

THE TRANSFORMATION OF BUSINESS ORGANIZATIONS IN THE DIGITAL ERA: CHANGES IN LEARNING ORGANIZATION AND KNOWLEDGE MANAGEMENT PRACTICES A SYSTEMATIC LITERATURE REVIEW

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Abstract

This study aims to examine how digital transformation reshapes learning organization and knowledge management practices in business organizations and to identify the resulting organizational impacts and research gaps. Using a Systematic Literature Review approach guided by the PRISMA 2020 protocol, this study analyses 20 Scopus indexed journal articles published between 2015 and 2025. The review focuses on the concepts of digital transformation, learning organization, and knowledge management within organizational contexts. The findings indicate that digital transformation strengthens continuous learning, digital skill development, and dynamic knowledge flows, while organizational outcomes are most strongly reflected in innovation capability, agility, and adaptability. However, performance effects remain contingent on effective learning and knowledge integration, highlighting persistent conceptual and methodological gaps in the literature.

Keywords: Digital transformation, Learning organization, Knowledge management, Organizational learning, Organizational performance

INTRODUCTION

Digital transformation has become a defining phenomenon shaping contemporary business organizations across industries and regions. Advances in digital technologies such as big data analytics, artificial intelligence, cloud computing, and digital platforms have fundamentally altered how organizations design their structures, manage processes, and compete in dynamic markets (Vial, 2019). Rather than representing a purely technological shift, digital transformation increasingly reflects a strategic and organizational transformation, requiring firms to reconfigure capabilities, routines, and knowledge bases to remain competitive (Ferreira et al., 2022). Scholarly literature emphasizes that digital transformation challenges traditional organizational models by accelerating environmental uncertainty and intensifying competition (Verhoef et al., 2021). In this context, organizations are compelled to develop adaptive capacities that enable continuous learning, experimentation, and innovation. Several studies highlight that digital transformation success depends not only on technological infrastructure but also on the organization's ability to learn and integrate new knowledge into decision making and operational practices (Vial, 2019; Reis & Melão, 2023). Consequently, learning organization principles have gained renewed relevance in the digital era.

The concept of the learning organization emphasizes continuous learning, shared vision, collective problem solving, and knowledge sharing as central organizational capabilities

(Senge, 2006). In digital environments, these capabilities become critical as organizations must respond rapidly to technological change and evolving customer demands. Empirical and review studies suggest that learning organization practices support digital transformation by fostering agility, innovation capability, and organizational resilience (García-Morales et al., 2022; Verhoef et al., 2021). This indicates that digital transformation and organizational learning are deeply interrelated processes rather than independent phenomena. Alongside organizational learning, knowledge management (KM) has emerged as a key organizational mechanism enabling firms to leverage digital technologies effectively. Knowledge management practices encompassing knowledge creation, storage, sharing, and application are increasingly mediated by digital tools and platforms (Alnuaimi et al., 2022). Recent Scopus indexed reviews confirm that digital transformation reshapes KM by enhancing knowledge accessibility, integration, and real time utilization across organizational boundaries (Machado et al., 2022). These transformations reinforce the strategic role of knowledge as a critical organizational asset in the digital economy.

Several studies further demonstrate that the integration of learning organization practices and knowledge management contributes to positive organizational outcomes, including innovation performance, operational efficiency, and competitive advantage (Donate & Pablo, 2015; Soto-acosta et al., 2017). In digitally transformed organizations, learning organizational culture supports the continuous renewal of knowledge, while KM systems provide the infrastructure necessary for capturing and disseminating that knowledge effectively. This synergy underscores the importance of examining both constructs simultaneously rather than in isolation. Despite the growing body of research, existing studies on digital transformation, learning organization, and knowledge management remain fragmented across disciplines and industries. Many studies focus on specific technologies or organizational contexts, limiting the development of an integrated understanding of how digital transformation reshapes learning and knowledge practices at the organizational level (Reis & Melão, 2023; Ferreira et al., 2022). Therefore, a Systematic Literature Review (SLR) is needed to synthesize existing findings, identify dominant themes, assess reported organizational impacts, and highlight research gaps. This study addresses this need by systematically reviewing Scopus indexed literature to examine how digital transformation reshapes learning organization and knowledge management practices in business organizations and what impacts are reported in the literature.

LITERATURE REVIEW

Digital Transformation as Organizational Change

Digital transformation is conceptualized as a comprehensive organizational change process driven by the integration of digital technologies into business strategies, structures, and processes. From an organizational theory perspective, digital transformation represents an adaptive response of organizations as open systems facing increasing environmental complexity and technological turbulence (Scott, 2008). Rather than focusing solely on technological adoption, this perspective emphasizes the need for organizational reconfiguration, learning capacity, and strategic alignment to ensure effective transformation in the digital era (Daft, 2016).

Learning Organization Theory

Learning organization theory provides a foundational framework for understanding how organizations continuously adapt to dynamic environments. A learning organization as an entity that enhances its capacity to create and apply knowledge through collective learning, shared vision, and systems thinking (Senge, 2006). In the context of digital transformation, learning organization principles enable organizations to respond to rapid technological change by fostering continuous learning, experimentation, and knowledge sharing across organizational levels (Garvin et al., n.d.).

Knowledge Management Theory

Knowledge management theory focuses on the systematic processes through which organizations create, store, share, and apply knowledge as a strategic resource. Conceptualize knowledge management as an organizational capability supported by both technological and social infrastructures (Alnuaimi et al., 2022). Building on this view, (Nonaka et al., 2008) emphasize the dynamic interaction between tacit and explicit knowledge, highlighting the importance of organizational contexts that facilitate knowledge creation and transfer, particularly in digitally enabled environments.

Integration of Learning Organization and Knowledge Management

Theoretical literature suggests that learning organization and knowledge management are complementary constructs. Learning organization theory emphasizes cultural and behavioral conditions that support learning, while knowledge management theory provides the mechanisms through which knowledge is institutionalized within organizations (Daft, 2016). Together, these theories explain how organizations in the digital era can sustain continuous learning and leverage knowledge strategically to support organizational transformation.

Organizational Outcomes in the Digital Era

From a strategic management perspective, learning and knowledge based capabilities are critical sources of organizational advantage. Knowledge constitutes a valuable organizational resource that can generate sustained competitive advantage when effectively managed (Barney, 2014). In the digital era, organizations that successfully integrate learning organization principles and knowledge management practices are better positioned to enhance innovation, adaptability, and overall organizational performance (Daft, 2016).

METHODOLOGY

This study adopts a Systematic Literature Review (SLR) approach to comprehensively examine how digital transformation influences learning organization and knowledge management practices in business organizations, as well as the organizational impacts arising from these changes. The SLR approach was selected because it enables a structured, transparent, and replicable synthesis of scientific evidence, making it particularly suitable for addressing conceptual and empirical research questions that span diverse organizational contexts. In the fields of business administration, management, and organizational studies, SLR has been widely used to identify dominant research patterns, theoretical developments, inconsistencies in findings, and emerging research gaps related to complex organizational phenomena.

The implementation of the SLR in this study refers to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta Analyses) 2020 protocol, which provides systematic guidance for the processes of study identification, screening, eligibility assessment, and final inclusion of articles (Page et al., 2021). By following the PRISMA protocol, this study aims to ensure a high level of methodological accountability and traceability, particularly in relation to the search strategy and article selection process. Conceptually, this study focuses on two research questions: (RQ1) how digital transformation reshapes learning organization and knowledge management practices in business organizations, and (RQ2) what organizational impacts, outcomes, and research gaps are identified in the literature regarding these practices in the digital era.

To maintain analytical focus and conceptual consistency, the scope of this study is formulated using a modified PICO logic (Population, Intervention, Comparison, and Outcome). The *Population* consists of business organizations operating in digitally transforming environments, the *Intervention* refers to digital transformation initiatives and the adoption of digital technologies, the *Comparison* is implicit and reflects variations in organizational contexts and levels of digital maturity, and the *Outcome* consists of changes in learning organization practices, knowledge management practices, and reported organizational impacts such as innovation capability, adaptability, and organizational performance.

1. Inclusion and Exclusion Criteria

The selection of articles was based on inclusion and exclusion criteria designed to ensure both scientific relevance and publication quality. Articles included in this study were published between 2015 and 2025, written in English, and published as full length journal articles in peer reviewed journals indexed by Scopus or Web of Science. The subject areas were limited to Business, Management, and Accounting, in order to maintain consistency with the disciplinary focus of the study.

Articles were included if they explicitly discussed digital transformation in organizational contexts and examined its relationship with learning organization practices and knowledge management practices. Studies that addressed organizational learning, knowledge creation, knowledge sharing, or knowledge utilization as part of digital transformation initiatives were considered relevant. Only empirical studies or structured literature reviews were included to ensure the analytical validity of the synthesized findings.

Articles excluded from the analysis comprised conference proceedings, books, book chapters, editorials, and purely conceptual papers that did not present systematic empirical evidence. In addition, studies that focused solely on technical or engineering aspects of digital technologies without linking them to organizational learning or knowledge management were excluded. Articles without accessible abstracts or full texts, as well as duplicate records identified during the search process, were also removed. The application of these criteria aimed to ensure that the resulting synthesis was based on relevant, reliable, and methodologically accountable scientific evidence.

2. Systematic Search Strategy

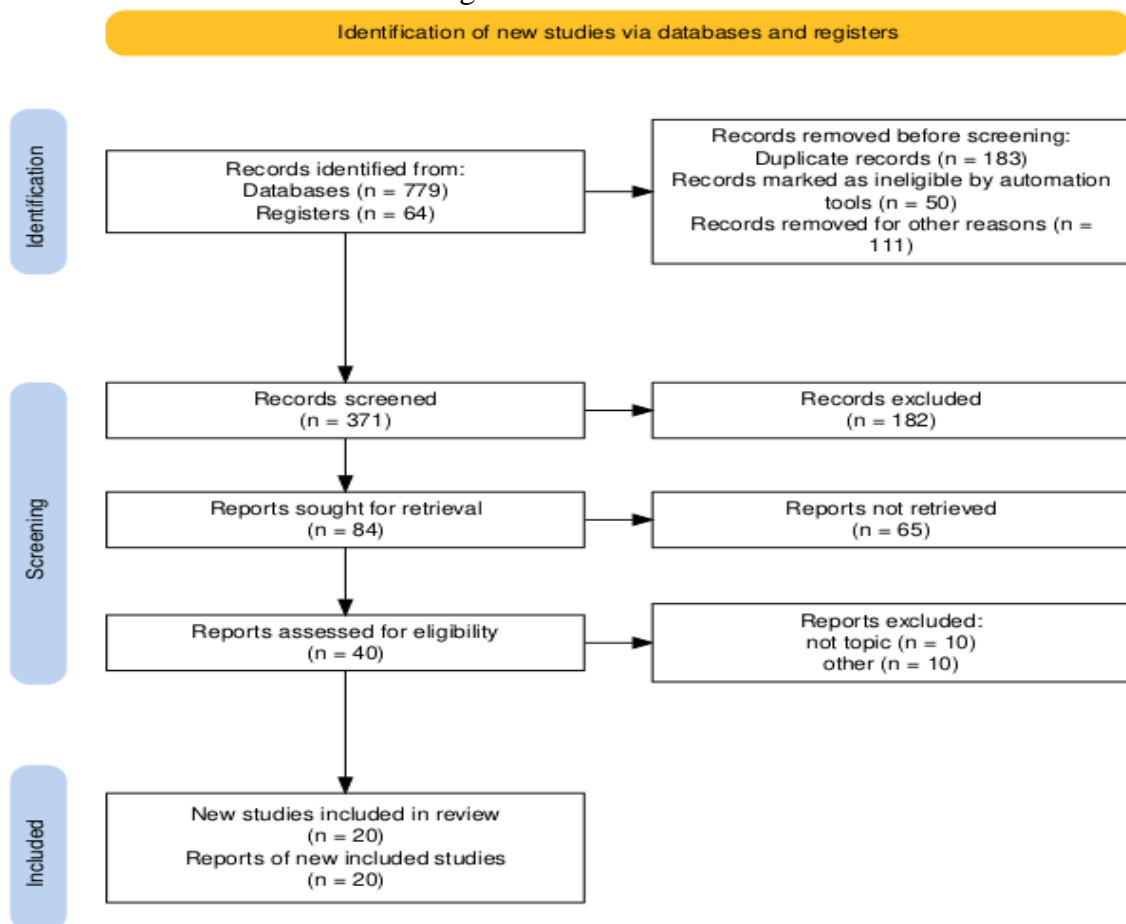
The literature search strategy was conducted in a structured manner following the PRISMA protocol, which guides the processes of identification, screening, eligibility, and inclusion. The

search was conducted exclusively through the Scopus and Web of Science databases, considering their wide coverage, credibility, and established use as primary sources for systematic literature reviews in management and organizational research (Mongeon & Paul-Hus, 2016).

The combination of keywords was designed to capture the core dimensions of the research topic, namely digital transformation, learning organization, and knowledge management, and was constructed as follows:

The search was limited to journal articles published in English and indexed within the subject areas of Business, Management, and Accounting. This search strategy was designed to ensure comprehensive coverage while maintaining relevance and consistency with the research objectives.

Figure 1: Prisma Flowchart



3. Study Selection and Data Synthesis

Following the identification stage, duplicate records were removed, and the remaining articles were screened based on their titles and abstracts. Articles that met the relevance criteria were then assessed through full text review to determine their eligibility for inclusion. The final set of selected articles was analyzed using a structured data extraction matrix capturing publication details, organizational context, digital transformation focus, learning organization practices,

knowledge management practices, reported organizational impacts, and identified research gaps.

The synthesis of findings was conducted using a thematic analysis approach, allowing recurring patterns, dominant themes, and conceptual relationships to be identified across studies. This process enabled a comprehensive understanding of how digital transformation reshapes learning organization and knowledge management practices and how these changes are associated with organizational outcomes reported in the literature.

Picture 2: Article Distribution Map

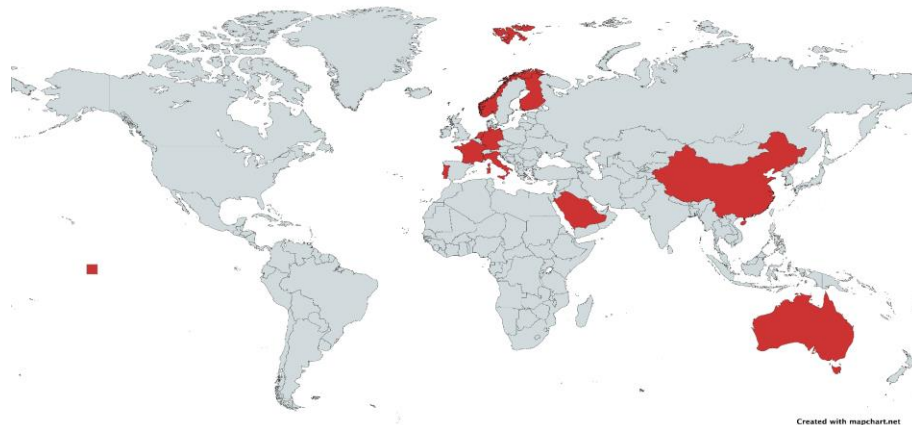


Table 1: Article author, country, and main finding

No	Author and Year	Country	Main Findings
1	(Vial, 2019)	France	Digital transformation is an organizational change process requiring learning and capability reconfiguration to generate value.
2	(Ferreira et al., 2022)	Austria	Digital transformation reshapes management practices and highlights the role of organizational learning and knowledge integration.
3	(Gong & Ribiere, 2021)	China	Conceptual clarification of digital transformation emphasizing organizational and knowledge dimensions beyond technology.
4	(Warner & Wäger, 2019)	Germany	Digital transformation builds dynamic capabilities through continuous organizational learning and strategic renewal.

5	(Vaio et al., 2021)	Italy	Digital innovation enhances knowledge management systems and supports organizational learning and decision making.
6	(Machado et al., 2022)	Portugal	Knowledge management acts as a key enabler of digital transformation, particularly in Industry 4.0 contexts.
7	(Hafeez et al., 2025)	Finland	Knowledge management strengthens learning organization practices and supports SMEs' digital transformation outcomes.
8	(Cao et al., 2025)	China	Digital transformation promotes organizational learning and sustainability when supported by knowledge management.
9	(Jiang et al., 2025)	China	Top management digital knowledge and KM practices enable ambidextrous innovation under digital transformation.
10	(Chen et al., 2024)	China	Digital transformation enhances knowledge creation and innovation performance through data driven practices.
11	(Konopik et al., 2022)	Germany	Organizational capabilities and learning mechanisms are essential for mastering digital transformation.
12	(Blanka et al., 2022)	Austria	Digital transformation requires continuous learning and competency development among employees.
13	(Alnuaimi et al., 2022)	United Arab Emirates	Leadership and agility mediate the relationship between digital transformation and organizational performance.
14	(Nguyen et al., 2023)	Netherlands	Digital transformation success depends on system level alignment of learning, strategy, and knowledge processes.
15	(Fischer et al., 2020)	Germany	Process oriented learning and knowledge integration support strategic digital transformation.
16	(Guo et al., 2023)	China	Digital transformation has mixed performance effects, highlighting the digitalization paradox without learning support.
17	(Sun, 2024)	China	Knowledge sharing mediates the impact of digital transformation on innovation and sustainability outcomes.

18	(Alvarenga et al., 2020)	Portugal	Digital transformation and knowledge management contribute to organizational modernization and sustainability.
19	(Mikalef et al., 2019)	Norway	Advanced digital technologies enable organizational learning when embedded in proper governance structures.
20	(Shanbhag & Pardede, 2022)	Italy	Knowledge sharing enhances the positive performance impact of digital transformation in SMEs.

RESULT

RQ1: How does digital transformation reshape learning organization and knowledge management practices in business organizations?

Digital transformation as a driver of organizational capability reconfiguration

The reviewed literature consistently conceptualizes digital transformation as a profound organizational change process that extends beyond technology adoption to encompass strategic renewal, capability development, and organizational reconfiguration (Vial, 2019; Gong & Ribiere, 2021). Several studies emphasize that digital transformation reshapes organizations by fostering dynamic capabilities that enable firms to sense, seize, and transform in response to rapidly changing environments (Warner & Wäger, 2019; Konopik et al., 2022). From this perspective, learning organization practices and knowledge management are positioned as central organizational mechanisms that support continuous adaptation during digital transformation (Fischer et al., 2020; Nguyen et al., 2023).

Transformation of learning organization practices in the digital era

Digital transformation significantly reshapes learning organization practices by intensifying the need for continuous learning, experimentation, and cross functional collaboration. Studies highlight that organizations undergoing digital transformation increasingly rely on learning routines that support rapid skill development and digital competency building at both individual and collective levels (Ferreira et al., 2022; Blanka et al., 2022). Leadership and digital strategy further shape learning oriented environments by fostering agility and openness to change, which are essential for organizational learning in digitally turbulent contexts (Alnuaimi et al., 2022; Nguyen et al., 2023). These findings indicate a shift from episodic training toward embedded, ongoing learning processes aligned with digital transformation initiatives.

Evolution of knowledge management practices under digital transformation

The findings reveal a clear evolution of knowledge management (KM) practices from traditional knowledge documentation toward digitally enabled, dynamic knowledge flows. Digital technologies facilitate real time knowledge sharing, integration, and recombination across organizational boundaries, thereby enhancing organizational responsiveness and innovation potential (Machado et al., 2022; Vaio et al., 2021). Empirical evidence suggests that

digital transformation strengthens knowledge creation processes by leveraging data driven technologies and digital platforms, which enable organizations to transform dispersed information into actionable knowledge (Chen et al., 2024). Consequently, KM emerges as a strategic enabler that supports learning organization practices in digitally transformed organizations.

Increasing integration of learning organization and knowledge management

A recurring theme across the reviewed studies is the growing integration between learning organization practices and knowledge management systems. Learning oriented cultures encourage knowledge sharing and collaborative problem solving, while digital KM systems institutionalize learning outcomes and facilitate organizational memory (Hafeez et al., 2025; Vaio et al., 2021). Several studies demonstrate that this integration is particularly critical for supporting ambidextrous innovation, where organizations simultaneously pursue exploratory and exploitative learning activities (Jiang et al., 2025). In SMEs, lightweight but flexible KM practices play a crucial role in sustaining learning organization principles under resource constraints (Hafeez et al., 2025). Moreover, advanced technologies such as artificial intelligence are increasingly viewed as enablers of organizational learning, provided that appropriate organizational designs and governance mechanisms are in place (Mikalef et al., 2019).

Synthesis of RQ1.

Overall, digital transformation reshapes business organizations by (1) reconfiguring organizational capabilities and strategies, (2) reinforcing continuous learning and digital competency development, (3) transforming knowledge management into digitally enabled knowledge flows, and (4) strengthening the integration of learning organization and knowledge management as core mechanisms for adaptation and innovation (Machado et al., 2022; Warner & Wäger, 2019; Vial, 2019; Hafeez et al., 2025)

RQ2: What organizational impacts, outcomes, and research gaps are identified in the literature regarding these practices in the digital era?

Organizational performance and the digitalization paradox

The reviewed studies frequently associate digital transformation with improved organizational performance; however, the relationship is not uniformly positive. Some research highlights a “digitalization paradox,” where digital investments fail to translate into performance gains due to managerial myopia, misalignment between strategy and capabilities, or insufficient learning and knowledge integration (Guo et al., 2023). Learning organization practices and effective KM are therefore identified as critical mediating mechanisms that enable organizations to convert digital initiatives into tangible performance outcomes (Ferreira et al., 2022; Nguyen et al., 2023).

Innovation and ambidexterity as dominant outcomes

Innovation emerges as one of the most prominent organizational outcomes linked to digital transformation, learning organization, and KM. The literature shows that digital transformation enhances innovation capability by accelerating knowledge creation and integration processes,

thereby supporting both incremental and radical innovation (Chen et al., 2024; Vaio et al., 2021). In industry specific contexts, digital knowledge at the top management level and structured KM practices are found to support ambidextrous innovation, enabling organizations to balance exploration and exploitation effectively (Jiang et al., 2025). Knowledge sharing also mediates the relationship between digital transformation and green or sustainable innovation outcomes (Sun, 2024).

Organizational agility, adaptability, and resilience

Another frequently reported outcome is enhanced organizational agility and adaptability. Studies argue that digital transformation driven learning organization practices enable faster decision making and responsiveness to environmental changes (Warner & Wäger, 2019; Konopik et al., 2022). Systems oriented perspectives further suggest that synergies among strategy, structure, competencies, and KM practices are essential for sustaining adaptive capacity in the digital era (Nguyen et al., 2023). At the employee level, digital skill development and competency enhancement contribute to organizational resilience and long term adaptability (Blanka et al., 2022).

Sustainability and broader organizational value

Several studies extend the discussion of outcomes beyond performance and innovation to include sustainability and broader organizational value creation. Digital transformation, when supported by KM and learning practices, is associated with improved sustainability outcomes and more effective knowledge utilization across organizational and sectoral boundaries (Alnuaimi et al., 2022; Cao et al., 2025). In SMEs, knowledge sharing is shown to strengthen the performance effects of digital transformation, highlighting the importance of social and relational dimensions of KM (Hafeez et al., 2025).

Identified research gaps

Despite substantial progress, the literature reveals several persistent research gaps. Conceptually, inconsistent definitions and measurements of digital transformation, learning organization, and KM limit cross study comparability (Gong & Ribiere, 2021; Vial, 2019). Methodologically, many studies rely on cross sectional designs, underscoring the need for longitudinal and multi level research to capture the dynamic nature of digital transformation processes (Warner & Wäger, 2019; Cao et al., 2025). Contextually, research remains concentrated in specific industries and developed economies, indicating a need for studies in SMEs and Global South contexts to enhance generalizability (Hafeez et al., 2025). Finally, future research should develop integrative models that explicitly link digital transformation, learning organization practices, KM mechanisms, and organizational outcomes, including the roles of leadership, digital competencies, and governance structures (Alnuaimi et al., 2022; Sun, 2024).

Table 2: Findings Mapped to RQ1-RQ2

Dimension	Key Findings	Representative Studies
RQ1: Digital transformation to LO practices	Shift toward continuous learning, digital skill development, cross functional learning	(Blanka et al., 2022) (Ferreira et al., 2022) (Vial, 2019)
RQ1: Digital transformation to KM practices	Transition from static KM to dynamic, digital enabled knowledge flows	(Chen et al., 2024) (Vaio et al., 2021) (Machado et al., 2022)
RQ1: LO KM integration	Learning culture and KM systems mutually reinforce organizational adaptation	(Jiang et al., 2025) (Hafeez et al., 2025)
RQ2: Performance outcomes	Mixed performance effects; risk of digitalization paradox	(Guo et al., 2023) (Ferreira et al., 2022)
RQ2: Innovation outcomes	Enhanced innovation and ambidextrous innovation capability	Chen et al. (2024); Jiang et al. (2025); Sun (2024)
RQ2: Agility and adaptability	Improved organizational agility and resilience	(Warner & Wäger, 2019) (Konopik et al., 2022)
RQ2: Research gaps	Inconsistent definitions, cross sectional designs, limited Global South contexts	(Gong & Ribiere, 2021) (Machado et al., 2022) (Hafeez et al., 2025)

DISCUSSION

This discussion interprets the results by linking the empirical patterns identified in the review to the broader theoretical perspectives on digital transformation, learning organization, and knowledge management. First, the findings confirm that digital transformation should be understood as a continuous organizational learning process rather than a discrete technological initiative. The consistent emphasis on dynamic capabilities, continuous learning, and knowledge integration supports theoretical arguments that position learning organization practices as foundational to successful digital transformation (Warner & Wäger, 2019; Vial, 2019).

Second, the results highlight the complementary relationship between learning organization and knowledge management. Learning organization practices create the cultural and behavioral conditions necessary for learning, while KM systems provide the structural and technological mechanisms through which learning is embedded and sustained. This integration explains why organizations with strong learning and KM capabilities are better positioned to convert digital initiatives into innovation and adaptability outcomes (Machado et al., 2022; Hafeez et al., 2025).

Third, the mixed performance outcomes reported in the literature reinforce the notion of a digitalization paradox. The discussion suggests that digital investments alone are insufficient; rather, organizational learning and effective KM function as mediating mechanisms that determine whether digital transformation leads to positive performance outcomes (Guo et al.,

2023; Ferreira et al., 2022). This insight extends prior digital transformation frameworks by explicitly foregrounding learning and knowledge processes.

Finally, the identified research gaps indicate several avenues for future research. Conceptually, greater clarity is needed in defining and operationalizing digital transformation, learning organization, and KM. Methodologically, longitudinal and multi level studies are required to capture the dynamic and evolving nature of digital transformation. Contextually, future research should explore underrepresented settings, including SMEs and organizations in emerging economies, to enhance the generalizability of findings (Gong & Ribiere, 2021; Hafeez et al., 2025).

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

This Systematic Literature Review synthesizes 20 Scopus indexed studies to examine how digital transformation reshapes learning organization and knowledge management practices in business organizations and to identify the resulting organizational impacts and research gaps. The findings confirm that digital transformation represents a comprehensive organizational change process rather than a purely technological initiative. Learning organization practices and knowledge management consistently emerge as central mechanisms that enable organizations to adapt and innovate in digitally dynamic environments.

With respect to RQ1, the review shows that digital transformation strengthens continuous learning, digital skill development, and cross functional collaboration, while simultaneously shifting knowledge management from static documentation toward dynamic and digitally enabled knowledge flows. For RQ2, the literature indicates that digital transformation is most frequently associated with innovation capability, organizational agility, and adaptability, while performance and sustainability outcomes remain contingent on effective learning and knowledge integration. The findings also reveal persistent gaps related to conceptual ambiguity, methodological limitations, and narrow contextual coverage.

Recommendations

Organizations pursuing digital transformation should focus on cultivating learning-oriented cultures and aligning digital initiatives with effective knowledge management practices. Digital investments need to be accompanied by leadership support, continuous capability development, and mechanisms that facilitate knowledge sharing and organizational learning. For small and medium sized enterprises, flexible and lightweight knowledge management approaches are recommended to support learning without increasing organizational complexity.

Future research should develop integrative models that explicitly link digital transformation, learning organization practices, knowledge management mechanisms, and organizational outcomes. Greater use of longitudinal and multi level research designs is needed to capture the dynamic nature of digital transformation processes. Further studies should also expand empirical contexts to include small and medium sized enterprises and organizations in emerging economies, as well as examine the role of advanced digital technologies in shaping organizational learning and knowledge practices.

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