucial role in enhancing the competitiveness of SMEs by enabling them to improve efficiency, innovation, and customer engagement. Competitiveness in the digital economy is increasingly determined by firms' ability to adopt and leverage digital technologies effectively. SMEs that successfully implement digital transformation strategies often experience improvements in productivity, operational flexibility, and market responsiveness.

Studies show that digital technologies help SMEs reduce operational costs and enhance business performance through automation and improved resource management. [Fan et al \(2022\)](#) demonstrate that digital transformation enables firms to optimize production processes and improve efficiency by integrating digital technologies into their operations. Similarly, [Chen \(2023\)](#) highlights that digital transformation strengthens innovation performance by improving firms' ability to manage knowledge and technological resources.

Moreover, digital transformation enables SMEs to access new markets through digital platforms and e-commerce systems. Digital marketing tools allow SMEs to reach broader customer segments and improve brand visibility. According to [Ardiani & Putra \(2021\)](#) SMEs that adopt digital marketing strategies can significantly improve their market reach and customer engagement.

However, despite these advantages, SMEs often face challenges in implementing digital transformation. Limited financial resources, lack of digital skills, and inadequate technological infrastructure remain significant barriers. Studies such as [Aini et al \(2024\)](#) and [Santi et al \(2024\)](#) emphasize that digital literacy and organizational readiness are critical factors determining the success of digital transformation initiatives among SMEs.

**Table 3: Factors Affecting SME Competitiveness in the Digital Economy**

Factor	Description	Supporting Study
Digital capability	Ability to adopt and manage digital technologies	Zhao et al (2023)
Innovation capability	Ability to develop new products and services	Chen (2023)
Market access	Use of digital platforms and e-commerce	Ardiani & Putra (2021)
Organizational readiness	Managerial capability and digital literacy	Aini et al (2024)

Table 3 summarizes key factors influencing SME competitiveness in the

digital economy. The literature indicates that digital capabilities, innovation capacity, and access to digital markets are critical determinants of competitiveness. Additionally, organizational readiness and managerial capabilities play an essential role in enabling SMEs to successfully implement digital transformation strategies.

### **Challenges of Digital Transformation Adoption in SMEs**

Despite the numerous benefits associated with digital transformation, SMEs face various challenges in adopting digital technologies effectively. These challenges are multidimensional, encompassing technological, organizational, financial, and human resource constraints. Many SMEs lack the necessary infrastructure, financial resources, and digital expertise required to implement advanced technologies such as artificial intelligence, big data analytics, and cloud-based systems.

One of the most frequently cited barriers is limited digital literacy among SME owners and employees. Digital literacy refers to the ability to understand, adopt, and effectively use digital technologies within business operations. Studies show that many SMEs lack the technical skills necessary to operate digital platforms, manage data analytics tools, or implement digital marketing strategies. According to [Santi et al \(2024\)](#), the lack of skilled human resources remains one of the primary barriers to digital adoption in SMEs. Similarly, [Rahayu & Veri \(2025\)](#) argue that digital literacy programs are essential for enabling SMEs to successfully integrate digital technologies into their business operations.

Another significant challenge is the financial constraint associated with digital transformation. Implementing digital technologies often requires substantial investments in hardware, software, and employee training. For many SMEs with limited financial resources, these costs can be prohibitive. [Aini et al \(2024\)](#) emphasize that limited access to financing often prevents SMEs from adopting digital technologies even when they recognize the potential benefits.

Technological infrastructure is another critical factor affecting digital transformation adoption. SMEs operating in regions with inadequate internet connectivity or limited access to digital infrastructure often face difficulties implementing digital solutions. This problem is particularly relevant in developing economies where digital infrastructure may not be evenly distributed across regions. As noted by [Prakoso et al \(2023\)](#) infrastructure limitations significantly affect SMEs' readiness to adopt digital platforms and information systems.

Organizational culture and resistance to change also play an important role. Many SMEs operate with traditional management practices and may be reluctant to adopt new digital processes. Resistance to technological change can slow down digital transformation initiatives and limit the effectiveness of innovation strategies. Therefore, organizational readiness and leadership commitment are essential factors in ensuring the successful implementation of digital transformation in SMEs.

**Table 4: Key Challenges of Digital Transformation Adoption in SMEs**

Challenge	Description	Supporting Studies
Digital literacy gap	Lack of technical skills and digital knowledge	Santi et al (2024)
Financial constraints	High investment costs for digital technologies	Aini et al (2024)
Infrastructure limitations	Inadequate internet connectivity and ICT infrastructure	Prakoso et al (2023)
Organizational resistance	Cultural barriers and reluctance to adopt new technologies	Hardi & Arifin (2023)

Table 4 summarizes the major barriers affecting digital transformation adoption among SMEs. The literature indicates that digital transformation is not solely a technological issue but also an organizational and institutional challenge. Limited digital literacy, financial constraints, infrastructure limitations, and organizational resistance collectively shape SMEs' readiness to adopt digital technologies. Addressing these challenges requires coordinated efforts from governments, industry stakeholders, and educational institutions to provide training programs, financial support, and digital infrastructure development.

### The Role of Dynamic Capabilities in Digital Transformation

Dynamic capability theory provides an important theoretical framework for understanding how firms adapt to rapidly changing technological environments. Dynamic capabilities refer to a firm's ability to integrate, build, and reconfigure internal and external resources in response to changing market conditions. In the context of digital transformation, dynamic capabilities enable organizations to effectively leverage digital technologies for innovation and competitiveness.

Research indicates that digital transformation enhances firms' dynamic capabilities by improving their ability to sense market opportunities, seize new business opportunities, and reconfigure organizational resources. According to [Chen \(2023\)](#), digital technologies enable firms to improve information processing and knowledge integration, which strengthens their ability to identify new market opportunities.

Similarly, [He-dan et al \(2022\)](#) highlight that digital transformation contributes to innovation performance by strengthening firms' ability to reconfigure resources and develop new technological capabilities. These dynamic capabilities allow firms to adapt more quickly to technological changes and evolving customer demands.

Dynamic capabilities also play a mediating role between digital transformation and business model innovation. Firms with strong dynamic capabilities are better positioned to translate digital technology investments into innovative business models and competitive advantages. [Sun \(2023\)](#)

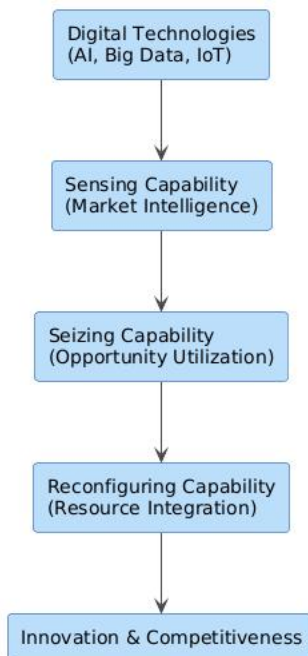
suggests that digital transformation alone does not guarantee innovation success; rather, it is the firm's ability to utilize digital technologies through dynamic capabilities that determines the effectiveness of innovation outcomes.

Furthermore, digital capabilities—such as data analytics capability, digital platform integration, and digital communication tools—serve as important components of dynamic capabilities. These capabilities enable firms to collect and analyze large volumes of data, improve decision-making processes, and enhance collaboration across organizational boundaries.

**Table 5: Dynamic Capabilities in Digital Transformation**

Capability Dimension	Description	Supporting Study
Sensing capability	Ability to identify market opportunities	Chen (2023)
Seizing capability	Ability to capture digital opportunities	He-dan et al (2022)
Reconfiguring capability	Ability to restructure organizational resources	Sun (2023)

Table 5 illustrates the three core dimensions of dynamic capabilities that influence digital transformation outcomes. These capabilities enable firms to detect market opportunities, respond to technological changes, and restructure their business processes. The literature suggests that firms with stronger dynamic capabilities are more likely to successfully implement digital transformation strategies and achieve sustainable competitive advantages.



**Figure 2: Dynamic Capability Framework in Digital Transformation**

The diagram above illustrates the dynamic capability framework within the context of digital transformation. Digital technologies provide the foundation for firms to develop sensing capabilities, which enable organizations to identify new opportunities in rapidly changing markets. These

opportunities are then captured through seizing capabilities, where firms implement strategic initiatives and digital innovations. Finally, reconfiguring capabilities allow firms to restructure resources and organizational processes to sustain innovation and competitiveness. This framework highlights that digital transformation outcomes depend not only on technological adoption but also on firms' organizational capabilities.

### **Policy and Strategic Implications for SME Digitalization**

The findings of this literature review highlight several important implications for policymakers and business practitioners seeking to promote digital transformation among SMEs. Governments play a critical role in facilitating digital transformation by providing supportive infrastructure, regulatory frameworks, and financial incentives.

One of the most important policy interventions involves improving digital infrastructure. Reliable internet connectivity and access to affordable digital technologies are essential for enabling SMEs to participate in the digital economy. Governments should prioritize investments in broadband infrastructure, particularly in rural and underserved regions.

In addition to infrastructure development, governments should also focus on enhancing digital literacy and workforce capabilities. Training programs aimed at improving digital skills among SME owners and employees can significantly improve their readiness to adopt digital technologies. According to *Magoutas et al (2024)* countries that invest in digital education and workforce development tend to experience higher levels of digital innovation and productivity growth.

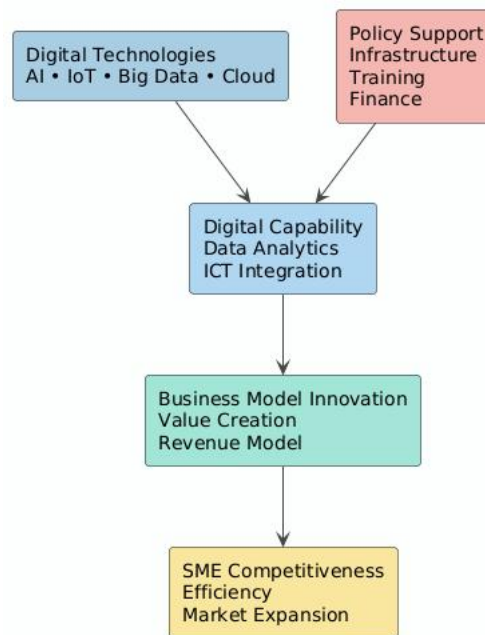
Financial support mechanisms are also essential for encouraging digital transformation among SMEs. Governments can provide financial incentives such as grants, tax credits, or subsidized loans to support SMEs in investing in digital technologies. These programs can reduce the financial barriers associated with digital transformation and encourage SMEs to adopt innovative business models.

Furthermore, collaboration between governments, private sector organizations, and academic institutions can help create a supportive digital ecosystem. Partnerships between SMEs and technology providers can facilitate knowledge transfer and accelerate digital innovation. Universities and research institutions can also contribute by providing training programs, consulting services, and research collaborations that support SME digitalization initiatives.

**Table 6: Policy Strategies for Supporting SME Digital Transformation**

Policy Area	Strategy	Expected Impact
Digital infrastructure	Expand broadband and ICT infrastructure	Improve technology accessibility
Digital literacy	Training programs for SME owners	Enhance digital skills
Financial support	Grants and subsidies for digital investment	Reduce adoption costs
Innovation ecosystem	Collaboration with universities and tech firms	Accelerate innovation

Table 6 presents key policy strategies that can support digital transformation among SMEs. The literature suggests that a comprehensive policy framework combining infrastructure development, digital literacy programs, financial incentives, and innovation ecosystem support can significantly enhance SMEs' ability to adopt digital technologies and compete in the digital economy.



**Figure 3: Integrated Framework of Digital Transformation and SME Competitiveness**

The integrated framework presented above summarizes the relationships identified in the literature between digital technologies, digital capabilities, business model innovation, and SME competitiveness. Digital technologies serve as the foundational drivers of transformation by enabling organizations to develop digital capabilities such as data analytics and ICT integration. These capabilities facilitate business model innovation, which allows firms to redesign value creation processes and develop new revenue streams. Ultimately, these innovations contribute to enhanced SME competitiveness through improved

operational efficiency and expanded market access. Policy support mechanisms, including infrastructure development, digital training programs, and financial incentives, play a critical role in strengthening SMEs' digital capabilities and facilitating successful digital transformation.

## CONCLUSION

Digital transformation has emerged as a critical driver of organizational change and competitiveness in the modern digital economy. This literature review highlights that the integration of digital technologies—such as artificial intelligence, big data analytics, cloud computing, and digital platforms—has significantly reshaped how firms create, deliver, and capture value. For small and medium-sized enterprises (SMEs), digital transformation enables improvements in operational efficiency, innovation capability, and market expansion. The findings from previous studies between 2020 and 2024 indicate that digital transformation contributes to business model innovation by facilitating data-driven decision-making, enhancing digital capabilities, and enabling firms to develop more flexible and customer-oriented business models. These innovations ultimately strengthen SMEs' competitiveness by improving productivity, expanding market access, and enhancing organizational adaptability in increasingly dynamic market environments.

However, the literature also reveals that the success of digital transformation in SMEs is influenced by several organizational and institutional factors, including digital literacy, financial resources, technological infrastructure, and dynamic capabilities. SMEs often face significant barriers in adopting digital technologies, particularly due to limited technical skills and financial constraints. Therefore, effective digital transformation requires not only technological adoption but also the development of organizational capabilities, supportive leadership, and an enabling policy environment. Governments and stakeholders play an important role in facilitating SME digitalization through investments in digital infrastructure, training programs, and financial support mechanisms. Future research should further explore the long-term impact of digital transformation on SME competitiveness, as well as the role of emerging technologies and institutional support in accelerating inclusive and sustainable digital transformation.

## REFERENCES

- Aini, A. N., Safitri, E. N., Majalina, G., Abidin, M. Z., & Khoiriawati, N. (2024). Analisis Peluang Dan Tantangan Teknologi Terhadap Pemberdayaan Umkm Di Indonesia. *Sentri Jurnal Riset Ilmiah*, 3(5), 2564–2571. <https://doi.org/10.55681/sentri.v3i5.2842>
- Aliyev, A. (2023). Research of Problems of Interaction of Economic Processes With Artificial Intelligence Technologies and Development Prospects of Their Solution Mechanisms. *Drukerovskij Vestnik*, (5), 245–260. <https://doi.org/10.17213/2312-6469-2023-5-245-260>
- Ardiani, W., & Putra, R. (2021). Pelatihan Berbasis Daring Dalam Penguatan Pemasaran Digital UKM Kota Medan. *Humanism Jurnal Pengabdian Masyarakat*, 2(1), 31. <https://doi.org/10.30651/hm.v2i1.5899>

- Brusova, M. M., & Gidayatov, G. M. (2024). Innovations in the Digital Economy and Their Impact on Businesses and Individuals. *Uik*, 10, 40-46. <https://doi.org/10.36871/u.i.k.2024.10.01.008>
- Al-Ansaari, Y., Bederr, H., & Chen, C. (2015). Strategic orientation and business performance: An empirical study in the UAE context. *Management Decision*, 53(10), 2287-2302. <https://doi.org/10.1108/MD-01-2015-0034>
- Ali, A. A. (2018). Strategic planning-organizational performance relationship: Perspectives of previous studies and literature review. *International Journal of Healthcare Management*, 11(1), 8-24. <https://doi.org/10.1179/2047971915Y.0000000017>
- Fan, X., Ye, W., & Jiang, H. (2025). Supply chain integration, strategic choice and corporate growth of agricultural companies: an analysis of dynamic QCA. <https://doi.org/10.3389/fsufs.2025.1535458/pdf>
- Gede, D. & Huluka, A. (2023). The impact of strategic alignment on organizational performance: The case of Ethiopian universities. <https://doi.org/10.1080/23311975.2023.2247873>
- Holm, C., Kringelum, L., & Anand, A. (2025). Creating effective strategy implementation: a systematic review of managerial and organizational levers. <https://doi.org/10.1007/s11846-025-00880-3.pdf>
- Rigtering, J. C., Eggers, F., Kraus, S., & Chang, M. L. (2017). Entrepreneurial orientation, strategic planning and firm performance: The impact of national cultures. *European Journal of International Management*, 11(3), 301-324. <https://doi.org/10.1504/EJIM.2017.083872>
- Uygun, Y., Gotsadze, N., Schupp, F., Gzirishvili, L., & Nana, B. S. (2022). A holistic model for understanding the dynamics of outsourcing. <https://doi.org/10.1080/00207543.2022.2031330>
- Chen, L. (2023). Enterprise Digital Transformation, Dynamic Capabilities and Innovation Performance. *Frontiers in Business Economics and Management*, 11(2), 327-332. <https://doi.org/10.54097/fbem.v11i2.12632>
- Dauda, P., Paris, P. P., & Qur'ani, B. (2023). Pengaruh Usaha Kecil Menengah Sektor Kuliner Terhadap Pertumbuhan Ekonomi Sebelum Pandemi Covid 19 Di Makassar. *Jurnal Manajemen Perbankan Keuangan Nitro*, 6(1), 14-25. <https://doi.org/10.56858/jmpkn.v6i1.90>
- Fan, X., Wang, Y., & Lu, X. (2022). Digital Transformation Drives Sustainable Innovation Capability Improvement in Manufacturing Enterprises: Based on FsQCA and NCA Approaches. *Sustainability*, 15(1), 542. <https://doi.org/10.3390/su15010542>
- Hardi, R., & Arifin, A. Z. (2023). Pengaruh Information Dan Communication Technology Adoption Serta Digital Transformation Terhadap Asset Growth UMKM. *Jurnal Manajemen Bisnis Dan Kewirausahaan*, 7(3), 537-548. <https://doi.org/10.24912/jmbk.v7i3.23866>
- He-dan, M., Jia, X., & Wang, X. (2022). Digital Transformation, Ambidextrous Innovation and Enterprise Value: Empirical Analysis Based on Listed Chinese Manufacturing Companies. *Sustainability*, 14(15), 9482. <https://doi.org/10.3390/su14159482>
- Li, H., & Zhou, Q. (2023). Construction of Digital Capability Evaluation Index System for Manufacturing Enterprises. *Manufacturing and Service Operations Management*, 4(5). <https://doi.org/10.23977/msom.2023.040512>
- Magoutas, A., Chaideftou, M., Skandali, D., & Chountalas, P. (2024). Digital Progression and Economic Growth: Analyzing the Impact of ICT Advancements on the GDP of European Union Countries. *Economies*, 12(3), 63. <https://doi.org/10.3390/economies12030063>

- Manurung, N., Pakpahan, Y. A., Simanjuntak, R. F. N., Pratama, M. H., & Sitompul, M. (2024). Faktor-Faktor Yang Mempengaruhi Kesuksesan Usaha Kecil Dan Menengah (UKM). *Journal of Education Transportation and Business*, 1(2), 569–571. <https://doi.org/10.57235/jetbus.v1i2.4121>
- Mo, M. (2024). The Impact of Digital Transformation on Product Innovation—Mediated by Business Model Innovation. *Jaeps*, 7(1), 23–31. <https://doi.org/10.54254/2977-5701/7/2024060>
- Prakoso, S. T., Amalina, N. D., Erikawati, C., Aisah, N., & Danuari, A. (2023). Manajemen Pengetahuan Bisnis Dalam Transformasi Digital Sebagai Sinergi Internal Process Collaboration. *Remik (Riset Dan E-Jurnal Manajemen Informatika Komputer)*, 7(1), 775–783. <https://doi.org/10.33395/remik.v7i1.12156>
- Rahayu, W., & Veri, J. (2025). Penerapan Sistem Informasi Manajemen Berbasis Digital Dalam UMKM: Sebuah Kajian Literatur. *Journal of Human and Education (Jahe)*, 5(2), 267–272. <https://doi.org/10.31004/jh.v5i2.2340>
- Rahman, L., & Sanjaya, F. (2024). Mendorong Kewirausahaan Masyarakat Melalui Pemanfaatan Teknologi: Studi Kasus Implementasi Solusi Digital Di Lingkungan Usaha Kecil Menengah. *Sikemas*, 3(3), 119–124. <https://doi.org/10.47353/sikemas.v3i3.1988>
- Rofiq, A., Anggraeni, R., Rabbani, F. R., & Reza, A. A. (2023). Peningkatan Kapasitas UKM Kab. Malang Melalui Pelatihan Manajemen Keuangan Dan Pemasaran Digital. *Mangente Jurnal Pengabdian Kepada Masyarakat*, 2(2), 164. <https://doi.org/10.33477/mangente.v2i2.3495>
- Santi, I. N., Parawangsa, I., Parani, S. B., & Lamusa, F. (2024). Eksplorasi Faktor Penghambat Adopsi Digital Marketing Pada UMKM Di Kota Palu. *Jurnal Media Wahana Ekonomika*, 21(2), 207–222. <https://doi.org/10.31851/jmwe.v21i2.15036>
- Wang, N. (2022). Scholarship Policies of International Students in Chinese Universities: A Brand Perception Perspective. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.869171>
- Xingxing Xu p Cuncun Sun. (2023). Review and Prospect of Business Model Innovation Research. *Academic Journal of Business & Management*, 5(21). <https://doi.org/10.25236/ajbm.2023.052130>
- Zhao, Q., Li, X., & Li, S. (2023). Analyzing the Relationship Between Digital Transformation Strategy and ESG Performance in Large Manufacturing Enterprises: The Mediating Role of Green Innovation. *Sustainability*, 15(13), 9998. <https://doi.org/10.3390/su15139998>