

The Determinants of Digital Innovation; A Systematic Review

Ali Atiah M. Aldaoudi^{1*}, Rozaini Binti Rosli²

¹School of Business and Management, Lincoln University College, Malaysia,
aldaoudi.phdscholar@lincoln.edu.my

²School of Business and Management, Lincoln University College, Malaysia,
rozaini@lincoln.edu.my

*Corresponding Author's E-mail: aldaoudi.phdscholar@lincoln.edu.my

Abstract: *Digital innovation has become a critical concern for organizations seeking to improve competitiveness, adaptability, service delivery, and value creation in increasingly digital environments. However, existing research on the determinants of digital innovation remains fragmented across different sectors, theoretical perspectives, and organizational contexts. This systematic review aims to synthesize existing literature on the determinants of digital innovation and identify the main technological, organizational, human, strategic, and contextual factors that influence digital innovation outcomes. A systematic review approach was adopted to examine 30 selected studies related to digital innovation, digital transformation, digital capabilities, organizational capabilities, leadership, culture, human capital, business model innovation, and performance outcomes. The studies were analyzed using a literature review matrix and thematic synthesis. The review process followed identification, screening, eligibility, and inclusion stages consistent with PRISMA 2020 logic. The findings show that digital innovation is shaped by multiple interacting determinants, including digital capabilities, technological capabilities, organizational capabilities, human capital, digital skills, leadership, organizational culture, agility, dynamic capabilities, and contextual conditions. The reviewed studies also indicate that digital innovation contributes to innovation performance, firm performance, competitive advantage, business model renewal, sustainable innovation, public-sector service transformation, and ecosystem development. Digital innovation should be understood as an integrated organizational process rather than a purely technological activity. Successful digital innovation requires alignment among technology, capabilities, people, strategy, culture, and context.*

Keywords: Digital innovation; digital transformation; digital capabilities; organizational capabilities; systematic review.

1. Introduction

Digital innovation has become a major concern in contemporary organizational and management research because digital technologies increasingly shape how organizations create value, develop new products, improve services, redesign business processes, and compete in dynamic markets. The rapid expansion of artificial intelligence, big data analytics, cloud computing, blockchain, digital platforms, and the Internet of Things has changed the nature of innovation by enabling organizations to recombine technological resources, data, knowledge, and capabilities in new ways. Digital innovation

is therefore not limited to the adoption of digital tools, but involves the use of digital technologies to produce new or improved products, services, processes, business models, and organizational practices. This makes digital innovation a multidimensional phenomenon that depends on technological readiness, organizational capabilities, human skills, leadership support, cultural alignment, and external contextual conditions. The growing relevance of digital innovation is evident in research showing that emerging technologies such as artificial intelligence, blockchain, cloud computing, and data analytics are transforming business operations and value creation (Akter et al., 2022).

Digital innovation is closely connected to digital transformation, yet the two concepts should be distinguished. Digital transformation refers to broad organizational change enabled by digital technologies, including changes in strategy, structures, operations, culture, and business models. Digital innovation, in contrast, focuses more specifically on innovation outcomes that emerge from the use, integration, and recombination of digital technologies. In this sense, digital transformation can be viewed as an enabling condition for digital innovation, while digital innovation represents a key outcome of digital transformation processes. Prior research has shown that digital transformation moves organizations toward more flexible and adaptive designs that support continuous change and digital business ecosystem participation (Hanelt et al., 2021). Digital transformation can also reshape business models by changing how organizations engage customers, improve operational efficiency, generate revenue, and respond to market disruption (Adama & Okeke, 2024).

Although digital innovation has received growing scholarly attention, the literature remains fragmented because its determinants are examined across different sectors, theoretical perspectives, and methodological approaches. Some studies emphasize digital and technological capabilities as central drivers of digital innovation. For example, the combined effect of digital capabilities and technological capabilities has been shown to support enterprise digital innovation by strengthening firms' ability to exploit digital and technological resources (Wang & Li, 2023). Other research has demonstrated that human, collaboration, technical, and innovation capabilities contribute to digital innovation opportunities in small and medium-sized enterprises (Nasiri et al., 2023). A systematic review of organizational capabilities also identified sensing, analytic-driven, digital platform, and orchestration capabilities as important capability clusters that enable firms to recognize opportunities, use data, coordinate resources, and sustain digital innovation (Motamedimoghadam et al., 2025).

Human capital, digital skills, leadership, and organizational culture are also important determinants of digital innovation because digital technologies cannot produce innovation outcomes without people and organizational systems that can use them effectively. Digital technologies, innovation routines, and skills formation develop together, which means that organizations need new forms of knowledge, learning, and workforce capability to benefit from digital change (Ciarli et al., 2021). The digital economy can also promote enterprise innovation by improving human capital allocation, reducing recruitment gaps for research and development personnel, and increasing the efficiency of innovation-related labor resources (Dong et al., 2023). Digital literacy has similarly been shown to strengthen innovation capability, indicating that individuals with stronger digital skills are more capable of participating in innovation activities (Zhou et al., 2025). Leadership and culture further shape digital innovation because they influence strategic direction, employee participation, openness to change, and organizational readiness. Digital leadership supports exploratory innovation through digital entrepreneurial orientation and digital organizational culture (Wang et al., 2022).

The organizational and contextual determinants of digital innovation are especially visible in studies of SMEs, entrepreneurial firms, public organizations, and sector-specific environments. In micro and small industries, digital innovation is influenced by business factors, marketing factors, constraints,

credit factors, entrepreneur-related factors, and firm-level characteristics (Martini et al., 2023). In SMEs, digital innovation is shaped by configurations of antecedents that influence innovation processes and lead to organizational and business process performance outcomes (Ramdani et al., 2022). Entrepreneurial firms also represent an important context because digital innovation is linked to digital platforms, collaboration networks, digital ventures, business model innovation, and digital innovation ecosystems (Felicetti et al., 2024). In the public sector, digital innovation is shaped by citizen demand, electoral incentives, institutional pressures, and policymaker characteristics, which shows that digital innovation is not only a private-sector phenomenon (Hong et al., 2022).

Despite these contributions, there is still a need for a systematic synthesis of the determinants of digital innovation. Existing studies examine several related factors, including digital transformation, digital capabilities, technological capabilities, organizational capabilities, human capital, leadership, culture, agility, dynamic capabilities, business model innovation, and institutional context. However, these determinants are often investigated separately, which limits understanding of how they collectively explain digital innovation across different organizational settings. Research on digital transformation and innovation management remains conceptually fragmented and requires clearer organization across different analytical levels (Appio et al., 2021). The need to identify enabling factors is also important because digital transformation initiatives often face implementation challenges, making success factors essential for understanding innovation outcomes (Heuermann et al., 2024).

Accordingly, this paper aims to systematically review the determinants of digital innovation. It synthesizes 30 selected studies and organizes the evidence around key determinant categories, including digital transformation, digital capabilities, organizational capabilities, human capital and digital skills, leadership and culture, agility and dynamic capabilities, business model innovation, and performance or competitive advantage. By integrating these themes, the review contributes to the literature by clarifying the main factors that enable digital innovation and by showing how technological, organizational, human, strategic, and contextual dimensions interact. The paper also identifies key outcomes of digital innovation, including innovation performance, firm performance, competitive advantage, business model renewal, and organizational adaptability. This synthesis is expected to support researchers, managers, and policymakers in understanding how organizations can build the conditions needed for successful and sustainable digital innovation.

2. Methodology

This study adopted a systematic review design to identify, evaluate, and synthesize existing research on the determinants of digital innovation. A systematic review approach was considered appropriate because the literature on digital innovation is broad, multidisciplinary, and distributed across different research areas, including digital transformation, innovation management, organizational capabilities, digital leadership, human capital, business model innovation, and public-sector innovation. The review focused on studies that explicitly examined digital innovation, digital transformation as an innovation-enabling process, digital capabilities, organizational capabilities, and related factors that influence innovation outcomes. This approach is consistent with prior reviews that emphasized the need to organize fragmented digital innovation and digital transformation research into clearer conceptual categories (Ramdani et al., 2022). It is also aligned with research highlighting that digital transformation and innovation management literature requires structured synthesis because existing studies are spread across multiple levels of analysis and theoretical perspectives (Appio et al., 2021).

The search strategy was designed to locate relevant peer-reviewed studies that addressed the determinants, drivers, antecedents, capabilities, and outcomes of digital innovation. The search used combinations of keywords such as “digital innovation,” “determinants of digital innovation,” “drivers of digital innovation,” “digital innovation capabilities,” “digital transformation and innovation,” “digital capabilities,” “organizational capabilities,” “digital leadership,” “organizational culture,” “business model innovation,” “SMEs digital innovation,” and “public sector digital innovation.” The search focused on studies that were directly relevant to the paper’s aim and that provided conceptual, empirical, or review-based evidence about factors influencing digital innovation. Studies were included when they addressed digital innovation or closely related digital transformation mechanisms that contributed to innovation processes, innovation performance, business model change, organizational performance, or competitive advantage. This criterion was important because digital innovation is often studied through related concepts such as digital transformation, dynamic capabilities, digital platforms, and digital business model innovation (Hanelt et al., 2021).

The inclusion criteria were applied to ensure that the selected literature was relevant to the research objective. Studies were included if they focused on digital innovation, digital transformation, digital capabilities, organizational capabilities, digital leadership, human capital, organizational culture, dynamic capabilities, business model innovation, or innovation-related performance outcomes. The review included empirical studies, systematic literature reviews, structured literature reviews, and critical reviews when they contributed directly to understanding the determinants of digital innovation. Studies were excluded if they discussed general technology adoption without a clear connection to innovation, if they focused only on technical system design without organizational relevance, or if they did not provide evidence related to determinants, enablers, barriers, outcomes, or contextual conditions of digital innovation. This selection logic reflects the multidimensional nature of digital innovation, which is shaped by technological, organizational, human, strategic, and contextual factors rather than by technology adoption alone (Nasiri et al., 2023).

The study selection process followed four main stages: identification, screening, eligibility assessment, and inclusion. In the identification stage, potentially relevant studies were collected using the search phrases and citation list developed for the review. In the screening stage, titles and abstracts were examined to remove studies that were not related to digital innovation or its determinants. In the eligibility stage, the full content of the remaining studies was assessed based on relevance to the review aim, clarity of focus, and contribution to the determinant categories. In the final inclusion stage, 30 studies were selected for synthesis because they collectively addressed the major themes of the paper, including digital innovation, digital transformation, digital capabilities, organizational capabilities, human capital and digital skills, leadership and culture, agility and dynamic capabilities, business model innovation, and performance or competitive advantage. The use of a structured selection process supports transparency and helps reduce inconsistency in reviewing a fragmented field (Motamedimoghadam et al., 2025).

Data extraction was conducted using a literature review matrix developed for this paper. The matrix included the author and year of each study and a fixed set of thematic columns to identify whether each concept was explicitly addressed. The selected concepts were digital innovation, digital transformation, digital capabilities, organizational capabilities, human capital and digital skills, leadership and culture, agility and dynamic capabilities, business model innovation, and performance or competitive advantage. The symbol “√” was used only when the concept was explicitly mentioned in the study, while blank cells indicated that the concept was not directly addressed. This matrix format allowed the reviewed studies to be compared consistently and helped identify the dominant determinant categories across the selected literature. The matrix was especially useful because digital

innovation research often includes overlapping concepts that need to be organized systematically, such as digital capabilities, organizational readiness, digital organizational culture, and innovation outcomes (Zhen et al., 2021).

The synthesis followed a narrative and thematic approach. First, the studies were grouped according to their main focus, such as technological determinants, organizational determinants, human capital and skills, leadership and culture, dynamic capabilities and agility, business model innovation, and contextual factors. Second, the findings were compared across sectors and organizational settings, including SMEs, micro and small industries, entrepreneurial firms, public-sector organizations, banking, manufacturing, education, and technology-intensive firms. Third, the review examined the outcomes associated with digital innovation, including innovation performance, firm performance, competitive advantage, business model renewal, and organizational adaptability. A thematic synthesis was appropriate because the selected studies used different methods and contexts, making statistical meta-analysis unsuitable. This approach allowed the review to integrate diverse evidence while preserving the conceptual differences among determinants and outcomes (Felicetti et al., 2024). The study selection process is summarized in Figure 1, which presents the PRISMA 2020 flow diagram showing the identification, screening, eligibility, and inclusion stages of the review.

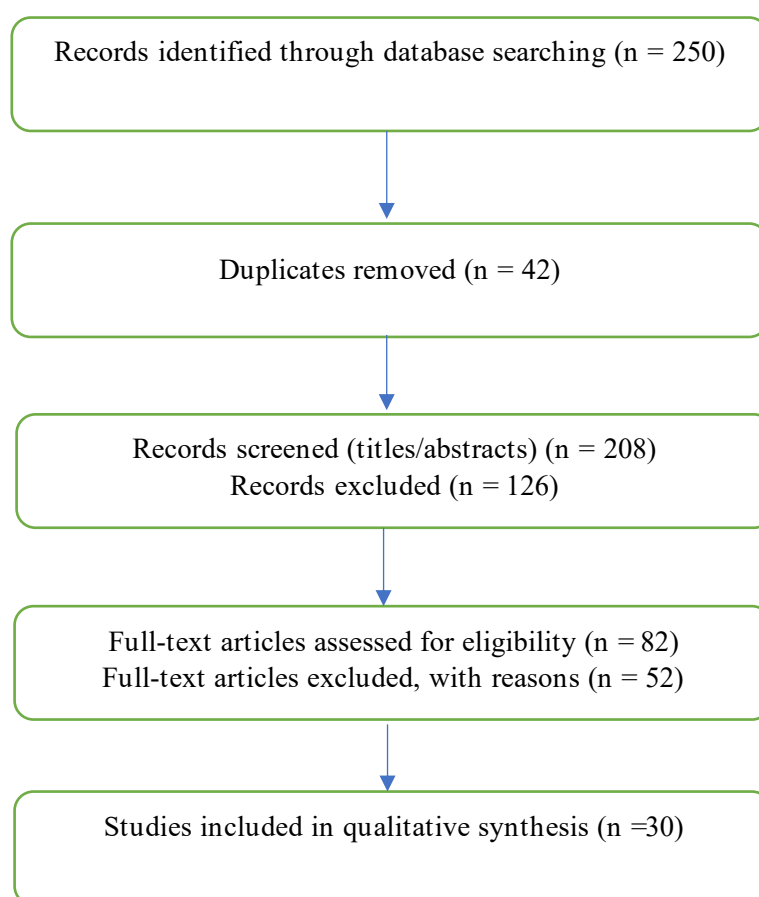


Figure 1: PRISMA 2020 Flow Diagram

3. Results

3.1 Study Selection and Characteristics

The systematic review included 30 studies selected because they explicitly addressed digital innovation or major factors related to its development, implementation, and outcomes. The selected studies provided evidence on key review themes, including digital innovation, digital transformation, digital capabilities, organizational capabilities, human capital and digital skills, leadership and culture, agility and dynamic capabilities, business model innovation, and performance or competitive advantage. Some studies focused directly on determinants of digital innovation in SMEs, micro and small industries, public organizations, and entrepreneurial firms. Other studies examined digital transformation, dynamic capabilities, and business model innovation as related mechanisms that enable digital innovation outcomes. This range of studies made it possible to synthesize digital innovation as both a capability-based process and a strategic response to changing digital environments.

As shown in Table 1, the Literature Review Matrix was used to organize the 30 studies according to the concepts explicitly mentioned in each article. The matrix included fixed columns for digital innovation, digital transformation, digital capabilities, organizational capabilities, human capital and digital skills, leadership and culture, agility and dynamic capabilities, business model innovation, and performance or competitive advantage. The table shows that digital innovation was the most frequently addressed concept, while digital transformation, digital capabilities, organizational capabilities, leadership and culture, and performance-related outcomes also appeared across several studies. The use of a fixed column set allowed consistent comparison across all selected studies and helped identify the dominant themes in the review. This matrix also supports the systematic nature of the paper by showing how each study contributed to the main synthesis categories.

Table 1: Literature Review Matrix

No.	Author(s) & Year	Digital Innovation	Digital Transformation	Digital Capabilities	Organizational Capabilities	Human Capital / Digital Skills	Leadership / Culture	Agility / Dynamic Capabilities	Business Model Innovation	Performance / Competitive Advantage
1	Martini et al. (2023)	✓								
2	Ramdani et al. (2022)	✓								✓
3	Adama & Okeke (2024)		✓				✓		✓	✓
4	Nasiri et al. (2023)	✓		✓	✓	✓				
5	Tahirkheli & Ajigini (2022)	✓	✓		✓		✓	✓	✓	
6	Motamedimoghadam et al. (2025)	✓		✓	✓			✓		✓
7	Wang & Li (2023)	✓		✓						✓
8	Zhen et al. (2021)	✓		✓	✓		✓			
9	Si et al. (2023)	✓					✓		✓	

No.	Author(s) & Year	Digital Innovation	Digital Transformation	Digital Capabilities	Organizational Capabilities	Human Capital / Digital Skills	Leadership / Culture	Agility / Dynamic Capabilities	Business Model Innovation	Performance / Competitive Advantage
10	Dong et al. (2023)	✓				✓	✓			
11	Ciarli et al. (2021)	✓			✓	✓				✓
12	Zhou et al. (2025)	✓		✓		✓				
13	Wang et al. (2022)	✓		✓	✓		✓	✓		
14	Bindel Sibassaha et al. (2025)	✓	✓				✓			
15	Albahri et al. (2023)	✓			✓	✓	✓	✓		
16	Al-Takhayneh et al. (2022)	✓					✓			
17	Xu et al. (2024)		✓	✓	✓			✓		✓
18	de la Torre & De la Vega (2025)	✓		✓				✓		✓
19	Abdurrahman (2025)	✓	✓	✓	✓			✓		✓
20	Song et al. (2023)	✓			✓	✓				✓
21	Appio et al. (2021)		✓		✓	✓				✓
22	Hanelt et al. (2021)		✓		✓			✓		
23	Shah et al. (2024)	✓	✓	✓		✓				✓
24	Akter et al. (2022)	✓	✓							
25	Agustian et al. (2023)		✓						✓	✓
26	Vaska et al. (2021)		✓						✓	
27	Yousaf et al. (2021)	✓		✓					✓	✓
28	Hong et al. (2022)	✓	✓							
29	Felicetti et al. (2024)	✓		✓		✓			✓	
30	Heuermann et al. (2024)		✓		✓					

3.2 Determinants of Digital Innovation

The reviewed studies indicate that digital capabilities and technological capabilities are among the most important determinants of digital innovation. Digital capabilities refer to the ability of organizations to use, integrate, and exploit digital technologies to support innovation activities. Technological capabilities refer to the ability to absorb, develop, and apply technology-based knowledge in innovation processes. The synergy between digital capabilities and technological capabilities has been shown to positively influence enterprise digital innovation (Wang & Li, 2023). Digital-related capabilities, including human, collaboration, technical, and innovation capabilities, also shape digital innovation opportunities in SMEs (Nasiri et al., 2023). Organizational capabilities

further strengthen digital innovation by helping firms sense opportunities, use data, build digital platforms, and coordinate resources across internal and external environments (Motamedimoghdam et al., 2025). These findings show that digital innovation depends not only on digital technology availability, but also on the organizational ability to convert digital resources into innovation outcomes.

Human capital, digital skills, leadership, and organizational culture also emerged as central determinants of digital innovation. Digital innovation requires employees and managers who can understand digital tools, apply digital knowledge, and participate effectively in innovation processes. Digital technologies, innovation routines, and skills formation develop together, which means that organizations need continuous learning and new skill development to benefit from digital change (Ciarli et al., 2021). Human capital allocation can promote enterprise innovation by reducing recruitment gaps, improving research and development efficiency, and strengthening the quality of innovation outputs (Dong et al., 2023). Digital literacy also supports innovation capability, especially in knowledge-intensive contexts where individuals must use digital resources creatively and effectively (Zhou et al., 2025). Leadership and culture are equally important because digital leadership supports exploratory innovation through digital entrepreneurial orientation and digital organizational culture (Wang et al., 2022). Organizational culture can foster digital innovation when it supports employee participation, agility, corporate entrepreneurship, and digital awareness (Albahri et al., 2023).

Contextual and institutional conditions further influence digital innovation by shaping the pressures, opportunities, and constraints that organizations face. In micro and small industries, digital innovation is affected by business factors, marketing factors, constraints, credit factors, entrepreneur characteristics, and firm-level factors (Martini et al., 2023). In SMEs, digital innovation is driven by configurations of antecedents that influence innovation processes and lead to organizational and business process performance outcomes (Ramdani et al., 2022). Entrepreneurial firms represent another important context because digital innovation is linked to collaboration networks, business model innovation, digital platforms, digital ventures, and digital innovation ecosystems (Felicetti et al., 2024). In the public sector, digital innovation is influenced by citizen demand, electoral incentives, institutional pressures, and policymaker characteristics (Hong et al., 2022). These findings show that digital innovation determinants vary according to organizational size, sector, governance setting, and institutional environment.

3.3 Outcomes of Digital Innovation

The reviewed studies show that digital innovation produces several important organizational outcomes, particularly in relation to innovation performance, firm performance, and competitive advantage. Digital capability, digital orientation, and digital transformation have been shown to positively influence digital innovation and firm performance (Shah et al., 2024). Digital transformation can also enhance corporate innovation performance through big data capabilities and organizational agility, indicating that digital change improves outcomes when firms can process data effectively and respond flexibly to market changes (Xu et al., 2024). Dynamic capabilities can further support competitiveness by enabling organizations to align digital innovation with responsible innovation and sustainable advantage (de la Torre & De la Vega, 2025). These findings suggest that digital innovation contributes to performance when digital technologies are supported by adaptive capabilities, data-driven decision-making, and strategic resource coordination.

Business model innovation was another important outcome associated with digital innovation and digital transformation. Digital transformation reshapes how organizations create, deliver, and capture value by changing customer engagement, operational processes, and revenue generation (Adama & Okeke, 2024). Digital transformation also influences business model innovation by transforming value creation, value delivery, and value capture across industries (Vaska et al., 2021). The impact of digital transformation on business models and competitive advantage is especially important because it changes how organizations operate, interact with customers, and compete in digital markets (Agustian et al., 2023). These findings show that digital innovation is not limited to new products or services, but can also transform the wider logic of organizational value creation and competitive positioning.

The outcomes of digital innovation also extend to sustainable innovation, public-sector transformation, and ecosystem development. Digital orientation, the Internet of Things, and digital platforms support sustainable digital innovation among SMEs in developing countries (Yousaf et al., 2021). In the public sector, digital innovation supports the use of new digital technologies to transform public services and respond more effectively to citizen needs (Hong et al., 2022). In entrepreneurial firms, digital innovation contributes to digital ventures, digital platforms, collaboration networks, business model innovation, and innovation ecosystems (Felicetti et al., 2024). At a broader level, digital innovation is connected to entrepreneurship, social change, and the development of digital economies because it changes how firms, institutions, and actors create and exchange value (Si et al., 2023). Therefore, the reviewed evidence shows that digital innovation produces outcomes across organizational, market, public-sector, and ecosystem levels.

4. Discussion

4.1 Interplay of Technological, Organizational, Human, Strategic, and Contextual Determinants

The findings of this systematic review show that digital innovation is best understood as the result of interaction among technological, organizational, human, strategic, and contextual determinants. Technological resources provide the foundation for digital innovation, but they do not automatically generate innovation outcomes unless organizations have the capabilities to integrate and exploit them. Digital capabilities and technological capabilities work together because firms need both digital resources and the ability to absorb, apply, and recombine technological knowledge in innovation processes (Wang & Li, 2023). This relationship is also supported by evidence showing that human, collaboration, technical, and innovation capabilities shape how SMEs identify and exploit digital innovation opportunities (Nasiri et al., 2023). Therefore, digital innovation depends on the alignment between technology availability and organizational capacity, rather than on the isolated adoption of digital tools. Organizational capabilities such as sensing, analytic-driven decision-making, platform development, and resource orchestration help firms convert digital opportunities into sustained innovation outcomes (Motamedimoghadam et al., 2025).

The human and cultural dimensions are equally important because digital innovation requires employees, managers, and leaders who can interpret digital opportunities and participate in change processes. Human capital influences innovation because digital technologies require new skills, learning routines, and knowledge formation across organizations (Ciarli et al., 2021). Human capital allocation also strengthens enterprise innovation by improving the efficiency and quality of research and development activities (Dong et al., 2023). Digital literacy further supports innovation capability because individuals with stronger digital knowledge are more able to use digital tools creatively and

productively (Zhou et al., 2025). Leadership and culture connect the human and organizational dimensions by shaping readiness, participation, experimentation, and openness to digital change. Digital leadership supports exploratory innovation by encouraging digital entrepreneurial orientation and digital organizational culture (Wang et al., 2022). Organizational culture also supports digital innovation when it encourages employee participation, agility, corporate entrepreneurship, and digital awareness (Albahri et al., 2023).

The contextual dimension explains why determinants of digital innovation differ across organizational size, sector, and institutional environment. In micro and small industries, digital innovation is shaped by business factors, marketing factors, credit conditions, entrepreneur characteristics, and firm-level resources (Martini et al., 2023). In SMEs, digital innovation is influenced by configurations of antecedents that affect the innovation process and organizational performance outcomes (Ramdani et al., 2022). In entrepreneurial firms, digital innovation is closely linked to collaboration networks, business model innovation, digital platforms, digital ventures, and innovation ecosystems (Felicetti et al., 2024). In public-sector organizations, digital innovation is influenced by citizen demand, electoral incentives, institutional pressures, and policymaker characteristics (Hong et al., 2022). These differences suggest that digital innovation cannot be explained through one universal determinant model. Instead, digital innovation emerges from the fit between technological resources, organizational capabilities, human skills, strategic leadership, and the specific institutional context in which organizations operate.

4.2 Policy, Practical, and Theoretical Implications

The findings have several policy implications because digital innovation is influenced by external conditions such as infrastructure, institutional support, digital ecosystems, and sector-level readiness. Policymakers can support digital innovation by improving access to digital infrastructure, encouraging digital capability development, and designing policies that reduce barriers for SMEs and micro enterprises. This is especially important because micro and small industries often depend on business, marketing, credit, entrepreneur, and firm-level conditions when making digital innovation decisions (Martini et al., 2023). Public-sector policy should also recognize that digital innovation is not only a private-sector issue, since government organizations use digital technologies to transform services and respond to citizen demand (Hong et al., 2022). Policies that encourage digital skills, digital platforms, data use, and innovation ecosystems may therefore strengthen digital innovation across both private and public organizations. In this sense, digital innovation policy should combine technology investment with capability-building, human capital development, and institutional coordination.

The practical implications are also important for managers and organizational leaders. The results suggest that organizations should avoid treating digital innovation as a narrow technology adoption project. Instead, managers should build digital capabilities, strengthen organizational capabilities, develop employee digital skills, support digital leadership, and create cultures that encourage experimentation and learning. Digital transformation improves innovation performance when organizations develop big data capabilities and organizational agility (Xu et al., 2024). Dynamic capabilities also help firms align digital innovation with competitiveness and responsible innovation (de la Torre & De la Vega, 2025). For SMEs and entrepreneurial firms, managers should pay attention to digital platforms, collaboration networks, and business model renewal because these factors support digital innovation and value creation (Felicetti et al., 2024). Therefore, successful digital innovation requires coordinated managerial action across technology, strategy, culture, people, and capabilities.

The theoretical implications of this review relate to the need for a more integrated understanding of digital innovation determinants. The literature shows that digital innovation is explained through several theoretical perspectives, including capability-based views, dynamic capabilities, resource-based view, technology–organization–environment logic, innovation management, and digital transformation perspectives. The evidence suggests that no single theory fully explains digital innovation because the phenomenon includes technological, organizational, human, strategic, and contextual dimensions. Studies using the resource-based view and dynamic capabilities show that digital innovation depends on resources, capabilities, adaptation, and reconfiguration (Abdurrahman, 2025). Research based on technology, organization, and environment factors also shows that digital innovation is driven by combinations of technological, organizational, and environmental conditions rather than by isolated factors (Song et al., 2023). Therefore, future theoretical work should integrate capability-based, strategic, human, and contextual perspectives to explain how digital innovation develops and produces outcomes.

4.3 Comparison with Existing Reviews, Limitations, and Future Research

The findings of this review are consistent with previous reviews showing that digital innovation and digital transformation research remain broad, fragmented, and distributed across several fields. Prior work on digital innovation in SMEs showed that the literature includes different antecedents, innovation processes, and performance outcomes, which supports the need to organize determinants into clearer categories (Ramdani et al., 2022). This review also aligns with research arguing that digital transformation and innovation management require stronger conceptual organization across macro, meso, and micro levels of analysis (Appio et al., 2021). Similarly, the findings support the view that digital transformation is linked to strategy and organizational change because it moves firms toward flexible organizational designs and digital business ecosystems (Hanelt et al., 2021). Compared with these reviews, the present paper focuses more directly on determinants of digital innovation and synthesizes them into technological, organizational, human, strategic, and contextual categories.

The review also has some limitations that should be acknowledged. First, the review was based on a selected set of 30 studies, which allowed focused synthesis but may not cover all available literature on digital innovation. Second, the included studies used different concepts, methods, and contexts, which makes direct comparison challenging. Some studies focused on digital innovation directly, while others examined digital transformation, business model innovation, dynamic capabilities, or innovation performance as related concepts. Third, the review relied on thematic synthesis rather than statistical meta-analysis because the included studies used different designs and measures. Fourth, the literature review matrix captured whether concepts were explicitly mentioned, but it did not measure the strength or causal weight of each determinant. These limitations mean that the findings should be interpreted as a structured synthesis of current evidence rather than as a definitive ranking of determinants.

Future research should continue to examine digital innovation using more integrated and context-sensitive approaches. Longitudinal studies are needed to explain how digital capabilities, organizational capabilities, leadership, culture, and human capital develop over time and influence digital innovation outcomes. More comparative studies are also needed across sectors, countries, and organizational types because digital innovation in SMEs, public-sector organizations, entrepreneurial firms, and large corporations may follow different paths. Future studies should also examine mediating and moderating mechanisms, such as organizational agility, big data capabilities, readiness, leadership style, and institutional pressure. Research on digital transformation success factors shows

that digital change depends on multiple enabling factors that must be studied together rather than separately (Heuermann et al., 2024). Future research should also give more attention to sustainable digital innovation, responsible innovation, and digital innovation in developing economies because these areas remain important for both theory and practice (Yousaf et al., 2021).

5. Conclusion

This systematic review examined the determinants of digital innovation by synthesizing evidence from 30 selected studies. The review showed that digital innovation is not driven by technology adoption alone, but by the interaction of technological, organizational, human, strategic, and contextual factors. Digital capabilities, technological capabilities, organizational capabilities, human capital, digital skills, leadership, organizational culture, agility, dynamic capabilities, and institutional conditions all contribute to how organizations identify, develop, and implement digital innovation. The findings also showed that these determinants vary across contexts, including SMEs, micro and small industries, entrepreneurial firms, public-sector organizations, banking, manufacturing, education, and technology-based enterprises. The review further demonstrated that digital innovation produces important outcomes for organizations and broader ecosystems. These outcomes include improved innovation performance, firm performance, competitive advantage, business model innovation, sustainable innovation, public-sector service transformation, and ecosystem development. The evidence suggests that organizations achieve stronger digital innovation outcomes when digital technologies are supported by adaptive capabilities, skilled employees, data-driven decision-making, supportive leadership, and cultures that encourage experimentation and change. Therefore, digital innovation should be understood as an integrated organizational process rather than a purely technical initiative. Overall, this review contributes to the literature by organizing the determinants of digital innovation into a clear and systematic structure. It highlights the need for researchers to move beyond isolated explanations and examine how different determinants interact across organizational and institutional settings. For practitioners and policymakers, the review emphasizes the importance of investing not only in digital infrastructure, but also in capabilities, skills, leadership, culture, and supportive innovation environments. Future research should continue to investigate digital innovation through longitudinal, comparative, and context-sensitive studies that explain how organizations build and sustain digital innovation over time.

References

- Abdurrahman, A. (2025). Examining the impact of digital transformation on digital product innovation performance in banking industry through the integration of resource-based view and dynamic capabilities. *Journal of Strategy & Innovation*, 36(1), 200540.
- Adama, H. E., & Okeke, C. D. (2024). Digital transformation as a catalyst for business model innovation: A critical review of impact and implementation strategies. *Magna Scientia Advanced Research and Reviews*, 10(02), 256-264.
- Agustian, K., Mubarok, E. S., Zen, A., Wiwin, W., & Malik, A. J. (2023). The impact of digital transformation on business models and competitive advantage. *Technology and Society Perspectives (TACIT)*, 1(2), 79-93.
- Akter, S., Michael, K., Uddin, M. R., McCarthy, G., & Rahman, M. (2022). Transforming business using digital innovations: The application of AI, blockchain, cloud and data analytics. *Annals of Operations Research*, 308(1), 7-39.

- Albahri, O. S., Alamoodi, A. H., Deveci, M., Albahri, A. S., Mahmoud, M. A., Al-Quraishi, T., ... & Sharaf, I. M. (2023). Evaluation of organizational culture in companies for fostering a digital innovation using q-rung picture fuzzy based decision-making model. *Advanced Engineering Informatics*, 58, 102191.
- Al-Takhayneh, S. K., Karaki, W., Hasan, R. A., Chang, B. L., Shaikh, J. M., & Kanwal, W. (2022). Teachers' psychological resistance to digital innovation in Jordanian entrepreneurship and business schools: Moderation of teachers' psychology and attitude toward educational technologies. *Frontiers in Psychology*, 13, 1004078.
- Appio, F. P., Frattini, F., Petruzzelli, A. M., & Neirrotti, P. (2021). Digital transformation and innovation management: A synthesis of existing research and an agenda for future studies. *Journal of Product Innovation Management*, 38(1), 4-20.
- Bindel Sibassaha, J. L., Pea-Assounga, J. B. B., & Bambi, P. D. R. (2025). Influence of digital transformation on employee innovative behavior: roles of challenging appraisal, organizational culture support, and transformational leadership style. *Frontiers in Psychology*, 16, 1532977.
- Ciarli, T., Kenney, M., Massini, S., & Piscitello, L. (2021). Digital technologies, innovation, and skills: Emerging trajectories and challenges. *Research Policy*, 50(7), 104289.
- de la Torre, A., & De la Vega, I. (2025). Dynamic capabilities and digital innovation: pathways to competitive advantage through responsible innovation. *Journal of Responsible Innovation*, 12(1), 2500154.
- Dong, P., Zhu, Y., Duan, S., Wu, M., & Bao, J. (2023). How does the digital economy promote a culture of business innovation? A study based on human capital allocation perspective. *Sustainability*, 15(8), 6511.
- Felicetti, A. M., Corvello, V., & Ammirato, S. (2024). Digital innovation in entrepreneurial firms: a systematic literature review. *Review of Managerial Science*, 18(2), 315-362.
- Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: Insights and implications for strategy and organizational change. *Journal of management studies*, 58(5), 1159-1197.
- Heuermann, M., Gaiser-Bertram, S., & Schallmo, D. (2024). Digital transformation success factors: a systematic literature review and bibliometric analysis. *International Journal of Innovation Management*, 28(09n10), 2440004.
- Hong, S., Kim, S. H., & Kwon, M. (2022). Determinants of digital innovation in the public sector. *Government Information Quarterly*, 39(4), 101723.
- Martini, M., Setiawan, D., Suryandari, R. T., Brahmana, R. K., & Asrihapsari, A. (2023). Determinants of digital innovation in micro and small industries. *Economies*, 11(6), 172.
- Motamedimoghadam, M., Mira da Silva, M., & Amaral, M. (2025). Organizational capabilities for digital innovation: a systematic literature review. *European Journal of Innovation Management*, 28(7), 3024-3048.
- Nasiri, M., Saunila, M., Ukko, J., Rantala, T., & Rantanen, H. (2023). Shaping digital innovation via digital-related capabilities. *Information Systems Frontiers*, 25(3), 1063-1080.
- Ramdani, B., Raja, S., & Kayumova, M. (2022). Digital innovation in SMEs: a systematic review, synthesis and research agenda. *Information Technology for Development*, 28(1), 56-80.
- Shah, N., Zehri, A. W., Saraih, U. N., Abdelwahed, N. A. A., & Soomro, B. A. (2024). The role of digital technology and digital innovation towards firm performance in a digital economy. *Kybernetes*, 53(2), 620-644.

- Si, S., Hall, J., Suddaby, R., Ahlstrom, D., & Wei, J. (2023). Technology, entrepreneurship, innovation and social change in digital economics. *Technovation*, 119, 102484.
- Song, Q., Chen, X., & Gu, H. (2023). How technological, organizational, and environmental factors drive enterprise digital innovation: Analysis based on the dynamic fsQCA approach. *Sustainability*, 15(16), 12248.
- Tahirkheli, S. K., & Ajigini, O. A. (2022). Factors influencing digital innovation strategy in organizations: An empirical analysis. *Information Resources Management Journal (IRMJ)*, 35(1), 1-23.
- Vaska, S., Massaro, M., Bagarotto, E. M., & Dal Mas, F. (2021). The digital transformation of business model innovation: A structured literature review. *Frontiers in psychology*, 11, 539363.
- Wang, H., & Li, B. (2023). Research on the synergic influences of digital capabilities and technological capabilities on digital innovation. *Sustainability*, 15(3), 2607.
- Wang, T., Lin, X., & Sheng, F. (2022). Digital leadership and exploratory innovation: From the dual perspectives of strategic orientation and organizational culture. *Frontiers in psychology*, 13, 902693.
- Xu, M., Zhang, Y., Sun, H., Tang, Y., & Li, J. (2024). How digital transformation enhances corporate innovation performance: The mediating roles of big data capabilities and organizational agility. *Heliyon*, 10(14).
- Yousaf, Z., Radulescu, M., Sinisi, C. I., Serbanescu, L., & Păunescu, L. M. (2021). Towards sustainable digital innovation of SMEs from the developing countries in the context of the digital economy and frugal environment. *Sustainability*, 13(10), 5715.
- Zhen, Z., Yousaf, Z., Radulescu, M., & Yasir, M. (2021). Nexus of digital organizational culture, capabilities, organizational readiness, and innovation: Investigation of SMEs operating in the digital economy. *Sustainability*, 13(2), 720.
- Zhou, X., Sun, K., Zhu, K., Feng, L., Sun, Q., & Zhong, D. (2025). The impact of digital literacy on university students' innovation capability: evidence from Ningbo, China. *Frontiers in Psychology*, 16, 1548817.