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Transformation of Organizational Models and Structures in the Digital Era: A Systematic Literature Review

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ABSTRACT

Background: Digital transformation has fundamentally changed the global business landscape and the strategic direction of modern organizations. Therefore, this study aims to identify the transformation of organizational models and structures in the digital era.
Method: The method used in this study is a Systematic Literature Review with research stages following the PRISMA approach. The research data consists of 30 articles sourced from Google Scholar, Elsevier/ScienceDirect, and Garuda Dikti, covering the period 2020–2025.
Results: The findings indicate that organizational models and structures in the digital era are shifting from traditional hierarchical forms to adaptive, collaborative, and agile structures that enable rapid responses to environmental changes. Digital leadership and organizational culture emerge as key success factors, with leaders acting as agents of change and an innovative culture supporting the internalization of values such as collaboration and continuous learning. The study further found that digital capabilities including digital platforms, AI, and data analytics play a dual role as catalysts for efficiency and drivers of innovation, improving data-driven decision-making and overall organizational performance. An effective digital transformation strategy requires integrated management of digital maturity, adaptive governance, and change risk management, enabling organizations to balance operational efficiency with continuous innovation.
Conclusion: This research confirms that organizational transformation in the digital era is an adaptive process that requires synergy between structure, culture, leadership, digital capabilities, and strategy to achieve long-term success.

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INTRODUCTION

Digital transformation has fundamentally altered the global business landscape and the strategic direction of modern organizations. These changes extend beyond technology alone, reshaping business processes, work patterns, organizational structures, and leadership models. Organizations today are required to adapt rapidly to technological developments, shifting consumer behavior, and increasingly complex competitive dynamics. This reality is reinforced by empirical evidence showing that digital transformation has a significant impact on organizational performance. Approximately 70–78% of organizations report increased agility in responding to environmental changes after strategically implementing digital technology, while 55–65% note gains in operational efficiency and productivity through process automation, real-time data utilization, and digital system integration. The global commitment to digitalization is further reflected in projections that investment will reach USD 2.8 trillion in the coming years to develop digital ecosystems, AI technology, data infrastructure, and workforce digital competency (Capgemini Research Institute, 2021; McKinsey & Company, 2021).

However, digital transformation cannot be understood solely as a process of technology adoption. While technology enables, the overall success of transformation depends heavily on an organization's capacity for structural and cultural change. Traditional hierarchical and bureaucratic organizational structures have proven ill-suited to the demands of the digital era, which calls for flexibility, cross-functional collaboration, rapid decision-making, and a commitment to continuous innovation (Akman et al., 2024; Shahzad et al., 2025). Organizational structure, in this regard, is not merely an administrative framework it is the primary foundation that shapes the direction, workflow, and effectiveness of goal achievement. In the context of modern management theory, organizational structure serves not only as a hierarchical arrangement but also as a system that governs coordination, communication, and the division of responsibilities between work units (Soleh & Mukrodi, 2025). In the digital era, marked by accelerating technological advances and globalization, organizations are compelled to move from rigid, top-down structures toward more adaptive, collaborative, and externally responsive models. An effective organizational structure is now recognized as a strategic instrument enabling organizations to integrate innovation, improve operational efficiency, and accelerate decision-making in the face of digital disruption (Daft, 2021; Joseph & Sengul, 2024).

These shifts in the global business environment have prompted organizations to rethink traditional structural models. In Indonesia, modern organizations are increasingly adopting flat, project-based, or matrix structures to enhance cross-functional collaboration (Daft, 2021). Such models allow greater flexibility in decision-making and strengthen organizational resilience in uncertain business conditions. Furthermore, a well-integrated organizational structure can enhance the effectiveness of management accounting information systems, thereby improving the accuracy of strategic decision-making (Fitriani & Nurleli, 2023) underscoring the pivotal role of structure in supporting technology-driven information management. Adopting adaptive structures must also be accompanied by cultivating a collaborative and innovative organizational culture (Leso et al., 2023). Organizations that embrace openness to change and institutional learning are better positioned to respond to technological and market dynamics. This consideration is particularly relevant in Indonesia, where many public and private organizations are navigating the balance between managerial control and employee autonomy. The interplay between organizational structure, work culture, and performance effectiveness is therefore an increasingly critical area of inquiry in the context of digital transformation.

A growing body of scholarship addresses this interplay from various angles, including the role of leaders in directing digital transformation (Malik et al., 2025), the impact of workload, organizational support, and work engagement on performance (Wang, 2024), the contribution of innovation and organizational resilience to business outcomes (Garrido-Moreno et al., 2024), transitions toward agile organizational structures (Pacheco-Cubillos et al., 2024), the influence of organizational culture on corporate social responsibility investment (Muralidhar et al., 2024), the relationship between Industry 4.0 technologies and sustainable organizational performance (Harikannan et al., 2025), the role of organizational structure and stakeholder engagement in performance outcomes (Zhang & Adnan, 2025), and the intersection of corporate governance, culture, and firm performance (Meidawati et al., 2025). Collectively, these studies reflect the multidimensional nature of organizational research spanning leadership, culture, innovation, structure, and technology while also revealing a need for more integrative frameworks that bring these dimensions into a coherent whole.

This study was therefore conducted to identify the latest trends and scientific findings regarding the transformation of modern organizational models and structures in the digital era, with a particular focus on the Indonesian organizational context. Its purpose is to synthesize empirical findings on how organizational structures evolve amid digitalization and to identify the key determinants of successful transformation. A Systematic Literature Review (SLR) approach was employed to address this objective. The findings are expected to contribute theoretically to the field of organizational management and serve as a practical reference for institutional leaders seeking to design structures that are more flexible, effective, and adaptive to future challenges (Burns & Stalker, 1994). The research is guided by the following questions:

RQ1: What are the trends in organizational model and structure transformation in the digital era based on the latest literature?

RQ2: What factors drive changes in organizational models and structures in the context of digitalization?

RQ3: What organizational strategies and approaches are used to implement digital transformation in their operational models and structures?

RQ4: What are the long-term challenges, risks, and implications that organizations face in the process of transforming organizational models and structures in the digital era?

These questions were formulated in recognition that digital transformation is not a purely technological phenomenon it equally encompasses the managerial, structural, and behavioral dimensions of organizational life. The shift from hierarchical to agile, networked, and hybrid organizational models demands a renewed understanding of digital leadership, innovative culture, and technology integration in organizational design (Butt et al., 2024; Cheng et al., 2025; Daft, 2021). Each research question was developed to address the conceptual (what), causal (why), procedural (how), and outcome dimensions of organizational structure transformation. Together, they ensure that the literature search, selection, and synthesis processes are systematic and theoretically grounded. Beyond describing structural change, this SLR aims to make a substantive theoretical contribution to understanding the relationship between digital leadership, organizational culture, and adaptive organizational performance in the evolving digital landscape.

METHOD

This study employed a Systematic Literature Review (SLR) approach using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. PRISMA was used to identify, analyze, and synthesize recent findings on the transformation of organizational models and structures in the digital era. This approach was chosen for its capacity to support a transparent, systematic, and standardized review process, thereby ensuring the replicability and reliability of results. The review followed four sequential stages: (1) formulating research questions, (2) determining a literature search strategy, (3) selecting articles based on inclusion and exclusion criteria, and (4) analyzing and synthesizing data.

Determining Literature Search Strategy

A systematic literature search strategy was developed to ensure that the sources reviewed were relevant, credible, and up-to-date. This strategy followed established SLR guidelines, which emphasize clear keyword usage, the selection of representative databases, and the consistent application of selection criteria throughout the review. To ensure source diversity and academic credibility, three databases were used: Google Scholar, ScienceDirect, and Garuda Dikti (Indonesian database). These databases were selected to capture both international and national literature, enabling the study to reflect developments in organizational transformation theory and practice across a range of institutional and sectoral contexts.

The main keywords used included "organizational structure," "digital transformation," "organizational design," "digital leadership," and "agile organization." Keyword combinations were applied using Boolean operators (AND, OR) to broaden the scope of search results and deepen thematic exploration related to the transformation of organizational models and structures. The publication range was limited to 2020–2025 to ensure relevance to the current digitalization context, particularly following the post-pandemic period of accelerated technological innovation. The initial search yielded 56 scientific articles, which were subsequently screened based on title, abstract, and thematic relevance to ensure that

only literature with high relevance to organizational structure transformation, digital leadership, and collaborative culture was included in the analysis and synthesis process (Cheng et al., 2025; Daft, 2021).

Article Selection Method

The article selection process was conducted systematically in accordance with the PRISMA framework. Its primary objective was to ensure that all included articles were relevant, credible. It made a meaningful academic contribution to the study of organizational model and structure transformation in the digital era. Figure 1 presents the steps in the article selection process as documented using a PRISMA flowchart, which illustrates the number of articles identified, screened, assessed for eligibility, and finally included in the analysis. This approach ensured a measurable and replicable review process that adhered to modern systematic research methodology standards.

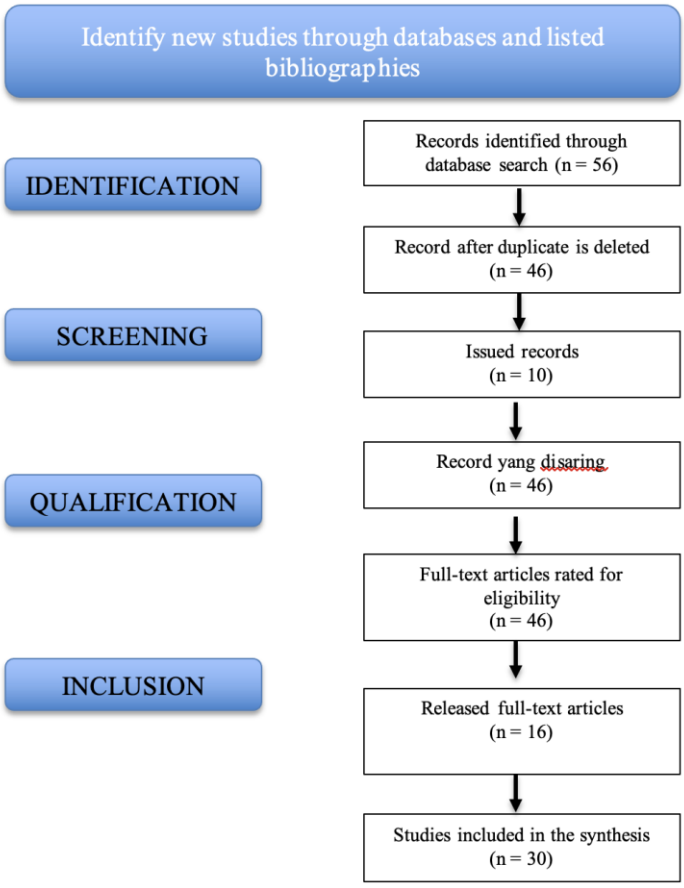

Figure 1. The PRISMA FLOW Diagram

Based on Figure 1, the first stage in article selection is identification, where all literature search results are collected from three main databases: Google Scholar, ScienceDirect, and Garuda Dikti. The search process uses a combination of keywords, including "organizational structure," "digital transformation," "organizational design," "digital leadership," and "agile organization." This stage yielded 56 scientific articles deemed relevant to the research topic (Capgemini Research Institute, 2021). The second stage is screening, where duplicate articles and those without full text are removed. Articles irrelevant to the context of organizational transformation for example, those discussing digital technology without implications for organizational structure are also excluded at this stage. After screening, 46 articles remained eligible for further review. In the third stage, an eligibility assessment was conducted. Each article was reviewed based on its title, abstract, and main content to assess its suitability for the research focus on organizational model and structure transformation. Articles lacking a clear methodological basis, or those that were purely conceptual without empirical analysis, were eliminated. This evaluation considered methodological clarity, contribution to organizational theory, and relevance to the digitalization context (Burns & Stalker, 1994; Daft, 2021). The final step was inclusion, where articles that met all criteria were incorporated into the analysis. Table 1 presents the inclusion and

exclusion criteria applied throughout the article selection. A total of 30 articles were ultimately selected for thematic analysis, covering key themes such as digital leadership, organizational structure flexibility, innovation culture, and the impact of digitalization on organizational performance (Akman et al., 2024; Cheng et al., 2025).

Table 1. Inclusion and Exclusion Criteria

Inclusion Criteria	Inclusion Criteria
• Peer-reviewed scientific articles • Timeframe 2020-2025 • Using Indonesian and English • Digital transformation, modern organizational structure, organizational models, digital leadership, organizational culture • Have clear research methods and results • Conceptual & empirical (qualitative / quantitative / mixed)	• Opinions, blogs, non-peer-reviewed reports, popular articles • Published before 2020 • Indonesian/English jam language • The main focus is not organization or digitalization (e.g., pure engineering, agriculture, biomedicine) • Does not explain methods or results • Grey literature without scientific basis

Figure 2 shows the distribution of the articles analyzed. Research on organizational models remains diverse, with notable concentration in specific thematic areas. The largest proportion of studies (31.4%) focuses on Organizational Structure Design, reflecting continued scholarly interest in how structural configurations support organizational performance and adaptation particularly questions related to structural alignment, coordination mechanisms, and organizational architecture. The second-largest category (25.7%) comprises research on Organizational Strategy and Transformation, underscoring the importance of strategic reorientation and transformation initiatives, especially amid digital change, competitive pressures, and environmental turbulence. A further 22.9% of articles fall under Digital Capabilities and Organizational Performance, confirming that digital competency development is increasingly recognized as a critical determinant of organizational effectiveness, innovation capacity, and long-term sustainability. The final category, Digital Leadership and Organizational Culture, represents 20% of the total articles analyzed. Although smaller in proportion, this category plays a fundamental role, demonstrating that leadership behaviors, cultural readiness, and value-based alignment remain crucial to the success of digital and organizational transformation. Taken together, the distribution pattern illustrated in Figure 2 reflects an integrated view of organizational transformation, in which structure, strategy, digital capabilities, and leadership collectively shape organizational outcomes.

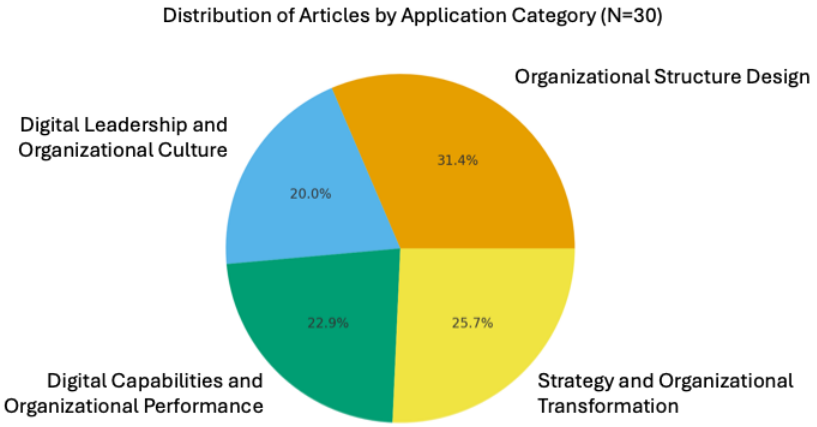

Figure 2. Distribution of Analyzed Articles per Category, 2020-2025

RESULTS AND DISCUSSION

Table 2 presents a summary of the review results from the 30 selected articles, which are described in greater detail in the sections that follow.

Table 2. Summary of Review Results of 30 Articles on Modern Organizational Models and Structures in the Digital Era

No	Author & Year	Method	Key Findings	Relevance
1	Cheng et al. (2025)	Quantitative (SEM)	Digital leadership strengthens the digital culture and sustainability of the organization.	Supporting adaptive structural design based on digital leadership.
2	Mollah et al. (2024)	Survey	Strong culture and organizational support for improving employee performance.	Emphasizes the importance of a cultural basis for effective structures.
3	Lin et al. (2025)	Quantitative (SEM)	AI & digital platforms enhance organizational innovation capacity.	Demonstrates technology as a structural enabler.
4	Akman et al. (2024)	Survey (quantitative field study)	Innovative and collaborative cultures accelerate digital transformation.	Provides empirical basis that innovative culture is a prerequisite for effective digital leadership.
5	Deloitte Insights (2023)	Quantitative	The "digital trifecta" is the key driver of transformation value.	Provides empirical evidence that digital transformation requires connecting digital vision to concrete structural and operational actions.
6	Fitriani & Nurleli (2023)	Quantitative	The structure of Islamic organizations is not significant to the effectiveness of SIA.	Demonstrates the need for a digital-based structure.
7	Maulana et al. (2022)	Qualitative	Hierarchical structures slow down decision making.	Suggests adoption of matrix model.
8	Ridwan & Sumirat (2021)	Qualitative	Rigid structures limit organizational flexibility.	Promote cross-unit collaborative teams.
9	Firdaus et al. (2021)	Descriptive	The bureaucratic model hampers the quality of public services.	Recommendation: lean/decentralized structure.
10	McKinsey & Company (2021)	Survey / analysis	Agile transformation is correlated with increased efficiency, speed, and innovation.	It serves as an empirical basis for the shift to agile structures.
11	Capgemini Research Institute (2021)	Survey	Around 60–62% of organizations report improved digital capabilities/leaders.	Supporting claims of the effectiveness of digital investments for organizational capabilities.
12	Daft (2021)	Conceptual-theoretical textbook	Rigid mechanistic structures limit organizational flexibility and adaptability.	Provides a foundational theoretical basis for structural redesign arguments.
13	Khisa (2020)	Qualitative	Decentralization in local government improves service responsiveness.	Relevant for bureaucratic reform.
14	Saeed et al. (2023)	Systematic literature review	Digital transformation increases organizational efficiency, innovation, and competitiveness through the adoption of AI, big data, cloud computing, and network structures.	Provides empirical evidence that governance changes and strategic innovation in digital transformation are inseparable from cybersecurity governance.
15	Kulichyova et al. (2025)	Systematic literature review	Flat, flexible, and decentralized structures are critical for driving agile cultures and enabling successful digital transformation.	Provides empirical evidence of the shift from hierarchical organizational structures to organic, flat, and adaptive structures.
16	Hanelt et al. (2021)	Systematic literature review	Digital transformation drives organizations to become organizations that are continuously adapting.	Provides a theoretical foundation for how digital leadership shapes organizational culture and

No	Author & Year	Method	Key Findings	Relevance
				collaboration across directly relevant units.
17	Nuryadin et al. (2023)	Systematic literature review	Organizations that embed digital leadership principles demonstrate greater capacity to drive cultural reform, cross-unit collaboration, and innovation across public sector institutions.	The role of digital mindset in fostering collaboration, and leaders' role as drivers of cultural change.
18	Cosa & Torelli (2024)	Qualitative systematic literature review (PRISMA)	Digital maturity assessment to identifying capability gaps and managing transformation.	Providing an empirical basis for data-driven decision-making
19	Li (2024)	Qualitative systematic review	Organizations investing in reskilling and upskilling programs.	Human resource readiness to sustain digital transformation outcomes.
20	Verhoef et al. (2021)	Qualitative	Digital transformation is multidisciplinary, involving fundamental changes in strategy, work processes, supply chains, and organizational policy direction.	Provides a comprehensive multidisciplinary framework confirming that digital transformation strategy must integrate technology, structural redesign, governance reform, and adaptive policy.
21	Shahzad et al. (2025)	Qualitative	Digital leadership are critical enablers of sustainable structural transformation.	Provides empirical evidence that hierarchical and bureaucratic structures hinder digital transformation.
22	Kolbjørnsrud (2024)	Qualitative	Organizations grow intelligence by combining human and AI strengths.	Supports arguments about collaborative leadership and adaptive culture.
23	Joseph & Sengul (2024)	Qualitative	Effective structural design integrates cross-functional coordination and decentralized authority to enable strategic agility and faster information flow.	Networked, decentralized structures facilitate cross-functional coordination and faster information flow amid digital disruption.
24	Butt et al. (2024)	Qualitative	Organizational culture must be strategically designed as a resource for digital transformation.	Provides direct empirical evidence that organizational culture is both the foundation and biggest obstacle of digital transformation.
25	Soleh & Mukrodi (2025)	Qualitative literature review	A flexible and adaptive organizational structure significantly improves organizational performance.	Organizations that adopt an adaptive and flexible structure experience increased coordination effectiveness, decision-making speed, and cross-unit communication.
26	Nugroho et al. (2025)	Quantitative / Survey	Digitalisasi dan sistem informasi di pendidikan tinggi secara signifikan meningkatkan kinerja operasional dan strategis.	Supporting arguments about the impact of digital transformation on individual and institutional performance in the education sector.
27	Vaszkun & Sziráki (2023)	Qualitative	Fluid, decentralized structures essential for digital complexity management.	Empirical foundation for adaptive/agile structures as design responses to digital transformation complexity.
28	Almuqrin et al. (2024)	Quantitative / Survey	Digital capabilities improve agility and performance	Supports arguments on HR readiness, digital training, and strategic value of digital

No	Author & Year	Method	Key Findings	Relevance
			(efficiency, quality, satisfaction) in public sector.	capability in public/education institutions.
29	Safi'i et al. (2025)	Mixed quantitative-analytical	Bureaucratic hierarchy & digital competency gaps are primary Indonesian HE barriers.	Human resource development as the highest priority for reskilling lecturers and education staff.
30	Gierten & Lesher (2022)	Quantitative analysis	A novel indicator (NDSC) measures national digital strategy comprehensiveness using the Going Digital Integrated Policy Framework.	The need for flexible, iterative, adaptive governance in digital transformation.

Transformation of Organizational Models and Structures in the Digital Era Based on Recent Literature

RQ1: How is the transformation of organizational models and structures in the digital era characterized in the latest literature?

A review of the 2020–2025 literature shows that the transformation of organizational models and structures in the digital era involves a fundamental shift from traditional hierarchical structures to more adaptive, collaborative, and technology-based forms. This shift is driven by global demands for organizational flexibility, accelerated decision-making, and the capacity to respond to change in a highly dynamic business environment (Capgemini Research Institute, 2021; Daft, 2021; McKinsey & Company, 2021). Traditional, bureaucratic, layered structures are being widely replaced by agile, flat, and hybrid models that enable cross-functional collaboration and the integration of people and technology (Hanelt et al., 2021; Saeed et al., 2023).

Globally, the literature consistently shows that digital transformation is driving the decentralization of organizational structures and strengthening inter-unit collaboration. Organizations are increasingly relying on data, artificial intelligence, and digital platforms for decision-making and work coordination (Deloitte Insights, 2023). These structural changes are not only technical but also strategic, encompassing dimensions of leadership, culture, and human resource management. Digital leadership plays a central role in building an organizational culture that supports innovation and sustainability (Cheng et al., 2025). Digital capabilities and strategic flexibility have similarly been identified as key factors in enhancing organizational competitiveness in the digital era (Lin et al., 2025). Within the framework of Society 5.0, modern organizational structures are moving toward networked organizations that combine human-machine collaboration to enhance work effectiveness (Akman et al., 2024), a view consistent with the argument that adaptive organizational architecture is a crucial element in managing the complexity and uncertainty of digital transformation (Vaszkun & Sziráki, 2023). In the education and public sectors, however, the implementation of digital structures continues to face bureaucratic obstacles and low human resource readiness (Almuqrin et al., 2024; Safi'i et al., 2025).

In the Indonesian context, the main challenges of organizational structure transformation remain resistance to cultural change, the dominance of traditional bureaucratic patterns, and limited workforce digital capabilities (Fitriani & Nurleli, 2023; Maulana et al., 2022). This situation suggests that structural change must be accompanied by managerial reform and increased digital literacy, so that the transformation process does not stall at technology adoption but genuinely creates sustainable organizational value (Nuryadin et al., 2023).

Overall, the literature analysis indicates that the 2020–2025 period represents a critical phase in the evolution of both global and national organizational structures. Emerging trends point toward organizational models grounded in collaboration, technology, and strategic flexibility, whose successful implementation depends heavily on digital leadership, an innovative culture, and the organization's capacity to adapt to technological disruption (Cheng et al., 2025; Mollah et al., 2024). The transformation of organizational models in the digital era thus reflects not only changes in formal structures but also a paradigm shift in how knowledge, power, and values are managed in modern organizations.

Factors Driving Changes in Organizational Models and Structures in the Context of Digitalization

RQ2: What factors drive changes in organizational models and structures in the context of digitalization?

The literature review of 30 selected articles identified four main themes reflecting the direction of research on organizational model and structure transformation in the digital era, as shown in Table 3: (1) Adaptive Organizational Structure Design, (2) Digital Organizational Strategy and Transformation, (3) Digital Capabilities and Organizational Performance, and (4) Digital Leadership and Organizational Culture.

Table 3. Summary of Articles by Application Category (N = 30, 2020–2025)

Category	Application	Number of Articles	Reference
Organizational Structure Design	Adaptive and agile organizational structure	6	Daft (2021); Kulichyova et al. (2025); Soleh & Mukrodi (2025); Maulana et al. (2022); Li (2024); Vaszkun & Sziráki (2023)
	Decentralization and matrix structure	2	Khisa (2020); Ridwan & Sumirat (2021)
Digital Leadership & Organizational Culture	Organizational structure in the education sector	1	Safi'i et al. (2025)
	Digital leadership and innovative culture	5	Cheng et al. (2025); Akman et al. (2024); Nuryadin et al. (2023); Butt et al. (2024); Mollah et al. (2024)
	Strengthening cross-unit collaboration and adaptive work culture	2	Kolbjørnsrud (2024); Hanelt et al. (2021)
Digital Capabilities & Organizational Performance	Developing the organization's digital capabilities	4	McKinsey & Company (2021); Cosa & Torelli (2024); Capgemini Research Institute (2021); Lin et al. (2025)
	The impact of digital transformation on performance	4	Fitriani & Nurleli (2023); Firdaus et al. (2021); Nugroho et al. (2025); Almuqrin et al. (2024)
Strategy & Organizational Transformation	Digital transformation strategy and structural redesign	3	Verhoef et al. (2021); Deloitte Insights (2023); Shahzad et al. (2025)
	Governance changes and strategic innovation	3	Joseph & Sengul (2024); Gierten & Lesher (2022); Saeed et al. (2023)

Organizational structure design

The first theme focuses on the paradigm shift in organizational structure from traditional hierarchical and bureaucratic models to more adaptive, collaborative, and agile forms. This shift is driven by the demands of a dynamic digital business environment, where speed of decision-making, cross-functional collaboration, and the capacity to innovate are critical to the success of modern organizations (Daft, 2021). Adaptive structural design emphasizes flexibility in communication flows and decentralized decision-making, enabling organizations to respond to market changes quickly and efficiently. In the digital era, organizational structure is no longer conceived as a rigid hierarchy but rather as a network of interconnected, collaborative teams that are adaptive to change (Daft, 2021). Models such as the flat organization, matrix structure, and hybrid organization have become dominant because they increase inter-unit synergy, accelerate information flow, and strengthen cross-functional innovation. In this context, a project-based approach is also widely used to encourage collaborative innovation and enhance organizational adaptability to external changes (Capgemini Research Institute, 2021).

Empirically, organizations that implement adaptive structures demonstrate increased innovation effectiveness, coordination, and operational efficiency (McKinsey & Company, 2021). This transformation is closely linked to the integration of digital technologies such as artificial intelligence and data analytics, which support data-driven decision-making (Akman et al., 2024). Research further underscores that adaptive structures strengthen organizations' capabilities to manage complex digital projects through cross-functional collaboration and the decentralization of responsibilities (Vaszkun & Sziráki, 2023).

Recent research also highlights the importance of decentralized and matrix structures in strengthening collaboration and autonomy at work. Decentralization encourages increased participation and accelerates communication flows between units, particularly in the public and education sectors (Khisa, 2020), while the matrix model enables more effective integration of diverse functions, allowing organizations to respond more quickly to external environmental changes (Ridwan & Sumirat, 2021). In Indonesia, public and educational organizations are shifting from bureaucratic structures to more decentralized, team-based models (Fitriani & Nurleli, 2023; Maulana et al., 2022), though this shift faces obstacles, including hierarchical culture, resistance to change, and limited digital capabilities. Successful implementation ultimately depends on integrating management information systems and shifting the managerial mindset to support collaboration and innovation (Fitriani & Nurleli, 2023).

Higher education institutions and government agencies that adopted adaptive structures experienced improvements in coordination, decision-making speed, and effective cross-unit communication (Safi'i et al., 2025; Soleh & Mukrodi, 2025). To sustain these gains, however, organizations need to strengthen governance models and reward systems that encourage continuous innovation and collaboration. Manufacturing organizations in Indonesia that implemented agile structures have also shown significant improvements in performance and efficiency (Li, 2024).

In sum, the organizational structure design literature for 2020–2025 confirms that the success of digital organizational transformation lies not only in changing the hierarchical form but also in shifting the managerial paradigm toward collaborative, flexible, and learning-based work. Adaptive structures serve not only as a coordination platform but also as a strategic instrument that strengthens organizational competitiveness, innovation, and resilience in the face of global digital disruption (Gierten & Lesher, 2022; Saeed et al., 2023).

Digital leadership and organizational culture

Digital leadership and organizational culture are central to the success of digital transformation across sectors. In the digital era, leadership is no longer understood solely as conventional managerial skill but as the strategic capacity to integrate technology, people, and business processes into an adaptive and innovative ecosystem (Akman et al., 2024; Cheng et al., 2025). Digital leaders act as change agents, driving cultural change toward greater openness to innovation, collaboration, and continuous learning.

Digital leadership plays a significant role in building digital culture and organizational sustainability by increasing adaptability and innovation orientation (Cheng et al., 2025). The effectiveness of organizational transformation is largely determined by the leader's ability to inspire, empower, and facilitate technology-based cross-unit collaboration. In the context of Society 5.0, digital leadership is key to integrating technological structures with human values, ensuring that transformation is not only efficient but also ethical and socially oriented (Akman et al., 2024). Organizational culture further serves as the foundation for successful restructuring in the digital era (Butt et al., 2024; Nuryadin et al., 2023). An innovative culture open to change creates a conducive environment for experimentation, creativity, and the adoption of new technologies. In this regard, digital leadership is tasked not only with directing technology strategy but also with fostering organizational values such as trust, participation, and collaboration. Successful structural change, therefore, requires cultural alignment between the organization's vision and the behavior of individuals and teams at all hierarchical levels (Butt et al., 2024).

Research shows that organizations that successfully implement sustainable digital transformation cultivate a collaborative leadership model and an adaptive culture (Hanelt et al., 2021; Kolbjørnsrud, 2024). Collaborative leadership fosters psychological safety, enabling organizational members to innovate boldly and take risks in implementing new ideas. An adaptive culture has also been shown to strengthen organizational agility the ability to respond quickly to external changes without losing strategic direction. The relationship between organizational culture and employee performance is further reinforced by organizational support: an innovative culture, backed by a reward system and a conducive work environment, can significantly increase employee performance and commitment to the digital transformation process (Mollah et al., 2024). This aligns with the view that digital leadership should combine human-centered management with intelligent technology to maintain a balance among productivity, well-being, and organizational sustainability (Deloitte Insights, 2023).

In the Indonesian context, digital leadership in the education and public sectors continues to face challenges, including bureaucratic culture and resistance to change (Nuryadin et al., 2023; Safi'i et al.,

2025). Changes in organizational structure must therefore be accompanied by a work culture that fosters collaborative values, openness to new ideas, and a commitment to innovation one that helps organizations adapt to technological disruption without losing their core identity and values.

The 2020–2025 literature review thus indicates that digital leadership and organizational culture share a synergistic, mutually reinforcing relationship. Digital leadership enables and guides organizational transformation, while organizational culture serves as the medium through which the values of change are sustained and internalized. Together, they are crucial to building future-ready organizations in which innovation, collaboration, and adaptability are at the heart of success in the evolving digital era.

Digital capabilities and organizational performance

The third theme highlights digital capabilities as a key foundation for improving organizational performance. In the dynamic digital transformation era, organizations are required not only to adopt technology but also to develop strategic capabilities to integrate it into business processes, decision-making, and organizational governance (Capgemini Research Institute, 2021; McKinsey & Company, 2021). Digital capabilities serve as a measure of an organization's readiness to navigate increasingly complex business change, where the ability to innovate, adapt, and collaborate is central to success.

Organizations with high levels of digital capability can significantly improve operational efficiency through automation, process digitization, and data-driven analysis (McKinsey & Company, 2021). Those that have achieved digital maturity demonstrate superior performance compared to competitors by leveraging technology to accelerate business processes, expand market reach, and enhance service quality. Critically, organizations that achieve digital mastery focus not only on technology use but also on aligning organizational structure, culture, and digital strategy (Capgemini Research Institute, 2021). This synergy between human and technological dimensions drives sustainable gains in organizational productivity and effectiveness. The integration of digital platforms, artificial intelligence, and big data analytics has been shown to impact strategic flexibility and organizational innovation positively (Lin et al., 2025), enabling data-driven decision-making, faster responses to market changes, and greater accuracy in strategic planning. These findings confirm that strategic digital capability serves not only as an efficiency tool but also as an engine of innovation, strengthening organizational competitiveness in the digital economy.

At the national level, strengthening digital capabilities is a crucial issue for public and educational organizations. Institutions that implement digital systems for academic and administrative governance can improve coordination effectiveness, operational efficiency, and stakeholder satisfaction (Almuqrin et al., 2024), while also opening space for cross-unit collaboration and technology-based learning innovation. In public organizations, the implementation of digital-based management information systems aligned with organizational cultural values can further strengthen accountability and performance effectiveness (Fitriani & Nurleli, 2023). Increased digital literacy and technological mastery by employees directly contribute to improved individual and institutional performance (Firdaus et al., 2021; Nugroho et al., 2025). Digital technology serves not only as an administrative tool but also as a control mechanism, enabling faster, more transparent decision-making and in the public sector, it has been shown to improve service quality through more efficient, results-oriented work processes.

From a global perspective, improving organizational performance in the digital era depends on the synergy between technology investment, human resource readiness, and change management (Hanelt et al., 2021). Developing agile, collaboration-oriented, and data-driven digital operating models is crucial for strengthening organizational resilience to external disruption. By integrating the technological, human, and strategic dimensions, organizations can optimize work processes while creating sustainable strategic value (Gierten & Lesher, 2022; Hanelt et al., 2021; Lin et al., 2025).

A literature review for the 2020–2025 period thus confirms that digital capabilities play a dual role: as a catalyst for efficiency and a driver of organizational innovation. Performance improvement no longer rests solely on formal structures or policies but on an organization's ability to learn and adapt digitally. Investment in digital capability development encompassing both infrastructure and human resource competencies is therefore a key prerequisite for modern organizations to survive and thrive amid the complexities of the digital economy (Almuqrin et al., 2024; Capgemini Research Institute, 2021; McKinsey & Company, 2021).

Organizational strategy and transformation (2020–2025)

The fourth theme emphasizes the need to restructure organizational strategies in alignment with the demands of digitalization and an increasingly complex global business environment. Digital transformation is no longer understood simply as the application of technology; it now encompasses a comprehensive reconstruction of an organization's strategy, structure, and business model. Modern organizations need to undertake strategic redesign that integrates digital technology, process innovation, and structural adjustment to become more flexible and responsive, while balancing technology orientation with human resource readiness (Verhoef et al., 2021). An effective transformation strategy must connect a company's digital vision with concrete operational initiatives, including adopting agile work models, implementing collaborative systems, and strengthening digital competencies throughout the organization (Deloitte Insights, 2023).

Digital restructuring cannot be separated from organizational governance. A robust governance structure is needed to reduce internal resistance to change and ensure alignment among policy, technology, and organizational culture. Organizations that implement a digital governance model grounded in transparency and participation achieve greater success in maintaining long-term consistency in their digital strategy (Shahzad et al., 2025). Transformation strategies also require innovation in work models and collaborative governance, as this approach accelerates innovation, reduces inter-departmental silos, and creates an adaptive work environment. Organizations must strengthen cross-functional coordination through networked structures that enable faster information flow and more decentralized decision-making (Joseph & Sengul, 2024; Saeed et al., 2023).

In the context of policy and competitiveness, a successful digital transformation strategy must be supported by an adaptive governance approach policies that are flexible, iterative, and responsive to technological and market changes (Gierten & Lesher, 2022). Adaptive governance enables public and private organizations to continuously adjust operational policies and procedures in response to external dynamics. In line with this, strategic innovation in the Indonesian education sector should focus on establishing a more agile, results-oriented organizational structure and implementing collaborative work systems that leverage digital technology to increase efficiency and transparency (Safi'i et al., 2025). The success of strategic digital transformation also depends on an organization's ability to measure its digital maturity level and manage the risks of change (Capgemini Research Institute, 2021; Cosa & Torelli, 2024). Digital maturity assessment identifies the extent to which an organization is ready to implement new technologies and adapt them to its existing operational model, while risk management addressing system failures, employee resistance, and misalignments between strategy and organizational culture remains a critical consideration in institutional digital planning.

The literature thus indicates that effective organizational strategy and transformation in the digital era encompass three main dimensions: adaptive and iterative policies (Deloitte Insights, 2023), digital maturity assessment (Capgemini Research Institute, 2021; Cosa & Torelli, 2024), and transformation risk management (Capgemini Research Institute, 2021). Research on organizational models and structures for 2020–2025 confirms that the digital transformation strategy is not only a technology agenda but also a leadership and organizational policy agenda. Sustainable implementation requires synergy between leadership vision, organizational cultural readiness, and an inclusive governance structure. With an adaptive, data-driven approach, organizations can achieve a balance between operational efficiency and continuous innovation amid global digital disruption (Cosa & Torelli, 2024; Deloitte Insights, 2023; Shahzad et al., 2025; Verhoef et al., 2021).

Conceptual Model of Organizational Structure Transformation in the Digital Era

Figure 3 presents a conceptual model of organizational structure transformation in the digital era. It maps four main thematic clusters shaping contemporary organizational development: structural redesign, digital culture and leadership, human resource digital capabilities, and strategic transformation. Each cluster highlights specific mechanisms such as agile structures, a culture of innovation, skills reskilling, and digital maturity that collectively enable organizations to adapt to technological and environmental disruption. The framework demonstrates that successful organizational transformation requires an integrated alignment of structure, culture, capabilities, and strategic governance.

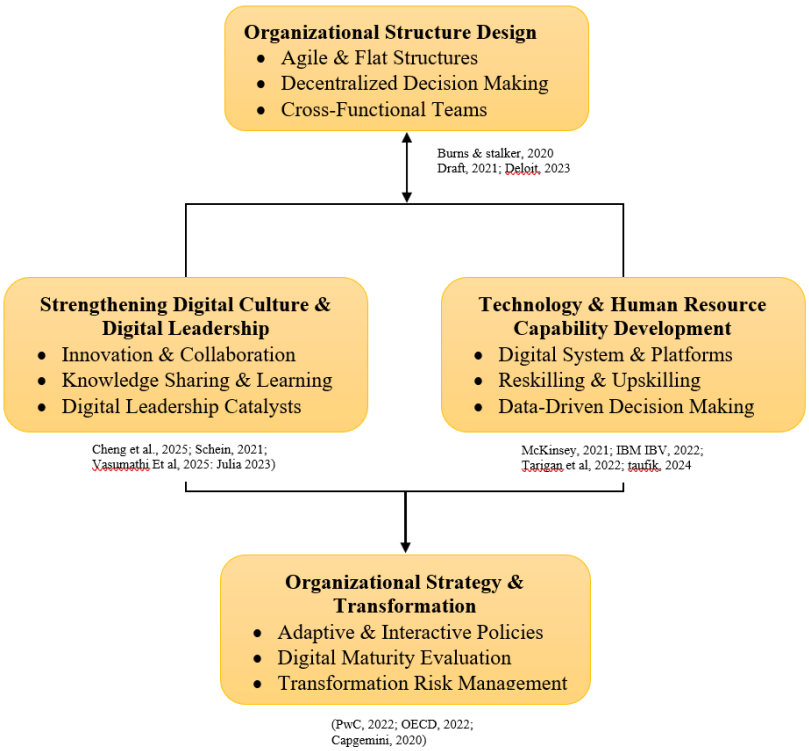

Figure 3. Conceptual Model of Organizational Structure Transformation in the Digital Era

Organizational structure design

Digital transformation in 2020–2025 has brought fundamental changes to organizational design and governance. Organizations can no longer rely on rigid hierarchical structures, as the pace of technological change and market complexity demand more agile, decentralized, and collaborative forms (Daft, 2021). Redesigning organizational structures has thus become a key element of ensuring competitiveness and agility in the digital era. Three dimensions characterize the shift in modern organizational structures during this period: Agile & Flat Structures, Decision Decentralization, and Cross-Functional Teams each representing the direction of organizational design change toward a more adaptive, innovative, and collaboration-oriented model.

Agile and flat structures mark a shift from traditional hierarchical systems to organizations with fewer bureaucratic layers, greater horizontal communication, and faster decision-making. Flat structures accelerate information flow and strengthen individual accountability, as employees are given greater space to make decisions based on real-time data (Daft, 2021). Globally, agile structures support organizational flexibility by forming small autonomous units squads or cells that work independently yet remain interconnected within a digital ecosystem (Vaszkun & Sziráki, 2023). This model encourages continuous experimentation and innovation through rapid iteration. In Indonesia, implementing agile structures in the manufacturing industry has been shown to impact innovation speed positively and inter-unit coordination effectiveness (Li, 2024), while flatter organizational structures also support faster decision-making and more efficient information system integration in the public and education sectors (Fitriani & Nurleli, 2023).

The second dimension is decentralization of decision-making a shift in authority from top management to operational units closer to information sources and customers. Decentralization in the public sector accelerates decision-making and improves service effectiveness by enabling local units to adapt policies to their specific context (Khisa, 2020). It is further recognized as a crucial pillar of adaptive governance a policy approach that is flexible, iterative, and responsive to external changes (Gierten & Lesher, 2022). In Indonesian higher education, decentralized models help faculties and study programs develop autonomous strategies tailored to their own academic needs, resulting in greater coordination effectiveness and shorter decision-making times (Ridwan & Sumirat, 2021). These findings are consistent with evidence from industrial organizations, where decentralization strengthens digital responsiveness

the organization's ability to react quickly and appropriately to technological and market dynamics (Shahzad et al., 2025).

The third dimension is cross-functional teams, a hallmark of modern digital-era organizations. Cross-functional teams combine expertise from various departments to solve problems collaboratively and accelerate innovation. They strengthen strategic flexibility and organizational innovativeness, making the innovation process more integrative and knowledge-driven (Lin et al., 2025), while also enabling continuous skill transfer and learning across units. Organizations with cross-functional networks gain a competitive advantage by connecting talent across fields to achieve common goals (Saeed et al., 2023), improving horizontal coordination and reducing inter-departmental fragmentation. In the Indonesian context, cross-functional teams in the education sector accelerate curriculum innovation, strengthen collaboration between units, and increase the effectiveness of campus digitalization policy implementation (Safi'i et al., 2025).

Strengthening digital culture and digital leadership

Organizational transformation in the digital era depends not only on technology adoption but also on the capacity to build a digital culture and leadership that encourages innovation, collaboration, and continuous learning. Digital leadership acts as a catalyst for change creating strategic direction, facilitating behavioral transformation, and fostering a technology-based work culture. It contributes significantly to transformation success by cultivating an innovative culture and enhancing team digital capabilities (Cheng et al., 2025). The relationship between organizational culture and digital transformation is reciprocal: an innovative culture accelerates technology adoption, while digitalization in turn strengthens collaborative practices and cross-functional learning (Akman et al., 2024). Three dimensions are key to strengthening digital culture and leadership in the 2020–2025 literature: Innovation & Collaboration Mindset, Knowledge Sharing & Learning, and Digital Leadership Catalyst.

The Innovation & Collaboration Mindset dimension highlights the importance of shifting toward an innovative and collaborative orientation. Digital organizations require every individual to think adaptively, embrace change, and engage proactively with disruption. An organizational culture that supports innovation is built on values of openness, trust, and the empowerment of individuals to experiment (Butt et al., 2024). Leadership that encourages open dialogue and grants teams autonomy creates a collaborative work climate that accelerates innovation (Butt et al., 2024). In educational organizations, digital leadership helps instill a digital mindset that strengthens innovation and cross-unit collaboration (Nuryadin et al., 2023). Organizations with a collaborative culture exhibit greater agility through faster communication and decision-making (Kolbjørnsrud, 2024), and cross-functional collaboration becomes the mechanism through which technology, strategy, and innovation are simultaneously integrated across all organizational levels.

Knowledge Sharing & Learning emphasizes continuous learning and knowledge sharing as the core of digital culture. In a digital organizational ecosystem, knowledge is a strategic asset that must be managed openly and collaboratively. Organizations with high levels of knowledge sharing adapt more quickly to change by transferring expertise across functions and generations (Akman et al., 2024), thereby strengthening trust and connectedness among individuals. Digital leadership plays a crucial role in building a learning organization by creating reward systems, digital training, and technology-based mentoring (Cheng et al., 2025). Learning thus becomes a dynamic process enabled by online collaboration, internal learning communities, and data-driven platforms no longer confined to formal training. Organizational support for digital learning and employee empowerment further enhances employee engagement and performance (Mollah et al., 2024). In Indonesia's education and public sectors, knowledge sharing through digital platforms helps strengthen cross-unit coordination and encourages innovation in public services (Safi'i et al., 2025).

The Digital Leadership Catalyst dimension emphasizes the role of digital leadership as a driver of organizational change and transformation. Digital leaders are not merely technology users but strategic directors capable of integrating a digital vision across all aspects of the organization. They act as transformational enablers, building a culture of trust, encouraging experimentation, and balancing control with flexibility (Cheng et al., 2025). Effective digital leadership is further characterized by the ability to inspire, communicate across boundaries, and foster collective commitment to the organization's digital vision (Akman et al., 2024). Beyond directing strategy, digital leaders play a catalytic

role in connecting technology and people, creating synergies between artificial intelligence and social intelligence (Kolbjørnsrud, 2024), and serving as a bridge between business strategy and technology implementation to ensure that digital adoption is inclusive, ethical, and value-oriented. As a result, organizations with strong digital leadership demonstrate a greater ability to manage digital risks and accelerate innovation, driven by a clear direction for change (Hanelt et al., 2021). In the educational context, digital leadership also serves as a key driver of work culture reform toward an agile and technology-adaptive mindset (Nuryadin et al., 2023; Safi'i et al., 2025).

Development of technological capabilities & human resources (2020–2025)

Digital transformation in the 2020–2025 period requires organizations to do more than adopt new technologies they must develop the digital capabilities and human resources needed to optimize them. Technology and HR capabilities are key pillars for successful organizational transformation amid rapid business change. Organizations with high levels of digital maturity demonstrate better operational efficiency, stronger innovation capabilities, and greater business resilience (Capgemini Research Institute, 2021; McKinsey & Company, 2021). These outcomes, however, can only be realized when technology investments are balanced with the strengthening of employee digital competencies, a culture of continuous learning, and data-driven decision-making. Three dimensions are the focus of the 2020–2025 literature in this area: Digital Systems & Platforms, Reskilling & Upskilling, and Data-Driven Decision Making.

Digital Systems & Platforms addresses the importance of integrating digital systems and platforms to support organizational efficiency, coordination, and innovation. Systems such as Enterprise Resource Planning (ERP), Learning Management Systems (LMS), and data analytics platforms serve as the primary foundation for building data-driven and collaborative organizations. Organizations that utilize digital platforms and artificial intelligence demonstrate significant improvements in strategic flexibility and innovation, as data can be managed in an integrated manner across all business lines (Lin et al., 2025). Agile digital operating models further accelerate cross-functional work processes, improve inter-unit connectivity, and strengthen digital competitiveness (Hanelt et al., 2021). In the public and education sectors, the adoption of digital systems has been shown to improve service efficiency, coordination effectiveness, and decision-making transparency (Almuqrin et al., 2024; Nugroho et al., 2025), and the use of platforms such as e-governance or academic management systems has proven effective in improving operational performance and public services.

HR Reskilling & Upskilling focuses on developing human resource competencies through targeted training programs. Digital transformation creates new demands for analytical skills, data literacy, and technological mastery that differ markedly from conventional work models. Without increasing HR capacity, technology investments will not deliver optimal value. Modern organizations must build a digital learning ecosystem to ensure the workforce can adapt to new technologies and remain relevant in the digital job market. Developing human resources in alignment with organizational values and culture is equally important for successful digitalization, particularly in the public sector (Fitriani & Nurleli, 2023). Sustainable digital training programs strengthen employee accountability and performance, and, in the educational context, reskilling lecturers and education staff is a strategic factor in supporting technology-based learning (Almuqrin et al., 2024; Safi'i et al., 2025). Mastery of digital applications and data analytics enables educators to design more adaptive and personalized learning systems.

Data-Driven Decision Making highlights the shift from intuition-based to data-informed decision-making. With the support of digital information systems and analytics, organizations can gain more accurate, real-time insights to inform business strategy and public policy design. Organizations with a data-driven culture demonstrate higher innovation capability, as strategic decisions are supported by empirical evidence and predictive analytics (Lin et al., 2025). Data intelligence has been recognized as a key driver of efficiency and competitive advantage in the digital era (Capgemini Research Institute, 2021), and organizations that successfully integrate data analytics into management processes show significant improvements in cost efficiency, strategic planning accuracy, and responsiveness to market changes (McKinsey & Company, 2021). In the public sector, the use of digital data in decision-making has also been shown to increase accountability and transparency in governance (Fitriani & Nurleli, 2023).

Organizational strategy and transformation (2020–2025)

Organizational transformation in the digital era requires a restructuring of business strategies and internal policies to align with technological dynamics and the ever-evolving demands of innovation. The literature consistently emphasizes that digital strategy is not solely focused on technology adoption but encompasses fundamental changes in governance, work patterns, and organizational policy direction (Deloitte Insights, 2023; Verhoef et al., 2021). This transformation requires a strategic approach that is adaptive, iterative, data-driven, and risk-oriented enabling organizations to respond to uncertainty and capitalize on opportunities arising from digital technological developments.

The first dimension is Adaptive & Iterative Policies, which emphasizes the formulation of flexible organizational policies that can evolve in response to external environmental changes and internal evaluation outcomes. Adaptive policies are a key element of building an agile organization, enabling strategies to be adjusted through iterative cycles informed by data and field practice (Deloitte Insights, 2023). They strengthen organizational responsiveness to technological disruption by prioritizing feedback loops and rapid prototyping to test policy effectiveness before widespread implementation (Verhoef et al., 2021). In this model, policies follow a continuous plan–do–check–act (PDCA) cycle updated based on evaluation results and organizational learning. An adaptive approach also accelerates internal innovation and reduces the risk of implementation failure in the early stages of transformation.

The second dimension is Digital Maturity Evaluation, which provides the basis for determining the direction and priorities of transformation. This evaluation assesses organizational readiness across technology, data, processes, human resources, and digital governance. An organization's digital maturity level reflects its ability to effectively integrate new technologies into business systems (Capgemini Research Institute, 2021), and organizations with high maturity typically have a focused technology investment strategy, efficient work processes, and an innovative culture that supports cross-functional collaboration. A measurable assessment enables management to define a transformation roadmap more accurately, identify gaps between current conditions and strategic targets, and prioritize results-oriented investments (McKinsey & Company, 2021). Maturity assessment also plays a crucial role in risk and compliance governance, helping organizations identify areas most vulnerable to digitalization failures or data security breaches (Cosa & Torelli, 2024). Digital maturity evaluation is thus not merely a technical measurement tool but a managerial instrument for ensuring alignment between digital vision and organizational capacity.

The third dimension is Transformation Risk Management, the foundation of a sustainable digital strategy. Digital transformation carries complex potential risks from technological failures and regulatory inconsistencies to human resistance to change requiring organizations to develop an integrated risk governance system from planning through implementation. A risk-informed strategy must be embedded in every digital project to maintain trust and sustainability (Cosa & Torelli, 2024). Transformation risks are not only technical; they also encompass social and cultural dimensions that influence employee acceptance of innovation. The level of risk is aligned with digital maturity: the lower the maturity, the higher the risks that must be mitigated (Capgemini Research Institute, 2021). Successful risk management in practice depends on strong governance and digital leadership that fosters a culture of trust and readiness for change (Shahzad et al., 2025).

The 2020–2025 literature review confirms that the success of organizational transformation strategies in the digital era depends heavily on the ability to integrate adaptive policies, digital maturity assessments, and a comprehensive risk management system. This holistic approach enables organizations not only to survive in an era of disruption but to transform into innovative, efficient, and future-oriented entities. By integrating these three dimensions, organizations can ensure that each digitalization step is directed, measurable, and sustainable making digital strategy a key driver of competitive advantage in the technology-driven global era (Capgemini Research Institute, 2021; Cosa & Torelli, 2024; Deloitte Insights, 2023; Gierten & Lesher, 2022; McKinsey & Company, 2021).

Organizational Strategies and Approaches to Implement Digital Transformation in Their Structure and Operational Model

RQ3: What organizational strategies and approaches are used to implement digital transformation in their structures and operational models?

Based on the 2020–2025 literature review, organizations across various sectors are implementing digital transformation through four main, integrated approaches. First, organizations are redesigning their structures toward more agile, flat, and hybrid models to reduce hierarchies, accelerate communication flows, and enhance cross-functional collaboration (Daft, 2021; Deloitte Insights, 2023; Kulichyova et al., 2025; Maulana et al., 2022). Second, strengthening a digital culture and transformational leadership are key to creating an innovative and adaptive work environment, where leaders act as catalysts for change and drivers of continuous learning (Akman et al., 2024; Butt et al., 2024; Cheng et al., 2025; Mollah et al., 2024; Nuryadin et al., 2023). Third, organizations develop technological and human resource capabilities through investments in cloud platforms, AI, ERP, and big data, along with reskilling and upskilling programs to enable human resources to adapt to the demands of digitalization (Hanelt et al., 2021; Li, 2024; McKinsey & Company, 2021). Fourth, organizations strengthen transformation governance and digital maturity evaluation to ensure the direction of change remains measurable and sustainable through adaptive policies, transformation risk management, and digital maturity measurement (Capgemini Research Institute, 2021; Cosa & Torelli, 2024; Gierten & Lesher, 2022; Shahzad et al., 2025). Together, these four strategies demonstrate that digital transformation is not simply a technological shift but a reengineering of systems, culture, and leadership to create a resilient, innovative, and competitive organization in the digital era.

Challenges in organizational structure transformation

Transforming organizational structures in the digital era is a complex process involving not only technological and system changes but also human, cultural, and infrastructure readiness. A review of the 2020–2025 literature identifies three key challenges: cultural resistance and mindset shifts, skills gaps, and limitations in technological infrastructure.

1. Cultural Resistance and Mindset Change

Changes in organizational structure often generate internal resistance due to role uncertainty, fear of losing control, and insecurity about new technologies. Organizational culture is frequently the greatest obstacle to transformation, as long-established values, norms, and work behaviors are difficult to change quickly (Butt et al., 2024). Organizations oriented toward hierarchy and control tend to be slow to respond to environmental changes. Without a culture of innovation and risk-taking, they will struggle to adapt to digital disruption (Akman et al., 2024). The importance of an open mindset is equally emphasized, so that employees become not only implementers but agents of change (Nuryadin et al., 2023). In the public and education sectors, bureaucratic culture and conservative work patterns remain major barriers to the implementation of adaptive structures (Firdaus et al., 2021; Maulana et al., 2022).

2. Human Resource Competency Gap (Skill Gap)

Digital transformation demands new skills that differ from conventional work models. Digital literacy, data analysis, virtual collaboration, and adaptive competencies are essential for the digital workforce. Most employees in educational institutions lack adequate digital skills, either in using management platforms or in data analytics (Almuqrin et al., 2024). Approximately 67% of global organizations face a significant skills gap in implementing digital technology effectively (McKinsey & Company, 2021). Without competency enhancement through reskilling and upskilling, transformation will only result in an imbalance between technology and human capabilities. Human resource readiness is ultimately a determining factor in the successful adoption of new structures, as technology cannot have an optimal impact without adequate human capacity (Li, 2024).

3. Limitations of Technology Infrastructure

Beyond human and cultural factors, limited technological infrastructure poses a major challenge, particularly in the public and education sectors where integrated digital systems — encompassing data management, cybersecurity, and collaborative platforms — are often absent. In Indonesian educational institutions, technology implementation remains largely confined to administrative use, failing to address strategic dimensions such as data-driven performance analysis (Safi'i et al., 2025). Weak inter-unit integration and limited information systems have similarly been identified as key factors inhibiting the effectiveness of public bureaucracy (Firdaus et al., 2021), resulting in slow and inefficient structural transformation.

Collectively, these three challenges demonstrate that the success of organizational structure transformation depends not only on technological innovation but equally on people and organizational culture. Without a shift in mindset, increased digital competency, and adequate infrastructure support, transformation will stall at the technical adoption stage without producing fundamental changes in the way the organization works (Akman et al., 2024; Almuqrin et al., 2024; Butt et al., 2024; Hanelt et al., 2021; McKinsey & Company, 2021). A comprehensive change management strategy that integrates culture, human resources, and technology is therefore essential for organizations to adapt effectively and sustainably in the digital era.

Risks faced by the organization

Organizations also face significant risks in the transformation process. One is the risk of fragmented coordination, which can arise from flatter and more autonomous structures. While such structures increase flexibility and responsiveness, the absence of clear governance and consistent operational standards can weaken cross-divisional coordination impeding information flow, slowing decision-making, and leading to duplication of work (Daft, 2021). Organizations also face data security and privacy risks: reliance on data for decision-making and innovation creates vulnerability to cyberattacks, information leaks, and privacy breaches, with potential consequences including financial loss, reputational damage, and legal compliance issues (Saeed et al., 2023).

A further risk is failure in digital transformation. Approximately 70% of digital transformation initiatives fail due to misalignment among organizational strategy, leadership, and change management. This typically occurs when organizations focus on technology implementation without integrating it with business objectives, organizational culture, and employee readiness (Capgemini Research Institute, 2021). Contributing factors include insufficient top management support, ineffective communication, employee resistance to change, and limited digital skills across the organization. As a result, transformation projects can stall at the technical adoption stage without producing fundamental changes in work processes, operational models, or organizational behavior. To mitigate this risk, organizations need a comprehensive change management strategy encompassing clear communication, stakeholder engagement, employee training and capacity building, and continuous strategy evaluation and adjustment.

Long-term implications for the organization

Transforming organizational structures in the digital era carries significant long-term implications. One of the most important is increased flexibility and responsiveness: organizations that successfully transform become more adaptive, collaborative, and innovative, enabling them to respond quickly to market dynamics and changes in the business environment. This flexibility also allows organizations to adjust internal processes, optimize resources, and seize new opportunities more effectively (Cheng et al., 2025; Deloitte Insights, 2023). Digital transformation will also drive changes in leadership and governance models: traditional command-and-control leadership will shift toward a connect-and-collaborate model that emphasizes employee empowerment, transparency, and data-driven decision-making, enabling more effective collaboration, greater engagement, and stronger internal innovation (Mollah et al., 2024; Nuryadin et al., 2023).

Transformation also shapes the formation of a continuous learning culture. Organizations will increasingly emphasize lifelong learning through digital platforms, internal competency enhancement schemes, and training programs that adapt to business needs and emerging technologies. This culture not only enhances employee skills and capabilities but also strengthens the organization's overall competitiveness (Hanelt et al., 2021). The long-term implication of digital transformation is thus the creation of more resilient, innovative organizations anchored in collaborative leadership, adaptive processes, and a culture of continuous learning that are better equipped to face the challenges ahead.

The literature review demonstrates that organizational structure transformation in the digital era is not simply the application of technology but a systemic change encompassing structure, culture, leadership, and human resource capabilities. Shifting from a hierarchical to a more agile, flat structure enables organizations to be more adaptive, responsive, and decisive amid complex, rapidly changing digital dynamics (Daft, 2021; Deloitte Insights, 2023; Kulichyova et al., 2025). A flatter structure encourages cross-functional collaboration and accelerates information flow, but its effectiveness depends heavily on clear governance and cross-team coordination mechanisms.

Structural change alone, however, is not sufficient. Organizational culture is the key foundation for successful transformation: a culture that supports innovation, collaboration, and continuous learning is a determining factor in the sustainability of change. Organizations that fail to build a digital culture often face resistance, stagnation, or cosmetic technology adoption without fundamental changes in work practices (Akman et al., 2024; Butt et al., 2024; Mollah et al., 2024).

Digital leadership is equally critical in orchestrating transformation. Leaders must act as catalysts for change — managing resistance, facilitating collaboration, and ensuring alignment between digital strategy and organizational goals (Cheng et al., 2025; Nuryadin et al., 2023). Effective leadership also empowers employees through data-driven decision-making and innovative initiatives, ensuring that transformation does not rest on any single individual. Human resource capabilities are no less important: continuous training, reskilling, and upskilling must be implemented to equip employees with the skills needed to operate technology, analyze data, and contribute to innovation (Almuqrin et al., 2024; Li, 2024; McKinsey & Company, 2021). Key challenges in this context include cultural resistance, limited digital competency, reliance on individual leadership, and digital risks such as cybersecurity, privacy, and ethical data use.

Organizational digital transformation must therefore be understood as a long-term process requiring a strategic, iterative, and holistic approach. Its success depends on the synergy among technology, culture, leadership, and human resource capabilities, within a framework of sustainable change governance. Organizations that can integrate all these aspects will be more resilient, adaptive, and competitive in facing evolving digital challenges, and better positioned to maximize innovation opportunities (Cosa & Torelli, 2024; Deloitte Insights, 2023; Saeed et al., 2023).

CONCLUSION

The transformation of organizational structures in the digital era shows a strong trend toward more flexible, collaborative, and technology-driven models a shift that is not merely technological but systemic, encompassing structure, culture, leadership, human resource capabilities, and governance. The success of this transformation rests on three integrated components: structural redesign through an agile approach and decentralized decision-making, which enables organizations to respond quickly to environmental changes and enhance cross-functional collaboration; the strengthening of digital culture and leadership to encourage innovation, continuous learning, and data-driven collaboration, with digital leadership acting as a catalyst for change, managing resistance, and ensuring alignment between digital strategy and organizational goals; and the development of technological and human resource capabilities through digital platforms, integrated data systems, and workforce reskilling and upskilling programs, ensuring effective technology utilization and enhanced digital competency. The success of transformation ultimately depends on an organization's ability to consistently and sustainably integrate all three components, so that change produces not merely technical adjustments but fundamental shifts in work processes and organizational culture. To advance this field, future research is encouraged in four directions: developing more standardized measures of digital maturity across sectors for more accurate benchmarking; conducting longitudinal studies to capture the long-term dynamics of transformation and its impact on performance, innovation, and adaptability; undertaking cross-country or cross-cultural comparative analyses to explore how socio-cultural context shapes the implementation of digital structures, culture, and leadership; and building digital organizational performance evaluation models that assess not only efficiency and productivity but also innovation, organizational resilience, and long-term sustainability.

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