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A Literature Review : Digital Leadership Style Analysis

Ahmat Mu Arif[1*], Andi Indriani Ibrahim[2], Syahbudin Adam [3], Nurrahman Afriansyah[4], Serli MT Ngole[5], Nurwahyuni S. Boimin[6], Safitra Ramadani H. Patolo[7], Nurjana Umar Dapu[8]
[1,4,5,6,7,8] Students of the Management Study Programme at Tadulako University PSDKU Tojo Una-Una
[2,3] Senior Lecturer in Leadership, Management Study Programme, Tadulako University

Article Info	ABSTRACT

The rapid advancement of digital technology compels every organiza tion to adapt in order to remain sustainable and is not merely about adopting new technologies but also about fundamental changes in work culture, leadership becomes a key determinant of transformation success. This collection of studies explores how effective leadership serves as the main driving force of digital change across various sectors, including education. The reviwed Studies aim to analyze the critical roles and strategies of leadership in promoting the success of digital transformation across different domains. Futhemore, thhis reviem seeks to identify thhe most suitable leadership models and strategic actions needed for organizations to resmain resilient, competitive, and innovatitive,and innovative in the era of technological disruption. Most of the studies employ qualitative descriptive approaches and literature reviews (including bibliometric analyses) to digital leadership, strategic leadership, change management, and innovative organization cultures. Overal, the findings indings indicate that transformational and strategic leadership play central roles in achieving successful digital transformation. Leaders in the digital era are expected to: Possess strong digital capabilities,including digital literacy, data drive decision-making, and virtual communication skills.Foster an innovative culture by creating collaborative, change-oriented, and results-driven work enviromens.Manage organizational change adaptively, enabling smooth transitions toward modern systems while minimizing resistance among members.In the education sector, digital leadership facilitates the intrgration of technology into learning processes and, scool administrations, leaders play a crucial role in enhancing transparency, accountability, and the efficiency of public services. Meanwile, in business and e-business sectors, visionary leadership becomes the key driver of particularly for smess undergoing digital transformation. Digital transformation is not merely a technological shift but also a transformation in mindset and arganizational behavior. Success in the digital era depends on leaders' ability to adapt, innovate, and empower human resources to face emerging challenges and seize new opportubities.

Corresponding author:

Ahmat Mu Arif
Students of the Management Study Programme at Tadulako University PSDKU Tojo Una-Una
Email: arif8023455@gmail.com

INTRODUCTION

The organisational landscape around the world is currently under massive transformative pressure, driven by the acceleration of digital technology. This phenomenon, often referred to as digital transformation disruption, has forced companies, governments and educational institutions to completely revise their operational models, not only to survive, but to remain relevant in the future.

In this dynamic and uncertain context, leadership emerges as a strategic variable that determines the direction of adaptation. Leadership in this era is no longer sufficient with conventional supervision. Leaders are required to be visionaries and true agents of change. Evans E.W. Tulungen, David P.E. Saerang, and Joubert B Maramis (2018), through qualitative literature studies, emphasise that the role of digital

leadership is crucial, especially in the government sector, to utilise information and communication technology (ICT) and Big Data in decision-making and service improvement. This demand is reinforced by Jihan Maulidiya et al. (2025), who in their Qualitative Literature Study concluded that strategic leaders must be able to formulate long-term visions and make data-based decisions in the midst of a rigid bureaucratic environment. Synergy between Transformational Leadership and Innovation

The most widely 2091rganizati leadership model for driving innovation is transformational leadership (TL). TL is seen as the key to stimulating innovative behaviour among employees in the era of public service 2091rganizational, as concluded by Intan Nuraeni et al. (2025) in their study. Empirical evidence of this synergy is presented by Sri Maryati and Muhammad Ichsan Siregar (2022). Through quantitative research using the SEM-PLS method on SMEs, they found that leaders' encouragement of ICT innovation acts as a significant mediator in improving 2091rganizational performance. The consistency of these findings is reinforced at the micro level; Yeremia Niaga Atlantika et al. (2025) in their Qualitative Descriptive research on business owners in border areas, emphasise that KT is very important as an agent of change that inspires digital adoption through vision and human resource empowerment.

Change Management and Digital Culture Formation

Digital transformation involves social, cultural, and structural adjustments. Given that resistance is an inevitable challenge, change management strategies must be implemented proactively and participatively. Devi Alhayatun Nufuz et al. (2025), based on descriptive qualitative data from interviews and observations, found that strategies must focus on building a new work culture and adaptive leadership to achieve organisational resilience. Furthermore, in the public sector, Rhaysya Admmi Habibani and Aldri Frinaldi (2025), through qualitative literature studies, recommend strengthening digital leadership and increasing the digital literacy of human resources as key strategies for creating an open, collaborative, and results-oriented organisational culture. In addition, leadership must also be able to adapt to a workforce dominated by millennials/Generation Z, who, according to digital communication patterns, as concluded by Meydita Asima Megarani Simbolon (2023) in a literature study on leadership communication.

Research gaps and sectoral implications

The complexity of this theme is reflected in the diversity of methodologies used, ranging from quantitative to bibliometric analysis. Erna Kasumawati (2023), in a bibliometric study of 455 articles, identified a fundamental gap, namely the lack of in-depth research on digital leadership and school operational management.

Responding to the needs of this sector, Siti Nurjanah et al. (2024), through a qualitative literature study, formulated three main strategies for school leaders: research on digital skills, integration of technology into the curriculum, and strategic cooperation with industry to improve the competitiveness of graduates. This effort is supported by Rahmawati Idrus et al. (2024), who developed a conceptual framework of Digital Culture Leadership for continuous improvement in primary education.

Purpose and Contribution of the Literature Review

Given the large number of scattered findings and the diversity of contexts studied, this literature review aims to conduct an in-depth synthesis to bridge cross-sectoral and methodological insights. This literature aims to conduct an in-depth synthesis to bridge cross-sectoral and methodological insights. Specifically, the objectives of this study are:

1. To synthesise models and characteristics of Digital and Transformational Leadership that have been proven effective based on empirical and conceptual evidence to drive performance and innovation.
2. To identify and formulate relevant and proven change management and cultural innovation strategies that support organisational digital transformation.
3. To provide a comprehensive conceptual framework as a practical guide for leaders and policymakers in Indonesia.

METHOD

This study utilised a systematic literature review (SLR) approach based on primary data from 20 academic journals that had been mapped, published between 2018 and 2025. The analysis process involved thematic mapping to group the results based on objectives, data collection methods (including literature studies, quantitative surveys, qualitative interviews, and bibliometrics), and the main implications found by the researchers. The use of the SLR method aims to produce an integrated, valid, and academically substantial synthesis of the various sources that have been collected.

RESULTS

A systematic analysis of 20 journals published between 2018 and 2025 revealed three key thematic pillars that are crucial to an organisation's success in facing digital transformation. These findings were obtained through various methodologies, ranging from qualitative and quantitative studies to bibliometric analysis, which provided a strong basis for synthesis.

Table 1. Characteristics of the Articles Analysed

No	Journal Title/Country	Research Objective	Design & Data Collection Methods	Participants/ Sample	Key Findings / Implications
1	Analisis Gaya Kepemimpinan Transformasional dalam Mendorong Perilaku Inovatif Pegawai pada Digitalisasi Pelayanan Publik. Indonesia	Analysing the role of KT in encouraging employee innovation in the era of public service digitalisation.	Library Research. Analysis of 27 journal articles/books (2019–2024).	Literature Study (Journal Articles & Books)	KT is a vital agent of change; it is necessary to overcome psychological barriers, conventional leadership, and rigid bureaucracy.
2.	Analisis Perubahan Kepemimpinan di Era Perkembangan Digital yang Pesat pada Pemasyarakatan. Indonesia	Analysing shifts and demands in leadership styles in correctional institutions due to digital developments.	Literature Review.	Literature Study (Journal Articles)	Leaders must shift to a collaborative style, master technology, and strengthen *soft skills* for organisational adaptation.
3.	Kepemimpinan Strategik dalam Organisasi dan Pemerintahan di Era Digital. Indonesia	Examine the roles, challenges, and relevant strategies of strategic leadership.	Qualitative (Literature Study). Review of the latest scientific sources.	Literature Study (Various Scientific Sources)	Leaders must have a long-term vision, make data-driven decisions, and be able to build a culture of innovation.
4.	Analisis Efektifitas Kepemimpinan Transformasional dalam Penetapan Kebijakan Organisasi di Era Digital. Indonesia	Analysing the effectiveness of KT in the context of organisational policy-making in the digital age.	Descriptive Analytical (Literature Review). Collecting and reviewing literature.	Literature Review	KT is a necessity for modern organisations and should be at the core of digital policy-making strategies.
5.	Evolusi Gaya Kepemimpinan dalam Era Digital. Indonesia	Analysing the evolution of leadership styles from traditional to digital.	Literature Review.	Literature Review	Leadership must shift to a collaborative and technology-based model, focusing on driving innovation and communication skills.
6.	Kepemimpinan Digital dalam Pendidikan: Sebuah Analisis Bibliometrik. Indonesia	Mapping the development of research on the theme of *Digital Leadership* (DL) in the education sector.	Bibliometrics. Data from 455 articles from Google Scholar (2012–2022).	455 Journal Articles (Secondary Data)	There is a need for more in-depth research linking DL with school operational management (quality, digital supervision, etc.).
7.	Strategi Efektif Dalam Manajemen	Examine effective change management	Descriptive Qualitative. In-depth	Relevant Informants within the	Change management must be proactive and participatory; build a

No	Journal Title/Country	Research Objective	Design & Data Collection Methods	Participants/ Sample	Key Findings / Implications
	Perubahan: Membangun Ketahanan Organisasi Di Era Digital. Indonesia	strategies to build organisational resilience.	interviews, observation, and documentation	Organisation (Primary)	new work culture and adaptive leadership to overcome resistance.
8.	Kepemimpinan di Era Digital dan Implementasinya di Lembaga Pendidikan. Indonesia	Analysing the role and implementation of digital leadership in educational institutions.	Library Research.	Literature Study	Leaders must be visionary, future-oriented, caring, and proficient in technology for educational development.
9.	Pengaruh Gaya Kepemimpinan Transformasional Dan Budaya Organisasi Terhadap Kinerja Guru Di Era Digital. Indonesia.	Analysing the synergy between KT and organisational culture on teacher performance.	Literature Review.	Literature Review	Innovative KT and organisational culture are synergistic and essential in improving teacher performance and readiness to adapt to technology.
10.	Kepemimpinan Digital dalam meningkatkan kinerja organisasi peran Teknologi Informasi dan Komunikasi. Indonesia.	Testing the role of ICT innovation in mediating the relationship between leadership factors and organisational performance.	Quantitative (SEM-PLS). Survey with questionnaire.	SMEs (Small and Medium Enterprises)	Leaders must encourage ICT innovation because ICT has been proven to mediate and improve organisational performance.
11.	Analisis Peran Gaya Kepemimpinan Tranformasional Dalam Mendorong Inovasi E-Bisnis Perbatasan. Indonesia	Analysing the role of KT in promoting e-business innovation in border areas.	Qualitative descriptive. Data collection through interviews and observation.	6 Business owners in Bengkayang	KT serves as an agent of change that inspires digital adoption; the importance of vision and human resource empowerment.
12.	Konsep Komunikasi Kepemimpinan Era Digital (Perspektif Al-Qur'an). Indonesia	Exploring the principles of leadership communication in the digital age based on the perspective of the Qur'an.	Qualitative (Library Research). Analysis of religious texts.	The Qur'an and Tafsir	Leaders can utilise the principles of the Qur'an to improve their communication skills and foster good relationships in the digital age.
13.	Kepemimpinan Budaya Digital dalam Pendidikan Dasar. Indonesia	Developing a conceptual framework for Digital Cultural Leadership (DCL) in Primary Education.	Conceptual/Framework. Concept and model analysis.	Conceptual Study	DCL (with 5 attributes: Vision, Collaboration, Management Skills, Literacy, Innovation, Transformation) is essential for the continuous

No	Journal Title/Country	Research Objective	Design & Data Collection Methods	Participants/ Sample	Key Findings / Implications
					improvement of primary schools.
14.	Inovasi Budaya Organisasi Publik Dalam Era Digital: Peluang Dan Strategi Implement's. Indonesia	Analysing strategies for implementing organisational culture innovation in the public sector in the digital age.	Descriptive Qualitative (Literature Study).	Literature Study	Main strategies: Strengthening digital leadership, improving the digital literacy of human resources, and reorienting work values to be more collaborative/open.
15.	Strategi Pemimpin Dalam Meningkatkan Daya Saing Siswa Lulusan Di Era Digitalisasi. Indonesia	Examine school leaders' strategies for improving the quality and competitiveness of graduates.	Qualitative (Library Research). Investigation of relevant documents.	Library Research	Leaders must focus on digital skills training, technology integration into the curriculum, and strategic partnerships with industry.
16.	Kepemimpinan Digital Menghadapi Persaingan Global Di Perguruan Tinggi. Indonesia	Explaining the role of KD in facing global competition in Higher Education (HE).	Conceptual/Literature Review.	Conceptual Study	HE leaders must be transformative and apply the 7 characteristics of KD (Responsibility, Innovation, Change, etc.) to remain superior and competitive.
17.	Strategi Menjadi Pemimpin Bagi Generasi Milineal di Era Komunikasi Digital. Indonesia.	Analysing effective leadership strategies for managing and leading Millennials.	Literature Review.	Literature Review	Leaders must be adaptive to digital media and integrate it into organisational communication patterns due to the dominance of Gen Z/Millennials.
18.	Transformasi Digital: Peran Kepemimpinan Digital. Indonesia	To determine the role of digital leadership in realising digital transformation in the government sector.	Qualitative (Literature Study).	Literature Study	KD is crucial; leaders must utilise ICT and *Big Data* for better decision-making and improved public services.
19.	Transformasi Kepemimpinan Kepala Sekolah pada Era Digital: Strategi Administrasi Pendidikan Berbasis Teknologi di Sekolah Menengah Pertama. Indonesia	Investigating the impact of principal leadership transformation in technology-based educational administration management.	Conceptual Analysis.	Conceptual Study	Principals must adapt and maximise the use of technology to manage the administrative and operational aspects of education digitally.

No	Journal Title/Country	Research Objective	Design & Data Collection Methods	Participants/ Sample	Key Findings / Implications
20.	Peran Dan Strategi Cerdas Kepemimpinan Dalam Tranformasi Era Digital. Indonesia	Describe the role and smart strategies of leadership in digital transformation.	Qualitative. Using a literature review and descriptive analysis approach.	Literature Review	Leadership must be transformational, visionary, and collaborative; smart strategies involve the use of analytical technology and team empowerment for innovation.

DISCUSSION

A systematic literature review covering 20 journals from 2018 to 2025 confirms that organisational success in the digital age is a direct function of leadership adaptation and organisational culture. This discussion presents a critical synthesis of the key findings that have been mapped out.

1. Leadership as a mediator of true transformation and innovation

The journals reviewed reached a strong consensus that transformational leadership (TL) and digital leadership (DL) are not merely preferences, but strategic necessities (Mira Veranita et al. 2024). A quantitative analysis (SEM-PLS) by Sri Maryati and Muhammad Ichsan Siregar (2022) provides important empirical evidence: leaders' encouragement of ICT innovation acts as a mediating variable in improving performance. This shows that leadership not only needs to adopt technology, but must actively mediate and inspire its use among employees.

The role of leadership as an agent of change is also highlighted qualitatively. Yeremia Niaga Atlantika et al. (2025) found that KT is crucial in inspiring the adoption of e-business in border areas, proving that the impact of KT transcends geographical and structural boundaries. This finding is supported in the public service sector, where Intan Nuraeni et al. (2025) emphasise the role of the four components of KT—ideal influence, inspirational motivation, intellectual stimulation, and individual consideration— in encouraging innovative behaviour among employees. In short, leaders in this era are required to have a long-term vision linked to technical capabilities and data-driven decision-making, a key characteristic of strategic leadership (Jihan Maulidiya et al., 2025).

2. Challenges of change management and digital culture formation

Transformation will never succeed without cultural adaptation and handling human resistance. Therefore, change management strategies must be a priority, as emphasised by Devi Alhayatun Nufuz et al. (2025). Their descriptive qualitative research concludes that strategies must be proactive and participatory, focusing on the formation of a new work culture to build organisational resilience. This need has resulted in specific demands for a different organisational culture in the public sector. Rhaysya Admmi Habibani and Aldri Frinaldi (2025) recommend strengthening the digital literacy of human resources and digital leadership to achieve a more open, collaborative, and results-oriented culture. This need is also driven by shifts in the workforce demographics. Meydita Asima Megarani Simbolon (2023) reminds us that the dominance of the Millennial/Z generation requires leaders to be adaptive to digital communication and master virtual interaction patterns, a challenge that is also highlighted by Febrian Rizky Anugrah Putra et al. (2025) in relation to managing virtual teams in correctional institutions. In conclusion, leaders must not only be proficient in technology, but also proficient in 'digital anthropology' - managing human interactions in an increasingly virtual environment (Aninditha S. Putri et al., 2025).

3. Research gaps and sectoral priorities in education

Although KT/KD theory is well developed, its implementation still shows gaps, especially in the education sector. A bibliometric analysis conducted by Erna Kusumawati (2023) explicitly identifies a gap between digital leadership and operational management in schools, a finding that points to a lack of applied studies linking the vision of digital leadership with daily school practices.

In response to this gap, recent studies offer concrete strategies. Siti Nurjanah et al. (2024) formulate three main strategies for school leaders: training students in digital skills, integrating technology into the curriculum, and strategic cooperation with industry. These strategies emphasise that school leaders must become technology role models (Raodatul Jannah et al., 2023) and focus on technology-based administrative efficiency (Heriyanita Rosmini et al., 2024) so that educational institutions not only adopt technology but truly transform.

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CONCLUSION AND RECOMMENDATIONS

Based on a synthesis of 20 journals published between 2018 and 2025, three key conclusions can be drawn:

1. KT/KD as a performance mediator: transformational and digital leadership are inevitable models and have been empirically proven to function as mediators of ICT innovation, directly contributing to improved organisational performance. Leaders must possess digital literacy, strategic vision, and data-driven decision-making capabilities.
2. The key to success lies in people and culture: The success of digital transformation is highly dependent on proactive and participatory change management that focuses on establishing a new work culture. This culture must be supported by improved digital literacy of human resources and adaptive communication patterns to lead the digital native generation.
3. Urgent need for applied research: Although the conceptual framework is strong, there is still a significant gap between digital leadership and its implementation at the operational level, especially in the education sector, which requires practical strategies to overcome day-to-day challenges in the field.

Based on the above conclusions, two sets of recommendations are proposed:

1. Practical recommendations (for organisations and policy makers)
    - Leadership development priorities: Organisations must integrate digital literacy skills, data-based decision making, and virtual team management into leadership development programmes (Bayu S. Bila & Aprizal Ahmad, 2025).
    - Invest in culture and human resources: Change management policies must focus on improving the digital literacy of human resources and creating a collaborative, open to mistakes (experimentation), and flexible work environment, not just purchasing new software (Rhaysya A. Habibani & Aldri Frinaldi, 2025; Devi A. Nufuz et al., 2025).
2. Academic recommendations (for further research)
    - Operational gap management: Further research should focus on quantitative applied studies or qualitative cases to fill the gaps identified by Erna Kusumawati (2023), particularly regarding the direct correlation between digital leadership styles and the effectiveness of operational management at the micro level (e.g., in schools or public service units).
    - In-depth Cross-Sectoral Analysis: Conduct a comparative study between the success of digital leadership in the private sector (SMEs) and the public sector (government/education) to identify the contextual variables that most influence the effectiveness of implementation

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