Startupreneur Business Digital (SABDA Journal)
Vol. 5, No. 1, 2025, pp. 96−106
E-ISSN: 2962-0260 P-ISSN: 2962-0279, DOI:10.33050

The Impact of Digital Transformation Strategies on Enhancing Innovation Capability Among Indonesian Startups

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Article Info

Article history:
Submission January 12, 2026
Revised April 27, 2026
Accepted April 30, 2026
Published May 05, 2026

Keywords:
Digital Transformation
Innovation
Capability
Startups

ABSTRACT

Digital transformation has emerged as a critical driver of organizational sustainability and competitive advantage in increasingly dynamic and uncertain markets. **This study examines** how digital transformation strategies enhance innovation capability within the context of Indonesian startups, which operate in rapidly evolving and resource constrained environments. Adopting a qualitative exploratory approach, data were collected through semi structured interviews with founders, managers, and key decision-makers from multiple startups across Indonesia. **The data were analyzed** using thematic analysis to identify key patterns and relationships. **The findings** reveal that digital transformation significantly contributes to innovation capability through several interconnected mechanisms, including technological integration, organizational learning, and data-driven decision making. In particular, organizational learning manifested through knowledge sharing, iterative improvement, and feedback integration emerges as a critical mediating factor that enables startups to effectively translate digital adoption into innovative outcomes. **The results** highlight that the strategic alignment between digital initiatives and organizational objectives plays a more decisive role than mere technological adoption. **This study contributes** to the literature by providing empirical insights into the processes through which digital transformation influences innovation capability in emerging startup ecosystems. It also offers practical implications for startup practitioners and policymakers in designing effective digital transformation strategies to foster sustainable innovation.

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DOI: https://doi.org/10.33050/sabda.v5i1.1064
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1. INTRODUCTION

The global business landscape is currently undergoing a paradigm shift driven by the rapid advancement of digital technologies [1]. In this era of Industry 4.0, digital transformation is no longer a choice but a strategic necessity for organizations seeking to maintain a competitive advantage [2]. This phenomenon is particularly critical for startups, which are inherently designed to operate in high-growth and high-uncertainty environments [3]. In the context of emerging economies, Indonesia has emerged as a significant digital hub

in Southeast Asia, characterized by a burgeoning startup ecosystem and a massive, mobile-first consumer base [4].

In the context of emerging economies, Indonesia has established itself as one of the fastest-growing digital ecosystems in Southeast Asia [5]. The country is characterized by a rapidly expanding startup landscape, increasing internet penetration, and a large, mobile-first population [2]. These conditions create significant opportunities for startups to leverage digital technologies in developing innovative products, services, and business models. However, despite this favorable environment, many Indonesian startups still face challenges in translating digital adoption into meaningful innovation outcomes [6].

While numerous startups have integrated digital tools such as cloud computing, data analytics, and digital platforms into their operations, the impact of these technologies on innovation capability remains uneven. Innovation capability, defined as the ability of an organization to transform knowledge and ideas into new or improved products, services, or processes, is a critical determinant of startup success. Without a well-defined digital transformation strategy, technological adoption often remains superficial and fails to generate sustainable competitive advantages. Previous research suggests that digital transformation involves more than just implementing cutting edge software it requires a fundamental reshaping of organizational structures, culture, and strategic alignment [7]. In Indonesia, factors such as the digital talent gap, infrastructure disparities, and varying levels of data literacy present unique hurdles [8]. Therefore, this study aims to address these gaps by examining how digital transformation strategies influence innovation capability among Indonesian startups. Specifically, the study explores the role of key dimensions such as technological integration, organizational learning, and data-driven decision-making in shaping innovation outcomes. By adopting a qualitative exploratory approach, this research seeks to provide a deeper understanding of the processes underlying digital transformation and its impact on innovation capability.

Despite the growing body of literature on digital transformation and innovation, most existing studies focus on large organizations in developed economies, with limited attention given to startups in emerging markets such as Indonesia. Moreover, there is still a lack of in-depth understanding of the mechanisms through which digital transformation influences innovation capability, particularly from a qualitative and process-oriented perspective. Therefore, this study aims to address these gaps by examining how digital transformation strategies influence innovation capability among Indonesian startups. Specifically, the study explores the role of key dimensions such as technological integration, organizational learning, and data-driven decision-making in shaping innovation outcomes. By adopting a qualitative exploratory approach, this research seeks to provide a deeper understanding of the processes underlying digital transformation and its impact on innovation capability.

The findings of this study are expected to contribute to both theory and practice. Theoretically, the study enriches the literature on digital transformation and dynamic capabilities by providing empirical insights from an emerging market context. Practically, it offers strategic guidance for startup founders, managers, and policymakers in designing and implementing effective digital transformation initiatives that foster sustainable innovation.[9].

2. LITERATURE REVIEW

2.1. Digital Transformation

Digital transformation refers to the strategic integration of digital technologies into organizational processes, products, and business models in order to improve performance and create new value for customers and stakeholders [1, 2]. These technologies include cloud computing, artificial intelligence, automation, big data analytics, and digital platforms that support the integration of digital processes within organizations [10]. For startups, digital transformation is not only about adopting new technologies but also about rethinking business models, restructuring workflows, and fostering a culture of innovation [11]. Digital transformation enables startups to scale quickly, improve operational efficiency, and enhance customer engagement [12]. From a theoretical perspective, digital transformation can be explained through the Resource-Based View (RBV), which suggests that firms gain competitive advantage by developing valuable, rare, inimitable, and non-substitutable resources [13]. Digital technologies such as cloud computing, data analytics, and automation can be considered strategic resources that enhance organizational capabilities and support innovation activities. By leveraging these digital resources, startups can strengthen their internal competencies and create unique value propositions that are difficult for competitors to replicate [14].

2.2. Innovation Capability

Innovation capability refers to the ability of an organization to continuously transform knowledge, ideas, and technological inputs into new or improved products, services, or processes that generate value and enhance competitiveness in dynamic and uncertain markets [3]. This capability is not merely limited to the creation of new offerings but also includes the organization's capacity to refine existing solutions, optimize internal processes, and adapt business models in response to evolving customer needs and technological advancements [15]. As such, innovation capability becomes a critical determinant of long-term sustainability, especially for startups operating in highly competitive and rapidly changing environments [14].

At its core, innovation capability encompasses several interrelated dimensions, including creativity, technological competence, market responsiveness, and strategic decision-making [16]. Creativity enables organizations to generate novel ideas and explore unconventional solutions, while technological competence ensures the effective utilization and integration of advanced technologies into business operations [17]. Market responsiveness reflects the ability to identify and react swiftly to customer demands, emerging trends, and competitive pressures [18]. Meanwhile, strategic decision-making plays a crucial role in aligning innovation initiatives with organizational goals, ensuring that resources are allocated efficiently and innovation efforts deliver measurable impact. Startups with strong innovation capability are generally more resilient in the face of uncertainty and competition [19]. They are better equipped to pivot their strategies, develop disruptive solutions, and seize new market opportunities. This adaptability allows them not only to survive but also to thrive in volatile business environments. Moreover, such startups tend to achieve sustainable growth by continuously delivering value to customers and maintaining relevance in the market. Innovation capability also contributes to building competitive advantages that are difficult for competitors to replicate, particularly when it is embedded within the organization's culture and routines. Several factors influence the development of innovation capability within startups [20]. Leadership plays a pivotal role in fostering an innovation-driven vision, encouraging risk-taking, and supporting experimentation. Organizational culture is equally important, as a culture that promotes openness, collaboration, and learning can significantly enhance creative output and knowledge sharing [21]. Technology adoption is another key factor, as access to and effective use of digital tools—such as artificial intelligence, big data analytics, and cloud computing—can accelerate innovation processes and improve decision-making. Additionally, resource availability, including financial capital, human talent, and technological infrastructure, determines the extent to which startups can invest in research, development, and innovation activities [22].

2.3. Indonesian Startup Ecosystem

The Indonesian startup ecosystem has experienced significant and sustained growth over the past decade, positioning the country as one of the most dynamic digital economies in Southeast Asia [23]. This rapid development has been driven by a combination of supportive government initiatives, increasing inflows of venture capital, and the presence of a large, young, and technologically literate population [24]. Programs aimed at accelerating digital transformation such as startup incubators, digital talent scholarships, and regulatory support for innovation have played a crucial role in fostering entrepreneurial activity [25]. At the same time, both local and international investors have shown strong interest in Indonesia's market potential, particularly given its large consumer base and rising internet penetration [26]. Key sectors dominating the startup landscape include financial technology (fintech), e-commerce, and health technology (healthtech) [27]. Fintech startups have transformed the way financial services are accessed, especially by promoting financial inclusion among unbanked and underbanked populations [28]. E-commerce platforms have reshaped consumer behavior, enabling seamless online transactions and expanding market reach for small and medium enterprises (SMEs) [29]. Meanwhile, healthtech innovations have become increasingly relevant, particularly after the COVID-19 pandemic, by improving access to healthcare services through digital platforms such as telemedicine and health monitoring applications [30]. Despite this promising ecosystem, many Indonesian startups continue to encounter significant challenges in building strong digital competencies and sustaining long term innovation [31]. One of the primary constraints is limited access to consistent funding, particularly for early-stage startups outside major urban centers [32]. While large startups in metropolitan areas benefit from venture capital, smaller or regional startups often struggle to secure financial support necessary for scaling their operations [33].

2.4. Relationship Between Digital Transformation and Innovation Capability

Studies have shown that digital transformation enhances innovation capability by enabling data-driven decision-making, accelerating experimentation, and supporting customer-centric innovation [34]. Transforma-

tion allows organizations to redesign business models and improve innovation outcomes, while [4] emphasize the role of digital platforms in facilitating collaborative innovation. However, other studies argue that the effectiveness of digital transformation depends not only on technological adoption but also on organizational readiness, leadership capability, and resource integration [2]. From a theoretical perspective, this relationship can be explained through the Resource-Based View (RBV), Dynamic Capabilities Theory, and the Technology Organization Environment (TOE) framework, which suggest that digital technologies act as strategic resources while organizational capabilities and environmental conditions determine their effective use for innovation [29]. Despite growing research in this area, most studies focus on large organizations in developed economies, with limited attention to startups in emerging markets [35]. Therefore, this study examines how digital transformation strategies influence innovation capability among Indonesian startups, highlighting the roles of technological resources, organizational capabilities, and ecosystem factors in supporting innovation-driven growth [36].

3. METHOD

This study employs a qualitative research design with an exploratory approach to examine how digital transformation strategies influence the enhancement of innovation capability among Indonesian startups. A qualitative approach is considered appropriate as it allows for an in-depth understanding of complex organizational processes, particularly in the context of digital transformation and innovation.

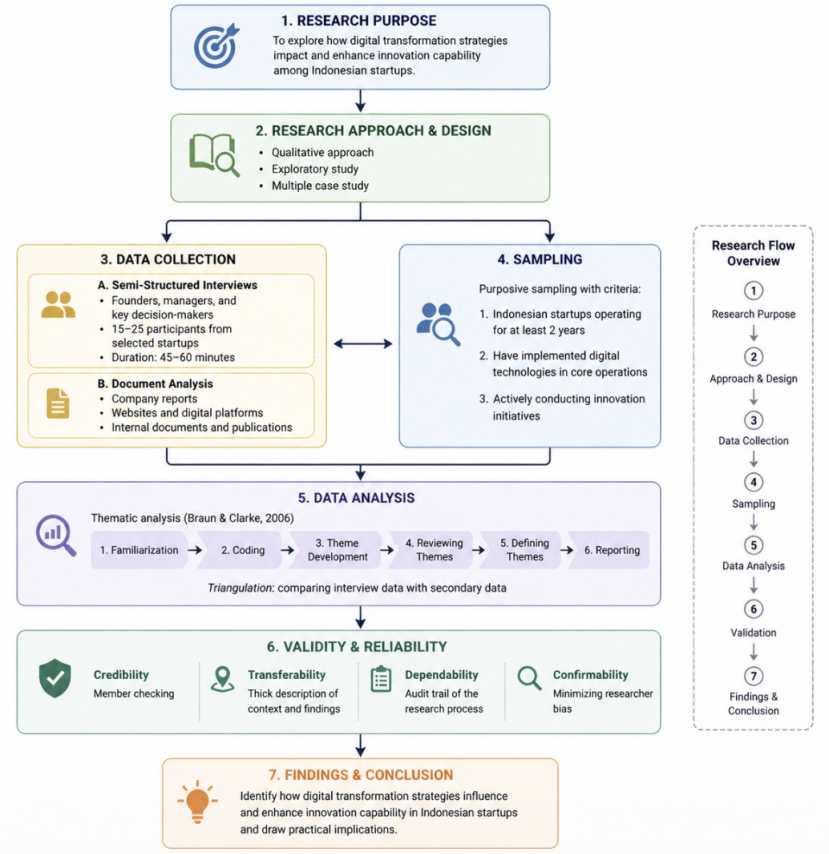

Figure 1. Research Flowchart

The exploratory nature of this study is essential given that digital transformation in emerging startup ecosystems, such as Indonesia, is still developing and highly context-dependent. As illustrated in Figure 1, the research flowchart outlines the systematic process adopted in this study, starting from problem identification to data analysis and interpretation. Many startups operate in highly dynamic environments characterized by

uncertainty, rapid technological change, and evolving market demands. Therefore, an exploratory design allows the study to remain flexible and open to uncovering new patterns, relationships, and insights that may not yet be fully captured in existing theoretical frameworks.

3.1. Research Design and Approach

The study adopts a multiple case study strategy, focusing on several Indonesian startups that have actively implemented digital transformation initiatives across different sectors. This approach is particularly suitable for capturing the complexity and contextual nature of digital transformation processes within emerging startup ecosystems. By examining multiple cases rather than a single instance, the research enables cross-case comparison, allowing patterns, similarities, and differences to be systematically identified and analyzed. Such comparative analysis provides richer and more nuanced insights into how diverse strategic approaches, organizational capabilities, and technological adoption practices contribute to the development of innovation capability.

3.2. Data Collection

Data were collected through semi-structured interviews and document analysis. The interviews involved founders, managers, and key decision-makers who are directly engaged in digital transformation processes within their organizations. Each interview lasted approximately 45–60 minutes and was conducted either online or in person. In addition, secondary data such as company reports, websites, and digital platforms were analyzed to complement and validate the primary data.

3.3. Sampling Technique

The sampling strategy employed in this study is purposive sampling, which allows the selection of participants based on their relevance and direct involvement in the phenomenon under investigation. This approach is particularly appropriate for qualitative research, where the objective is not generalization but rather an in-depth understanding of specific contexts and experiences.

As presented in Table 1, the sampling process is guided by clearly defined criteria to ensure the inclusion of information-rich cases. First, the selected startups must have been operating for at least two years, ensuring a certain level of organizational maturity and stability. Second, the startups must have adopted digital technologies within their core business operations, which is essential for examining digital transformation strategies in practice. Third, the organizations must demonstrate active engagement in innovation initiatives, such as product development, process improvement, or market experimentation.

Table 1. Sampling Technique

Aspect	**Description**
Sampling Method	Purposive sampling
Rationale	Selection based on relevance to research objectives
Criteria 1	Indonesian startups operating for at least 2 years
Criteria 2	Adoption of digital technologies in core business operations
Criteria 3	Active involvement in innovation initiatives
Sample Size	15–25 participants
Unit of Analysis	Startup organizations

The sample size ranges from 15 to 25 participants, consisting of founders, managers, and key decision-makers who possess strategic and operational insights into digital transformation processes. This range is considered sufficient to achieve data saturation while maintaining analytical depth. Furthermore, the unit of analysis in this study is the startup organization, enabling a comprehensive exploration of how digital transformation strategies are implemented at the organizational level.

4. RESULT AND DISCUSSION

This section presents the findings derived from the thematic analysis and discusses their implications in relation to digital transformation strategies and innovation capability among Indonesian startups. The analysis reveals several interconnected themes that explain how digital transformation contributes to enhancing innovation capability.

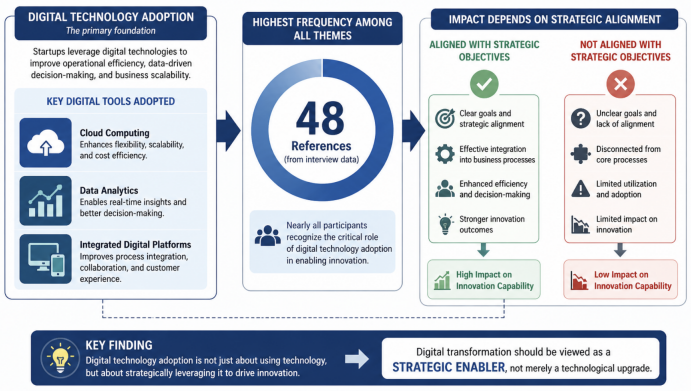

Figure 2. Digital Transformation Process in Enhancing Innovation Capability

Figure 2 illustrates that digital technology adoption serves as a foundational driver of innovation capability among Indonesian startups, but its impact is neither automatic nor uniform. The figure highlights that startups widely utilize technologies such as cloud computing, data analytics, and integrated digital platforms to enhance operational efficiency, scalability, and data-driven decision-making. These technologies function as an essential operational backbone, enabling organizations to streamline processes, improve coordination, and respond more effectively to dynamic business environments. The empirical strength of this finding is reinforced by the high frequency of mentions (48 references), indicating that nearly all participants consistently recognize the critical role of digital technologies in supporting innovation. However, the figure also emphasizes an important qualification: the effectiveness of digital technology adoption is highly dependent on its alignment with strategic objectives. When digital initiatives are clearly aligned with organizational goals, they lead to better integration into business processes, improved decision-making, and ultimately stronger innovation outcomes. In contrast, when such alignment is absent, technology adoption tends to be fragmented, underutilized, and disconnected from core operations, resulting in limited impact on innovation capability. This suggests that digital transformation should not be understood merely as the adoption of new technologies, but rather as a strategic process that requires coherence between technological investments and organizational direction.

Overall, the figure demonstrates that while digital technology adoption provides the necessary infrastructure for innovation, its ability to generate meaningful outcomes depends on strategic alignment and effective organizational implementation, positioning digital transformation as a strategic enabler rather than simply a technological upgrade.

4.1. Organizational Learning as a Mediating Mechanism

Table 2 presents the key dimensions and indicators of organizational learning identified through the thematic analysis. The table provides a structured breakdown of how learning processes are manifested within Indonesian startups, highlighting three primary dimensions: knowledge sharing, iterative improvement, and feedback integration, with a total of 42 references. The first dimension, knowledge sharing, recorded 15 occurrences, making it the most prominent indicator. This suggests that startups actively promote internal communication and collaboration through team discussions and cross-functional interactions. Such practices enable the dissemination of tacit and explicit knowledge across the organization, facilitating collective understanding and faster problem-solving. The prominence of this dimension indicates that knowledge exchange is a fundamental mechanism through which startups leverage digital technologies to support innovation. The second dimension, iterative improvement, accounted for 14 references and reflects the continuous refinement of products and processes. Startups engage in ongoing evaluation and adjustment of their offerings, often through trial-and-error approaches and incremental innovation. This iterative process is closely linked to agile methodologies, where rapid cycles of development and testing allow organizations to respond quickly to changes and improve performance over time. The relatively high frequency of this indicator demonstrates that learning is not static, but rather an ongoing and dynamic process embedded in daily operations. The third dimension, feedback integration, appeared in 13 references and highlights the importance of incorporating input from customers and stakeholders into decision-making processes. Startups utilize digital tools to gather and analyze feedback, enabling them to align their products and services with market needs.

Table 2. Indicators of Organizational Learning

Dimension	Indicators	Frequency
Knowledge Sharing	Team discussions, internal collaboration	15
Iterative Improvement	Continuous refinement of products and processes	14
Feedback Integration	Use of customer and stakeholder feedback	13
Total		42

Overall, the distribution of frequencies across these three dimensions indicates that organizational learning in startups is multi-dimensional and balanced, with no single indicator dominating excessively. Instead, innovation capability emerges from the interaction of internal knowledge exchange, continuous improvement processes, and external feedback mechanisms. These findings reinforce the argument that organizational learning serves as a critical mediating mechanism, enabling startups to effectively transform digital technology adoption into meaningful innovation outcomes.

5. CONCLUSION

This study confirms that digital transformation plays an important role in enhancing innovation capability among startups. However, beyond confirming existing findings, this study provides deeper insights into how digital transformation strengthens innovation capability through several organizational mechanisms, including improved data-driven decision-making, faster experimentation processes, and stronger market responsiveness within the Indonesian startup ecosystem. Through the adoption of digital tools and strategic technology integration, startups can enhance operational efficiency, accelerate product development, and strengthen customer engagement. Furthermore, leadership commitment and a supportive organizational culture are essential factors in ensuring the successful implementation of digital transformation. While previous studies have widely acknowledged the relationship between digital transformation and innovation capability, this study contributes by highlighting how this relationship manifests in the context of startups in an emerging digital economy. Specifically, the findings reveal that digital transformation in startups is not only about adopting advanced technologies but also about enabling continuous organizational learning, fostering experimentation, and improving responsiveness to rapidly changing market demands. These insights provide a more nuanced understanding of how digital transformation operates as an enabling mechanism for innovation within resource-constrained startup environments.

Despite its benefits, startups in Indonesia still face challenges such as limited financial resources, lack of digital expertise, and resistance to change. Addressing these barriers requires concerted efforts from government, industry, and academia to create a more supportive ecosystem for digital innovation. The study contributes to existing literature by offering insights into how digital transformation strategies influence innovation capability in emerging market contexts. In addition, the manuscript has been carefully reviewed to improve language clarity, grammar consistency, and formatting to ensure readability and adherence to academic writing standards. Therefore, the contribution of this study lies in explaining the underlying processes through which digital transformation supports innovation capability in startups, particularly within the dynamic and rapidly growing digital economy of Indonesia.

6. DECLARATIONS

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6.2. Author Contributions

Conceptualization: BD; Methodology: SW; Software: TK; Validation: BD and SW; Formal Analysis: BD and SW; Investigation: UR; Resources: SW; Data Curation: BD; Writing Original Draft Preparation: SW

and TK; Writing Review and Editing: BD and SW; Visualization: BD; All authors, BD, SW, and TK, have read and agreed to the published version of the manuscript.

6.3. Funding

The authors acknowledge that no funding was provided for the execution of this study.

6.4. Declaration of Competing Interest

The authors declare that they have no affiliations or involvements that could be perceived as a conflict of interest.

REFERENCES

[1] G. Vial, "Understanding digital transformation: A review and a research agenda," *Managing digital transformation*, pp. 13–66, 2021.
[2] S. Kraus, S. Durst, J. J. Ferreira, P. Veiga, N. Kailer, and A. Weinmann, "Digital transformation in business and management research: An overview of the current status quo," *International journal of information management*, vol. 63, p. 102466, 2022.
[3] A. Mendoza-Silva, "Innovation capability: a systematic literature review," *European Journal of Innovation Management*, vol. 24, no. 3, pp. 707–734, 2021.
[4] S. Nambisan, "Digital innovation and international business," *Innovation*, vol. 24, no. 1, pp. 86–95, 2022.
[5] J. Q. Dong and P. C. Verhoef, "Introduction to a research agenda for digital transformation," *A Research Agenda for Digital Transformation*, pp. 1–8, 2024.
[6] M. Hennink and B. N. Kaiser, "Sample sizes for saturation in qualitative research: A systematic review of empirical tests," *Social science & medicine*, vol. 292, p. 114523, 2022.
[7] V. Braun and V. Clarke, "Thematic analysis: A practical guide," 2021.
[8] M. Rubio-Andrés, J. Linuesa-Langreo, S. Gutiérrez-Broncano, and M. Á. Sastre-Castillo, "Tackling digital transformation strategy: how it affects firm innovation and organizational effectiveness," *The Journal of Technology Transfer*, vol. 50, no. 5, pp. 1893–1918, 2025.
[9] Y. Zhao, H. Xu, G. Liu, Y. Zhou, and Y. Wang, "Can digital transformation improve the quality of enterprise innovation in china?" *European Journal of Innovation Management*, vol. 28, no. 3, pp. 1034–1060, 2025.
[10] H. Halim, T. M. Kesuma, and M. R. Siregar, "Digital transformation strategy to optimize company performance," *Jurnal Manajemen Bisnis, Akuntansi Dan Keuangan*, vol. 2, no. 2, pp. 189–200, 2023.
[11] S. Li, L. Gao, C. Han, B. Gupta, W. Alhalabi, and S. Almakdi, "Exploring the effect of digital transformation on firms' innovation performance," *Journal of Innovation & Knowledge*, vol. 8, no. 1, p. 100317, 2023.
[12] A. Abudaqa, R. A. Alzahmi, H. Almujaini, and G. Ahmed, "Does innovation moderate the relationship between digital facilitators, digital transformation strategies and overall performance of smes of uae?" *International Journal of Entrepreneurial Venturing*, vol. 14, no. 3, pp. 330–350, 2022.
[13] C. Catal, G. Kar, and M. Zarali, "Strategic technological innovation investment: enhancing resilience in the age of digital transformation," *Journal of Innovative Digital Transformation*, vol. 2, no. 1, pp. 50–72, 2025.
[14] A. Zoppelletto, L. Bullini Orlandi, and C. Rossignoli, "Adopting a digital transformation strategy to enhance business network commons regeneration: an explorative case study," *The TQM Journal*, vol. 32, no. 4, pp. 561–585, 2020.
[15] C. Lukita, T. Handra, F. P. Oganda, and M. Laurens, "Data-driven innovation for circular digital economy in sustainable urban development," *IAIC Transactions on Sustainable Digital Innovation (ITSDI)*, vol. 7, no. 1, pp. 97–105, 2025.
[16] Y. Yu, H. Zeng, and M. Zhang, "Digital transformation for supply chain collaborative innovation and market performance," *European Journal of Innovation Management*, vol. 28, no. 6, pp. 2446–2468, 2025.
[17] D. Nylén and J. Holmström, "Digital innovation strategy: A framework for diagnosing and improving digital product and service innovation," *Business horizons*, vol. 58, no. 1, pp. 57–67, 2015.
[18] I. P. Gustiah and H. Newell, "Enhancing human resource management efficiency through scalable blockchain networks with an adaptive ai approach," *Startupreneur Business Digital (SABDA Journal)*, vol. 4, no. 2, pp. 114–123, 2025.

[19] V. Tebenko, N. Kutsai, M. Shashyna, O. Omelianenko, and I. Bakushevych, "Digital transformation in business: The impact of technology on efficiency, innovation and competitiveness." 2024.
[20] L. Ma, X. Zhang, and L. Dong, "Enhancing sustainable performance: the innovative strategy of digital transformation leading green collaborative management," *Sustainability*, vol. 15, no. 17, p. 13085, 2023.
[21] Q. Aini, E. Sediyono, K. D. Hartomo, D. Manongga, U. Rahardja, I. Sembiring, and N. A. Santoso, "Relationship quality analysis using technology in the business sector," in *2023 11th International Conference on Cyber and IT Service Management (CITSM)*. IEEE, 2023, pp. 1–6.
[22] M. K. Nasrun, H. Susilo, and T. W. Afrianty, "Accelerating digital transformation through digital leadership: strategies for innovation, sustainability, and organisational performance enhancement," *BISMA (Bisnis dan Manajemen)*, pp. 264–291, 2025.
[23] M. Xu, Y. Zhang, H. Sun, Y. Tang, and J. Li, "How digital transformation enhances corporate innovation performance: The mediating roles of big data capabilities and organizational agility," *Heliyon*, vol. 10, no. 14, 2024.
[24] J. A. Awad and R. Martín-Rojas, "Digital transformation influence on organisational resilience through organisational learning and innovation," *Journal of Innovation and Entrepreneurship*, vol. 13, no. 1, p. 69, 2024.
[25] B. Liu, H. Zou, H. Qin, H. Ji, and Y. Guo, "An evolutionary game analysis of digital transformation of multiagents in digital innovation ecosystems," *Plos one*, vol. 18, no. 7, p. e0289011, 2023.
[26] F. Schiavone and N. Omrani, "Innovating responsibly: Exploring digital transformation and open innovation strategies," *Journal of Innovation Economics & Management*, vol. 47, no. 2, pp. 1–14, 2025.
[27] A. D. Garcia, A. M. Rosyid, M. Yusup, and M. Khasanah, "Product innovation of foodpreneurs towards customer loyalty," *Startupreneur Business Digital (SABDA Journal)*, vol. 4, no. 2, pp. 104–113, 2025.
[28] T. S. Goh, J. Suteja, E. Erika, A. Simanjuntak, A. H. A. N. Karsa, and M. Angel, "Bibliometric analysis of the role of strategic management in food sustainability towards sdg2: Insights of free lunch program," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 7, no. 1, pp. 13–25, 2025.
[29] J. Yu, Y. Xu, J. Zhou, and W. Chen, "Digital transformation, total factor productivity, and firm innovation investment," *Journal of Innovation & Knowledge*, vol. 9, no. 2, p. 100487, 2024.
[30] S. Nambisan, M. Wright, and M. Feldman, "The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes," *Research policy*, vol. 48, no. 8, p. 103773, 2019.
[31] X. Fan, Y. Wang, and X. Lu, "Digital transformation drives sustainable innovation capability improvement in manufacturing enterprises: Based on fsqca and nca approaches," *Sustainability*, vol. 15, no. 1, p. 542, 2022.
[32] K. Lutfiyah, M. S. Maarif, Y. H. Asnawi, and L. D. Arsyianti, "Optimizing islamic boarding school edupreneurship through internet of things adoption and fuzzy analytical hierarchy process," *Aptisi Transactions on Technopreneurship (ATT)*, vol. 7, no. 1, pp. 1–12, 2025.
[33] A. Aldoseri, K. N. Al-Khalifa, and A. M. Hamouda, "Ai-powered innovation in digital transformation: Key pillars and industry impact," *Sustainability*, vol. 16, no. 5, p. 1790, 2024.
[34] F. Xue, Y. Tan, and S. Anwar, "Innovation strategy, digital transformation and competitive advantage of manufacturing enterprises: evidence from china," *European Journal of Innovation Management*, vol. 28, no. 8, pp. 3395–3417, 2025.
[35] H. Jing and G. Qu, "How to promote open innovation in restricted situations? digital transformation perspective," *Kybernetes*, vol. 53, no. 11, pp. 4615–4638, 2024.
[36] L. Arantes and J. J. Ferreira, "Innovative sustainability strategies and the role of digital transformation in organisations," *Corporate Social Responsibility and Environmental Management*, vol. 32, no. 3, pp. 3088–3121, 2025.