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Leadership in Digital Transformation of the Public Sector: A Systematic Literature Review

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Abstract: Digital transformation in the public sector is a complex and multidimensional change process in which leadership plays a central yet insufficiently mapped role in the literature. This study aims to systematically review the literature on leadership in public sector digital transformation to identify dominant leadership roles, success factors, and barriers. Using a Systematic Literature Review (SLR) approach based on the Scopus database with PRISMA selection flow, this study examined 33 articles from 398 initial records published between 2015 and 2025. Bibliometric analysis was conducted using VOSviewer to map research trends and clusters. The results reveal three main findings: (1) transformational, digital, and strategic leadership are the most dominant roles, forming a complementary triad model; (2) organizational culture, digital capability, and stakeholder engagement are the key determinants of transformation success; and (3) institutional-bureaucratic barriers, leadership capability gaps, and human resource resistance are the most critical challenges. This study concludes that the success of digital transformation in the public sector is not determined by technology investment alone, but by leadership maturity that integrates strategic vision, organizational agility, and public value simultaneously.

Keyword: Leadership, Digital Transformation, Public Sector, Systematic Literature Review, Digital Leadership.

INTRODUCTION

Digital transformation in the public sector has shifted from merely a policy option to a strategic obligation in modern governance worldwide. This large-scale application of technological innovation is driven by demands to improve service efficiency, fiscal transparency, and bureaucratic accountability to the public (Firmansyah et al., 2025). However, unlike the private sector, which is driven by market competition logic, restructuring and innovation adoption in government are always constrained by a rigid environmental complexity. Technology implementation in government is subject to strict

formal regulations, hierarchical bureaucratic structures, and pressure to fulfill dynamic public legitimacy (Alwaely et al., 2024).

Amid this institutional ecosystem complexity, leadership is identified as a critical determinant factor that distinguishes success from systemic failure in implementing digital transformation. Public sector leaders are now faced with increasing role expectations. They are required not only to understand the technical aspects of technology, but also to possess managerial capacity to manage shifts in organizational culture, build coalitions across stakeholders, and translate technology investment into real, inclusive, and measurable public value (Aldhi et al., 2025).

Although the urgency of leadership has been widely recognized, scholarly studies mapping how the locus and focus of leadership operate in the process of digital transformation in the public sector remain largely partial and fragmented. Most of the currently available literature focuses only on testing a single leadership style or limits itself to a particular national context, so a holistic map integrating leadership dynamics within the public digital ecosystem is not yet adequately available.

This study aims to fill this theoretical gap (theoretical gap) by conducting a Systematic Literature Review (SLR) of global literature published between 2015 and 2025 and indexed in the reputable Scopus database. The selection of this one-decade time span is based on the critical consideration that this period captures the major wave of evolution in the digital transformation agenda worldwide, including the accelerated emergency digitalization triggered by the COVID-19 pandemic.

Specifically, this study is designed to answer three research questions (Research Questions):

1. RQ1: How are leadership typologies and roles applied and conceptualized in digital transformation in the public sector?
2. RQ2: What multidimensional factors influence the success of digital transformation in the public sector?
3. RQ3: What are the critical barriers and challenges faced by bureaucratic leaders in executing the digital transformation agenda?

By answering these three questions, this study is expected to provide a dual contribution. Theoretically, this study synthesizes fragmented literature into an integrative “Leadership Triad Model.” Practically, this article offers strategic recommendations for policymakers and bureaucratic practitioners in designing a roadmap for government leadership capacity development.

METHOD

Research Design

This study uses a Systematic Literature Review (SLR) approach designed to produce a comprehensive, replicable literature synthesis free from subjective selection bias. This approach was chosen for its ability to systematically map the development of the literature and identify patterns of findings across studies that cannot be reached through conventional narrative literature reviews. The document search and selection flow in this study fully adopts the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol standard to ensure transparency and reproducibility of the selection process.

In addition to the SLR, this study complements its analysis through a quantitative bibliometric approach using VOSviewer software version 1.6.20. This bibliometric analysis is used to map the keyword co-occurrence network, identify research clusters, and track the temporal trends of topic development in the literature over time (Elmatsani et al., 2024).

Search Strategy

Primary data collection in the form of scientific articles was carried out through a structured search of the Scopus database in 26 May 2026. The search was conducted using the following Boolean search string composition:

(leadership AND "digital transformation" AND ("public sector" OR government OR "public administration" OR "public organization*" OR "public organisation*"))

The search was limited using Scopus's internal filters to original English-language scientific journal articles published between 2015 and 2025, within the subject clusters of social sciences, business, management, and public administration. This time-range restriction from 2015 onward is based on the logical consideration that the mass adoption of the digital transformation agenda in the public sector has only intensified over the past decade.

Inclusion and Exclusion Criteria

To avoid confirmation bias and maintain the thematic relevance and methodological quality of the articles reviewed, the inclusion and exclusion boundaries were explicitly established before the selection process began, as summarized in Table 1.

Table 1. Literature Selection Inclusion and Exclusion Criteria

Criteria	Inclusion	Exclusion
Document type	Original peer-reviewed journal articles	Conference proceedings, book chapters, editorials, and institutional technical reports
Time range	Published between 2015–2025	Published before 2015
Language & indexing	Written in English and indexed in Scopus	Written in a language other than English
Study focus	Addresses the public sector/government/public administration	Focuses exclusively on private commercial corporations
Content focus	Explicitly addresses the intersection of leadership and digital transformation	Leadership only briefly mentioned; duplicate records; technical papers on system implementation that lack organizational analysis

Study Selection Process (PRISMA Flow)

The study selection process was conducted in stages, in accordance with the PRISMA protocol. Of the 398 initial records identified through a search of the the Scopus database, 219 were excluded based on the filtered criteria leaving 179 records. During the abstract-screening stage, another 120 records were excluded because they did not explicitly address the intersection of leadership and digital transformation in the public sector, leaving 59 records for full-text review.

During the full-text review stage, 26 records were excluded because they did not provide enough discussion in specific that address the propose research question. Through this systematic screening process, 33 final articles were included in the qualitative synthesis for this study. The complete selection process is shown in Figure 1.

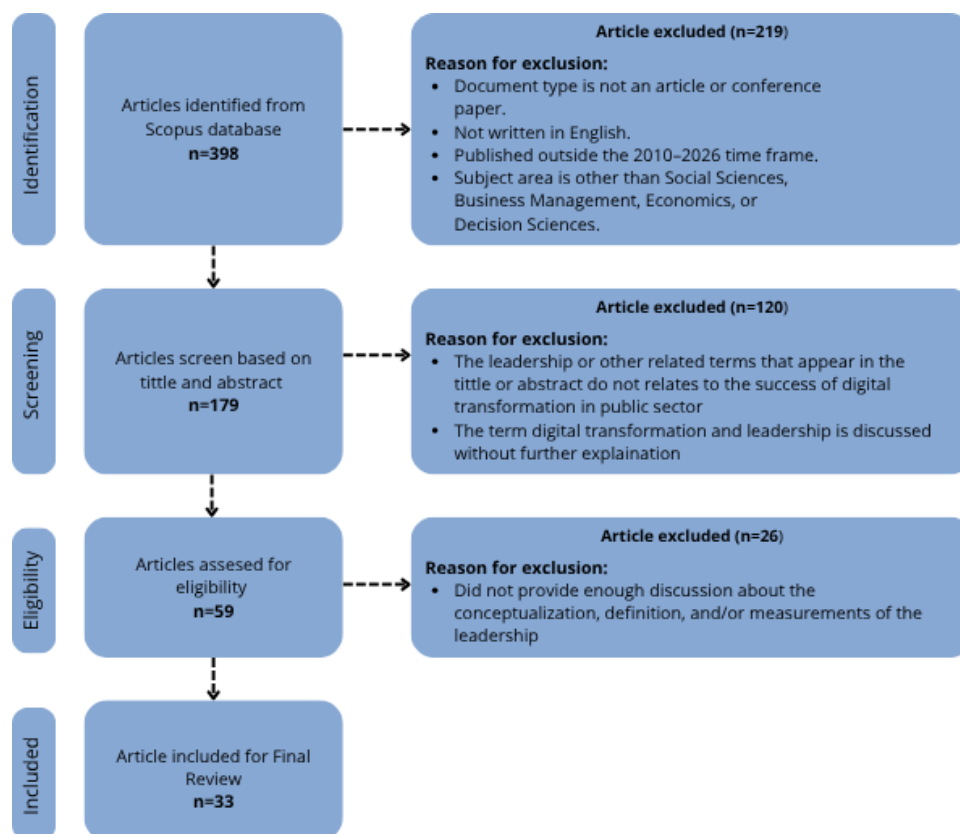


Figure 1. Study Selection Flow Based on the PRISMA Protocol

Article Identification

To obtain articles that aligned with the research objectives, the first step involved retrieving relevant studies from an electronic database. This study used the Scopus database as the primary source for several reasons: (1) Scopus provides extensive coverage of scientific publications, ensuring access to a large body of literature; (2) Scopus indexes reputable, peer-reviewed journal articles and conference proceedings, thereby ensuring the reliability and credibility of the retrieved studies; and (3) Scopus covers a wide range of disciplines, enabling a comprehensive review of research from multiple fields (Rizana et al., 2025).

However, because Scopus indexes large number of articles across diverse topics, a carefully designed search strategy incorporating relevant keywords was required to ensure that the retrieved articles were closely aligned with the focus of this study. The search terms were developed based on the research questions and the key concepts investigated, with particular emphasis on leadership types and roles that support digital transformation in government organizations. The selected keyword combinations were intended to capture studies that directly matched the scope and objectives of this research.

To ensure relevance, terms related to digitalization such as digital transformation, digitalization, and digital technology were required to appear in the article title. In addition, because the primary objective of this study was to identify leadership approaches that facilitate digital transformation, leadership-related terms including digital leadership, leadership types, leadership transformation, leadership roles, and leadership at different organizational levels were also required to appear in the title. Finally, because this study focuses on government organizations, keywords such as government, public services, public organization, governnace, and related terms were required to appear in the article title, abstract, or keyword section.

Based on these criteria, the search strategy employed in this study was as follows:

(leadership AND "digital transformation" AND ("public sector" OR government OR "public administration" OR "public organization" OR "public organisation*"))*

Article Screening

This stage constituted the initial screening process to determine the suitability of the retrieved articles before proceeding to the eligibility assessment stage. A total of 398 articles identified in the previous stage were screened according to the predefined inclusion and exclusion criteria. Based on this process, 219 articles were excluded because they did not meet one or more of the following criteria: they were not written in English, were not peer-reviewed journal articles or conference proceedings, fell outside the specified publication period, or belonged to subject areas other than Social Sciences, Business and Management, Economics, or Decision Sciences.

Following the initial screening, 179 articles were retained for further assessment based on their titles and abstracts. At this stage, 120 articles were excluded for three reasons. First, the leadership concepts or related terms appearing in the title or abstract were not associated with leadership factors supporting successful digital transformation in government organizations. Second, the term digital transformation was used merely as a buzzword or as an adjective without substantive discussion. Third, because this study focuses exclusively on government organizations, articles examining digital transformation in non-government settings including business organizations, non-profit organizations, educational institutions, and other organizational contexts were excluded.

This exclusion criterion was adopted to ensure theoretical consistency, contextual relevance, and the practical applicability of the findings within the context of digital transformation in government organizations. Consequently, only studies explicitly addressing digital transformation in public-sector organizations were retained. At the end of this screening stage, 59 articles met the selection criteria and were included in the eligibility assessment.

Article Eligibility Assessment

At this stage, a full-text review was conducted to assess the eligibility of the selected articles for inclusion in the final analysis. Because this study aims to identify leadership patterns that support successful digital transformation in government organizations, articles that did not provide sufficient discussion of the conceptualization, definitions, characteristics, dimensions, or roles of leadership in digital transformation were excluded.

Accordingly, only studies that provided substantial discussion of leadership within the context of digital transformation in government organizations were retained. Following the full-text assessment, a total of 33 articles met the eligibility criteria and were included in the final analysis.

Article Analysis

Three types of analyses were conducted on the 33 selected articles: descriptive analysis, and qualitative analysis.

Descriptive analysis was performed to provide an overview of the characteristics of the reviewed studies. Specifically, the analysis examined the distribution of articles by publication year, document type, research methodology, organizational or sectoral focus, and journal distribution.

Finally, qualitative analysis was conducted to synthesize the leadership patterns that support digital transformation in government organizations and to develop a deeper understanding of how these leadership patterns are conceptualized, implemented, and contribute to the success of digital transformation initiatives in practice.

Bibliometric Analysis with VOSviewer

Bibliometric analysis was conducted using VOSviewer version 1.6.20 on all 398 documents from the initial screening stage comprehensively map the intellectual structure of research in this field. This analysis produced a co-occurrence network map consisting of 53 items, 6 thematic clusters, and 414 links, with a total link strength of 793. A temporal overlay visualisation (2016–2024) was used to identify how topics evolve over time, while a density visualisation was used to identify the most concentrated areas of research (hotspots).

RESULT AND DISCUSSION

Bibliometric Map: Research Trends and Clusters

The keyword co-occurrence network analysis via VOSviewer produced six thematic clusters reflecting the main research dimensions in the field of leadership and public sector digital transformation.

The Network Visualization reveals that “digital transformation,” “e-government,” and “public sector” are the nodes with the largest size, indicating the most dominant frequency of occurrence and connection strength in the literature. The “leadership” and “digital leadership” nodes also occupy a central position, confirming the relevance of the leadership topic as a key variable in the discourse on public sector digital transformation. The six clusters formed reflect interconnected yet conceptually distinguishable research dimensions, namely: (1) leadership and organizational change, (2) digital transformation and e-government, (3) collaborative governance and public policy, (4) public administration and public management, (5) innovation and public value, and (6) sustainability and development.

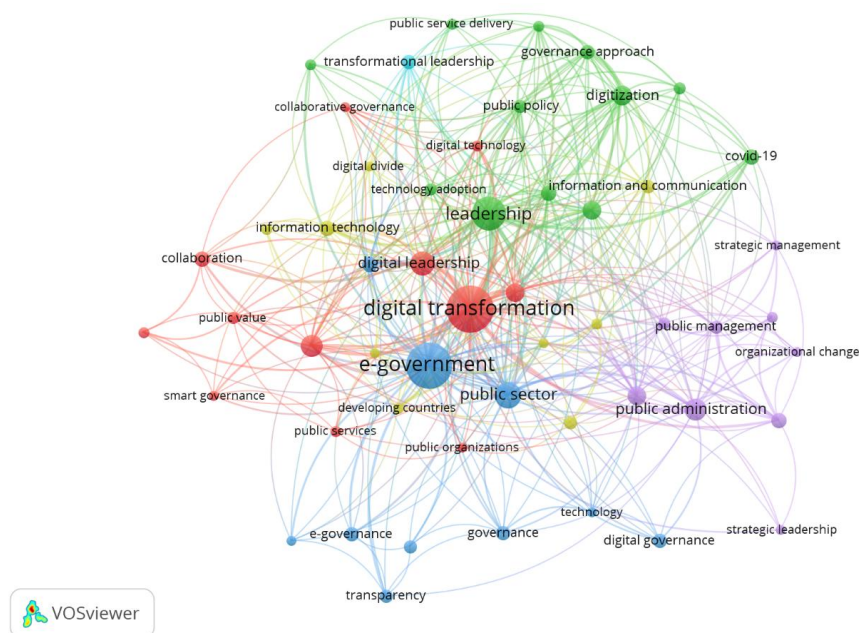


Figure 2. Keyword Co-Occurrence Network Map (Network Visualization)

The temporal Overlay Visualization reveals a significant research development trajectory. Dark blue keywords (2016–2018 period), such as “e-government,” “barriers,” “transparency,” and “collaboration,” reflect the initial research focus, which was still oriented toward infrastructure and barriers in technology adoption. In contrast, yellow-light green keywords (2022–2024 period) such as “public administration,” “public management,” “organizational change,” “digital governance,” and “strategic leadership” indicate a

significant shift in the research agenda toward issues of strategic leadership, governance, and the organizational impact of digital transformation.

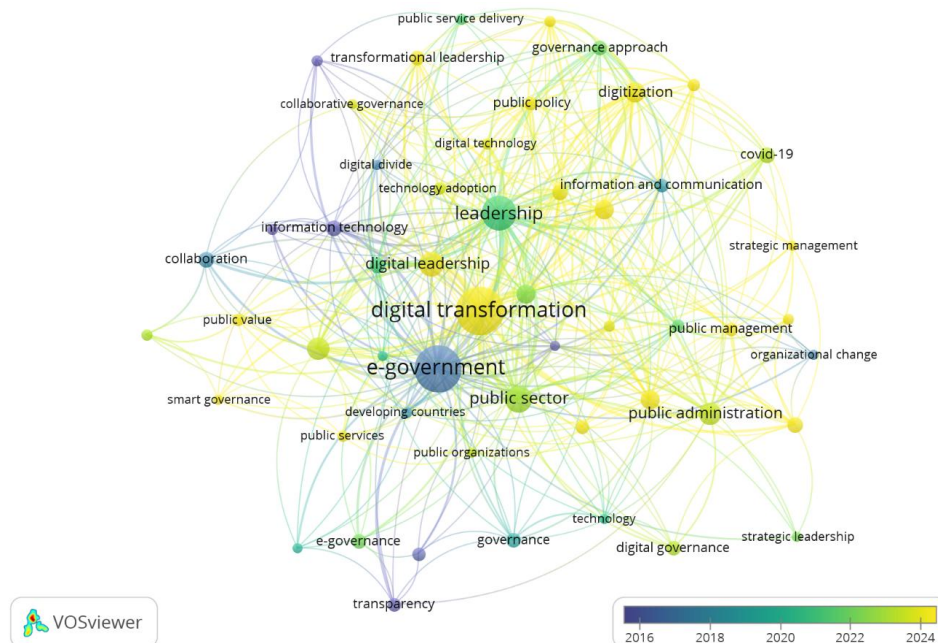


Figure 3. Temporal Map of Research Topic Development (Overlay Visualization)

The Density Visualization confirms that the densest research hotspot lies at the intersection of three main concepts: “digital transformation,” “e-government,” and “digital leadership.” This concentration indicates that previous research most intensively examined the intersection between the government's digital transformation agenda and its digital leadership dimension, while issues such as strategic leadership, digital governance, and organizational change remain in lower-density areas, which simultaneously indicates room for further research development.

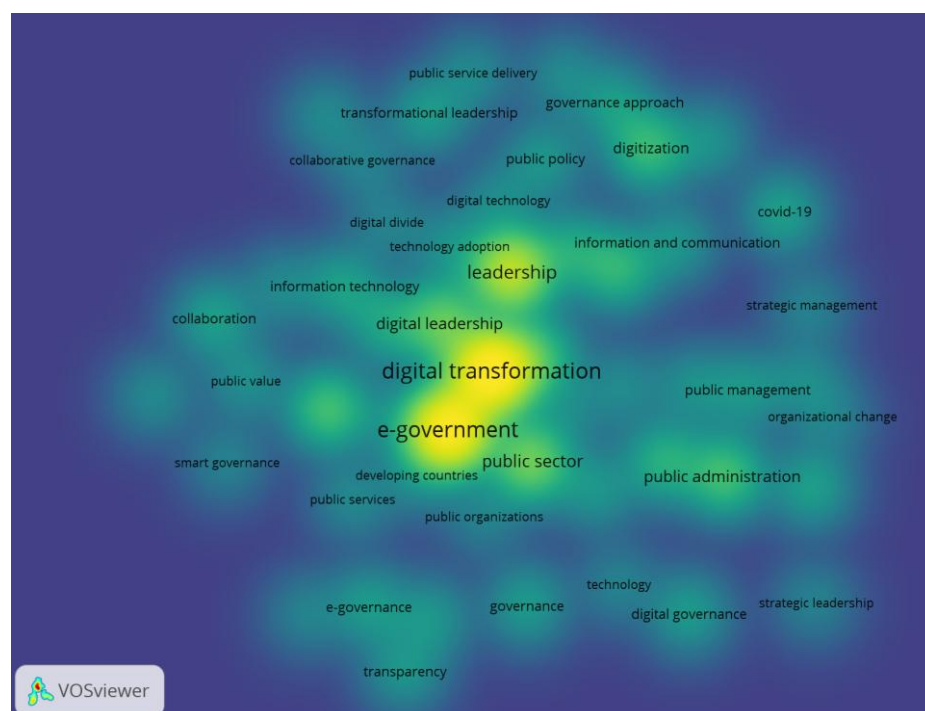


Figure 4. Research Concentration Density Map (Density Visualization)

The Role of Leadership in Public Sector Digital Transformation

1. Leadership Triad Model

A qualitative synthesis of the literature consistently identifies three main leadership approaches that form what is referred to in this study as the “Leadership Triad Model” in public sector digital transformation, namely transformational leadership, strategic leadership, and digital leadership.

Transformational leadership is the most fundamental and most widely discussed approach in the literature. Transformational leaders act as a driving force that inspires a shared vision and motivates employees to embrace disruptive change. This approach works through four main mechanisms: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Bass & Riggio, 2006). In the context of digital transformation, transformational leadership has proven effective in overcoming organizational cultural resistance and building a climate conducive to experimentation and innovation.

Strategic leadership plays an important role in formulating long-term action plans, directing information and communication technology (ICT) policy, and ensuring public services run efficiently and transparently through appropriate resource management (Aldhi et al., 2025; Elmatsani et al., 2024). Strategic leaders translate the digital vision into a coherent roadmap, ensuring that every digital initiative is not *ad-hoc* but integrated into the organization's long-term development direction.

Digital leadership is a specific dimension that distinguishes it from conventional leadership models. This approach strategically integrates leadership principles with technology to create public value, increase organizational agility, and change work culture. Digital leadership is not merely about technical mastery, but about the ability to combine digital culture and digital competence to transform information technology capabilities into real public value (Aldhi et al., 2025; Elmatsani et al., 2024).

2. Role Typology Based on Hierarchical Position

Beyond the leadership style approach, the literature also identifies role typologies based on the position of actors within the organizational hierarchy. Political leaders (governors, mayors, ministers) act as political sponsors who provide formal legitimacy, set macro visions, and secure financial resources. Administrative/managerial leaders (city managers, directors) function as *champions* who bridge the political vision with technical execution in the field. Meanwhile, the shared leadership model distributes responsibility both horizontally among top-level managers and vertically to technical experts or special units such as a *Chief Transformation Officer* (CTO) (Faozanudin et al., 2025).

Specifically in the context of village and remote-area government, the literature identifies three typologies of leader attitudes toward digitalization (Faozanudin et al., 2025):

- a) *Digital Enthusiasts*: Leaders who strongly support technology adoption despite facing systemic barriers in their region.
- b) *Pragmatic Adopters*: Leaders who follow the digital mandate merely to comply with regulations while still maintaining traditional processes.
- c) *Institutional Protectors*: Leaders who reject digitalization to protect established power structures and patronage.

3. Collaborative and Facilitative Approaches

Digital transformation in the public sector is often a complex problem that transcends the boundaries of a single organisation, so the literature strongly emphasises the importance of a collaborative leadership approach. In the context of collaborative governance, leaders adopt specific roles: *steward* (guardian of the integrity of the collaboration process), *mediator* (arbiter of inter-unit conflict), *catalyst* (catalyst for identifying new opportunities), and

bridge-builder (connector of the political agenda with administrative reality) (Maulana et al., 2024).

The *penta-helix* approach, which involves collaboration among five main actors (government, academia, business, community, and media), emerges as the most relevant collaboration model in the literature. This model has been proven to accelerate adoption and expand the impact of digital transformation when implemented consistently, as practiced by the West Java Provincial Government through a dedicated digital unit (Maulana et al., 2024).

Factors Influencing the Success of Digital Transformation

1. Organizational Culture

Organizational culture is consistently identified in the literature as the foundation of digital transformation, which is often more difficult to address than technical barriers. Organizations that succeed in digital transformation are those able to foster a culture of innovation and experimentation, in which leaders create a psychologically safe environment for staff to experiment through mechanisms such as *living labs* (Branderhorst & Ruijter, 2025).

The literature emphasizes that the success of transformation depends heavily on the organization's ability to mitigate cultural resistance stemming from fear of job redundancy due to automation (Xanthopoulou & Antoniadis, 2024). Leaders play an important role in aligning digital values within the organization's belief system, so that digital transformation gains the internal legitimacy needed for long-term sustainability.

2. Digital Capability and Managerial Digital Readiness

Digital capability is the second factor that consistently emerges as a predictor of digital transformation success. The literature defines digital capability not merely as the ownership of technological devices, but as the organization's dynamic ability to operationalize such technology to improve public performance.

Managerial Digital Readiness (MDR) is recognized as an important factor that mediates the relationship between technological capability and organizational performance (Aldhi et al., 2025). MDR is a multidimensional capability that reflects managers' psychological and behavioral readiness to lead change, consisting of three main components: digital structure readiness, digital strategy readiness, and digital technology readiness.

Crucially, the literature asserts that strong information technology infrastructure and skilled human resources do not activate themselves; their impact on organizational performance is only fully realized when mediated by MDR. Drawing on Dynamic Capabilities Theory, MDR is framed as a higher-order capability that enables organizations to “sense” (*sensing*) digital opportunities and “transform” (*transforming*) institutional routines in a turbulent environment (Aldhi et al., 2025).

3. Stakeholder Engagement

The third factor is stakeholder engagement. Digital transformation in the public sector is not merely an internal organizational process, but a collaborative process involving citizens, business partners, academics, and civil society. The literature emphasizes that engaging citizens and stakeholders from the planning stage through co-creation and user-centric design approaches ensures that digital solutions genuinely address user needs and increase public satisfaction (Alshahrani, 2025b; Zumitzavan et al., 2025).

Transparency in communication regarding processes, data security, and digitalization objectives is also identified as an absolute prerequisite for building public trust (*public trust*), which in turn determines the legitimacy and sustainability of digital transformation programs (Alshahrani, 2025a).

Leadership Barriers and Challenges in Digital Transformation

1. Institutional and Bureaucratic Barriers

Institutional and bureaucratic barriers are the most widely identified category of challenge in the literature. Traditional bureaucratic hierarchical structures often hinder the agility needed for digital innovation; slow decision-making and overly centralized control become obstacles for leaders in responding quickly to technological change (Engkus, 2025; Faozanudin et al., 2025).

Organizational silos and sectoral ego are structural barriers specifically highlighted. Reluctance among institutions or departments to share data and resources due to fear of losing authority results in a fragmented digital landscape (Maulana et al., 2024; Mian et al., 2025). Resistance arises from concerns that their authority and data control will be taken over by other parties, leading to a lack of data standardization and system interoperability (Abasilim & Esisio, 2025). Paradoxically, regulations intended to govern digital transformation process often become bars that hinder the very innovation they are meant to promote (Faozanudin et al., 2025; Maulana et al., 2024), prompting leaders to use informal agency including communication platforms such as WhatsApp to maintain the speed of program coordination.

2. Leadership Capability Gaps

The second challenge is the leadership capability gap itself. Many public sector leaders, particularly middle management, lack a strategic understanding of how disruptive technologies such as *Artificial Intelligence* (AI), the *Internet of Things* (IoT), and *Big Data* can be capitalized on to create public value. The literature refers to this condition as the “digital intelligence gap,” which significantly limits leadership effectiveness in driving transformation (Hunitie & Akhorshaideh, 2025).

Temporal constraints are also identified as a real barrier: leaders are often trapped in daily operational and administrative routines, leaving insufficient cognitive capacity to develop a value-based digital vision (Aristovnik et al., 2025). This condition is reinforced by findings that many organizations lack a comprehensive roadmap, causing digital initiatives to tend to be partial, *ad-hoc*, and unsustainable (Abasilim & Esisio, 2025; Aldhi et al., 2025).

3. Human Resource Resistance and Digital Fatigue

Resistance from human resources is a challenge that cuts across organizational levels. Employees often view automation and AI as a real threat to their job security, which triggers strong cultural resistance to change. The generational gap between senior leaders characterized as *digital immigrants* and younger staff characterized as *digital natives* in their outlook on technology further adds to the complexity of coordination and adaptation to new systems (Abasilim & Esisio, 2025; Engkus, 2025; Faozanudin et al., 2023; Kraiwanit & Terdpaopong, 2024).

Interestingly, contemporary literature also identifies the phenomenon of digital fatigue as a barrier that is often overlooked. Continuous technological disruption and high digital administrative workload such as the need to enter the same data into various different government applications simultaneously have been shown to lower staff morale and hinder the adoption of new digital systems (Faozanudin et al., 2025; Mian et al., 2025).

4. Resource, Regulatory, and Infrastructure Limitations

Budget constraints are identified as the most significant barrier at the operational level. A lack of funding allocation not only hinders the procurement of new technology, but also impedes system maintenance, infrastructure upgrades, and ongoing staff training (Abasilim & Esisio, 2025).

At the middle-manager and village government level, the absence of fiscal autonomy namely the lack of authority to replace damaged hardware or independently optimize local infrastructure is a highly constraining operational barrier. In remote areas, unstable internet

connectivity and frequent power outages make digital systems difficult to operate consistently, widening the digital divide between regions, where concerns about cybersecurity and public data protection emerge as an increasingly relevant challenge (Sigurjonsson et al., 2024; Thakur et al., 2025).

Discussion

1. The Leadership Triad Model as an Integrative Framework

The Leadership Triad Model synthesized in this review builds upon, yet extends, several established leadership theories by integrating complementary dimensions that individually remain insufficient to explain public-sector digital transformation. While transformational, strategic, and digital leadership each capture important aspects of leadership behavior, none fully addresses the institutional complexity of digital transformation within public bureaucracies.

The transformational leadership dimension is grounded in the Full Range Leadership Model proposed by (Bass & Riggio, 2006), operationalized through idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. These behavioral components explain how leaders inspire commitment, stimulate innovation, and support organizational change. However, the model was developed as a general, sector-neutral theory and pays limited attention to organizational-level mechanisms, such as ICT governance, strategic resource allocation, and institutional coordination, as well as the technology-specific capabilities required to sustain digital transformation in government. The Leadership Triad Model therefore retains the motivational strengths of transformational leadership while embedding them within a broader strategic and technological context.

The strategic leadership dimension aligns with Upper Echelons Theory (Hambrick & Mason, 1984), which argues that organizational strategies reflect the cognitive base, values, and experiences of top executives. However, this perspective assumes a level of managerial discretion that rarely exists in public bureaucracies, where strategic decisions are constrained by legislation, administrative procedures, and political oversight. As demonstrated by the regulatory paradox discussed in Section 4.3, leaders often possess limited autonomy despite being responsible for organizational transformation. Rather than treating these institutional constraints as background conditions, the Leadership Triad Model incorporates them as defining characteristics of strategic leadership in the public sector, thereby extending the explanatory scope of Upper Echelons Theory.

The digital leadership dimension shares conceptual similarities with E-Leadership Theory (Avolio et al., 2000), which examines leadership processes mediated by information and communication technologies. Nevertheless, E-Leadership Theory was primarily developed to explain leadership in virtual and geographically distributed work environments, where technology functions mainly as a communication medium. The evidence synthesized in this review suggests a broader role for digital leadership in public organizations. Beyond facilitating communication, public-sector leaders are expected to possess digital competencies that enable them to formulate digital strategies, govern technology implementation, foster organizational learning, and translate digital capabilities into measurable public value. These responsibilities extend beyond the original scope of E-Leadership Theory.

Table 2 summarizes how each dimension of the Leadership Triad Model relates to its theoretical foundation while addressing limitations that emerge in the context of public-sector digital transformation.

Table 2. Positioning of the Leadership Triad Model Relative to Established Leadership Theories

Triad Dimension	Established Theory	Core Focus	Key Limitation in Public-Sector Digital Transformation
Transformational	Full Range Leadership Model (Bass & Riggio, 2006)	Individual leader behaviors that influence follower motivation and organizational change	Sector-neutral; does not explicitly address strategic governance or digital capabilities
Strategic	Upper Echelons Theory (Hambrick & Mason, 1984)	Executive characteristics shaping organizational strategic choices	Assumes managerial discretion that is constrained in regulation-bound public bureaucracies
Digital	E-Leadership Theory (Avolio et al., 2000)	Leadership processes mediated by information technology	Developed primarily for virtual work settings; emphasizes technology as a communication medium rather than as a mechanism for creating public value

Taken individually, these theories illuminate important but partial dimensions of leadership. None explains how motivational, strategic, and technological capabilities interact under the institutional constraints characteristic of public-sector governance. The principal contribution of the Leadership Triad Model lies in integrating these complementary dimensions into a single conceptual framework. This integration also helps explain the fragmentation identified in the reviewed literature where most studies continue to examine leadership through a single theoretical lens.

The synthesis further supports a broader conclusion emerging from both the academic and practitioner literature: successful digital transformation depends not only on technological investment but also on leadership capability. This observation is consistent with practitioner-based research by Kane et al. (2015) (Kane et al., 2015), which found that digitally mature organizations outperform others because of leadership readiness rather than technology adoption alone. However, their study was based on cross-industry corporate executive surveys and did not develop a multidimensional leadership framework tailored to the institutional realities of public administration. The Leadership Triad Model advances this line of inquiry by providing an integrated framework that explicitly incorporates motivational, strategic, and digital leadership within the regulatory and governance constraints that characterize public-sector digital transformation.

The findings of this study confirm that no single leadership style is sufficient to effectively lead digital transformation in the public sector. The literature consistently shows that transformational, strategic, and digital leadership operate as a complementary system, not as mutually substitutable alternatives (Elmatsani et al., 2024).

Transformational leadership provides the motivational and cultural foundation that enables change to occur. However, without strategic leadership to articulate a long-term roadmap, the motivation built risks losing direction and becoming mere momentary enthusiasm (Branderhorst & Ruijter, 2025; Elmatsani et al., 2024). Digital leadership, in turn, ensures that strategic vision and organizational motivation are translated into technology-based governance practices that create measurable public value (Aldhi et al., 2025; Elmatsani et al., 2024).

An important implication of this triad model is that leadership capacity development in the public sector needs to be designed in an integrated manner. Leadership training programs that focus only on managerial-strategic aspects without building digital literacy, or conversely, programs that only train technical competencies without building transformational leadership capacity, will not produce leaders who are effective in the context of digital transformation.

2. Managerial Digital Readiness as a Critical Transmission Mechanism

Moreover, one of other findings of this review is the role of *Managerial Digital Readiness* (MDR) as a critical transmission mechanism that converts technological capability

and individual skills into measurable organizational performance. This has an implication that is often overlooked in practice: many governments invest heavily in technological infrastructure (hardware, software, networks) but neglect investment in managerial readiness to effectively operationalize that infrastructure (Abasilim & Esisio, 2025; Aldhi et al., 2025; Branderhorst & Ruijter, 2025).

This finding aligns with Dynamic Capabilities Theory, which emphasizes that organizational competitive advantage lies not in the static assets possessed, but in the ability to sense, seize, and transform opportunities (Aldhi et al., 2025; Mian et al., 2025). In the public sector context, MDR functions as a higher-order dynamic capability that enables organizations to respond to digital disruption with the required agility.

3. The Regulatory Paradox and Informal Agency

Findings regarding regulatory barriers reveal a governance paradox: the regulatory framework designed to govern and ensure the accountability in digital leadership often becomes the biggest barrier to digital innovation itself (Faozanudin et al., 2025). Leaders' adaptive responses using informal infrastructure such as tactical coordination through WhatsApp groups when the formal bureaucratic system experiences delays indicate a serious gap (*gap*) between policy design and implementation reality on the ground.

This phenomenon demands serious attention from policymakers. Dependence on informal infrastructure indicates that the managerial agency capacity of leaders on the ground is not adequately supported by the existing formal framework. Adaptive, flexible regulatory reform that is responsive to the dynamics of technological evolution becomes a key prerequisite for the effectiveness of digital leadership (Alshahrani, 2025a).

4. An Integrative Conceptual Model of Leadership-Driven Digital Transformation

To synthesize the relationships discussed throughout this section, Figure 5 presents an integrative conceptual model linking the Leadership Triad, its enabling conditions, and the moderating barriers identified in this review into a single framework culminating in successful digital transformation.

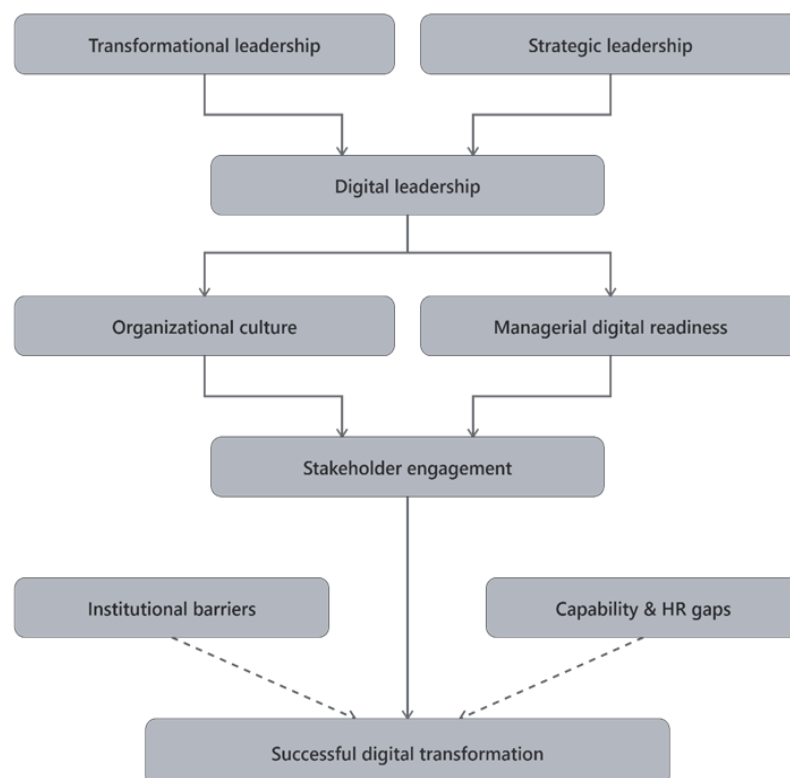


Figure 5. An integrative conceptual model of leadership-driven public sector digital transformation

Note. Conceptual model synthesized from the reviewed literature; arrows denote qualitatively reported relationships, not statistically tested paths

At the top of the model, transformational and strategic leadership function as parallel inputs that converge into digital leadership the mechanism through which motivational and directional capital is converted into technology-enabled public value.

This transformation is enabled by two supporting conditions: organizational culture, which determines whether staff experiment with and adopt new digital practices rather than resisting them (Branderhorst & Ruijter, 2025), and managerial digital readiness, identified in this review as a crucial transmission mechanism that converts technological capabilities into measurable organizational performance (Aldhi et al., 2025). Both contribute to stakeholder engagement, which ensures external legitimacy through co-creation, transparency, and user-centered design elements essential for the sustainability of digital initiatives (Alshahrani, 2025a).

In this flow, institutional and bureaucratic obstacles along with gaps in leadership capability and human resource resistance are depicted as inward-pointing dashed arrows rather than sequential stages. This visual distinction is intentional: unlike the enabling factors mentioned earlier, these obstacles do not add steps to the process but instead weaken or slow it down at multiple points simultaneously, as reflected in the regulatory paradox and organizational silo effects.

It is important to note that this model represents a conceptual synthesis derived from qualitative thematic analysis of the reviewed literature, not a statistically tested path model. The directional arrows denote relationships reported across studies, not estimated coefficients. Empirically validating these pathways for example, through structural equation modeling on primary survey data is accordingly proposed as a priority for future research.

5. Practical Implications for Policymakers, Institutions, and Implementing Leaders

Translating the findings above into practice requires recognizing that the three actors: political leaders, administrative/managerial leaders, and operational implementers that face distinct decision levers. Generic capacity-building recommendations risk being ignored precisely because they do not specify who should act on what. The following recommendations are therefore organized by tier.

a) For policymakers

First, leadership development programs funded or mandated at the policy level should be redesigned to build all three Triad dimensions jointly rather than in isolation. Programs that train only managerial-strategic competencies without digital literacy, or only technical skills without transformational capacity, do not produce leaders effective in digital transformation contexts.

Second, the regulatory paradox where governance rules designed to ensure accountability instead obstruct the innovation they are meant to enable calls for adaptive regulatory mechanisms, such as time-bound regulatory exemptions or sandbox provisions for pilot digital initiatives, rather than uniform rules applied regardless of context. Absent such flexibility, leaders will continue to rely on informal coordination channels that fall outside institutional accountability structures.

Third, budget allocations for digital transformation should explicitly ring-fence funding for managerial digital readiness training managers to operationalize technology rather than concentrating exclusively on hardware and software procurement does not translate into performance without this mediating capability.

Fourth, particularly for village governments and remote areas, the restoration of partial fiscal autonomy namely the authority to independently replace damaged equipment or optimize local infrastructure directly addresses operational constraints.

b) For government institutions (agencies as organizational units)

First, institutions need to formalize cross-unit data exchange protocols and interoperability standards, rather than relying on voluntary inter-departmental cooperation. Reluctance to share data stemming from concerns about a loss of authority will create a fragmented digital landscape if not addressed at the institutional level.

Second, institutions must establish structured, sustainable mechanisms for co-creation with citizens and stakeholders as standard practice, moving beyond mere **ad hoc** consultations; this step operationalizes a user-centric design approach, which is a decisive factor for public trust and program legitimacy.

Third, institutions need to audit and consolidate overlapping data entry requirements across various government applications. This administrative duplication is a direct cause of digital fatigue and declining staff morale an issue that can be resolved through low-cost interventions targeting clearly identified and documented root causes.

c) For public sector leaders responsible for implementation

First, leaders coordinating cross-agency digital initiatives should explicitly define roles such as steward, mediator, catalyst, and bridgebuilder, rather than allowing these collaborative functions to emerge informally following the **penta-helix** precedent documented in the West Java case (Maulana et al., 2024).

Second, leaders should utilize the three-component structure of managerial digital readiness namely digital structure readiness, digital strategy readiness, and digital technology readiness as a practical self-assessment framework prior to launching digital initiatives, in order to identify specific readiness gaps most likely to hinder implementation.

Third, leaders should proactively design onboarding processes and workflow support that account for the generational gap between digital immigrants and digital natives, rather than viewing resistance merely as a uniform staff attitude issue that can be resolved solely through training.

6. Research Gaps and Future Research Agenda

This review identifies several significant gaps in the literature that open opportunities for further research. First, most research is *cross-sectional*, so the dynamics of leadership evolution in the multi-year process of digital transformation cannot yet be deeply understood. Longitudinal research tracking leadership development from the initiation phase to institutionalization is greatly needed (Aldhi et al., 2025; Aristovnik et al., 2025; Zumitzavan et al., 2025).

Second, there is significant geographic imbalance in the literature: most empirical evidence comes from developed economies or urban contexts. Understanding of how leadership operates under technical infrastructure and governance structure limitations in developing countries, especially at the village and remote-area government level, remains very limited (Aldhi et al., 2025; Engkus, 2025; Faozanudin et al., 2025; Thakur et al., 2025).

Third, the voices of street-level bureaucrats (*street-level bureaucrats*) and citizens as users of digital services are almost absent from the existing literature. This bottom-up (*bottom-up*) perspective is important for understanding real implementation barriers at the grassroots level (Alshahrani, 2025a; Thakur et al., 2025).

Fourth, the ethical dimension of digital leadership including the management of ethical complexities such as algorithmic bias, digital surveillance, and data privacy protection in AI-based systems remains rarely explored in the literature, even though its relevance continues to increase alongside the expansion of automation (Alshahrani, 2025b; Branderhorst & Ruijter, 2025; ly, 2025).

CONCLUSION

This study conducted a Systematic Literature Review of 27 scientific articles published between 2015 and 2025 to map the landscape of leadership in public sector digital transformation. From the analysis conducted, three main conclusions can be drawn.

First, leadership in public sector digital transformation cannot be reduced to a single style or approach. The triad model integrating transformational, strategic, and digital leadership represents the most comprehensive framework for understanding the complexity of leadership roles in this context. The three approaches work synergistically: transformational leadership builds motivation and culture, strategic leadership provides direction and a roadmap, and digital leadership converts both into measurable public value.

Second, the success of digital transformation is determined not by the size of technology investment, but by the presence of three interrelated supporting factors: an adaptive organizational culture that supports innovation, managerial digital readiness (MDR) as a transmission mechanism between technological capability and performance, and active stakeholder engagement through a user-centric approach that ensures the legitimacy of digital solutions.

Third, the greatest barriers in public sector digital transformation are institutional and human in nature, not technical. Organizational silos, sectoral ego, leadership capability gaps, and human resource resistance due to automation anxiety have proven more difficult to overcome than technological barriers. This confirms that digital transformation is essentially a cultural and leadership transformation that uses technology as a tool, not the other way around.

REFERENCES

- Abasilim, U. D., & Esisio, O. J. (2025). Overcoming Barriers to Digital Transformation in Public Institutions in Nigeria. *Public Administration Issues*, 2025(6), 97–116. <https://doi.org/10.17323/1999-5431-2025-0-5-97-116>
- Aldhi, I. F., Suhariadi, F., Rahmawati, E., Supriharyanti, E., Hardaningtyas, D., Sugiarti, R., & Abbas, A. (2025). Bridging Digital Gaps in Smart City Governance: The Mediating Role of Managerial Digital Readiness and the Moderating Role of Digital Leadership. *Smart Cities*, 8(4). <https://doi.org/10.3390/smartcities8040117>
- Alshahrani, A. (2025a). Adopting Emerging Technologies in Digital Government: A Multi-Case Analysis of Drivers, Enablers, and Challenges in Saudi Arabia. *Digital Government: Research and Practice*, 6(3). <https://doi.org/10.1145/3719297>
- Alshahrani, A. (2025b). The Role of Leadership And Communication in AI Assimilation: Case Studies from Saudi Arabia's Public Sector Organizations. *Transforming Government People Process and Policy*. <https://doi.org/10.33266/1024-6177-2025-70-1-60-66>
- Alwaely, S. A., Alzubaidi, R. S. M., Altaher, A. E., El Tayeb, U. A. E. S., Abusalma, A., Saad, A. O. S., Hassan, K. A., & Rateb Darawsheh, S. (2024). Digital Transformation and The Challenges Associated with Applying Digital Technologies in Achieving Strategic Flexibility in Public Administration: A Case Study in Jordan. *International Journal of Data and Network Science*, 8(3), 1793–1800. <https://doi.org/10.5267/j.ijdns.2024.2.009>
- Aristovnik, A., Murko, E., Kristl, N., & Ravšelj, D. (2025). Disruptive Technology Capabilities in Local Governments: An Empirical Study. *Information Polity*, 30(1), 14–33. <https://doi.org/10.1177/15701255251321682>
- Avolio, B. J., Kahai, S., & Dodge, G. E. (2000). E-leadership: Implications for Theory, Research, and Practice. *The Leadership Quarterly*, 11(4), 615–668.

- Bass, B. M., & Riggio, R. E. (2006). *Transformational leadership (2nd ed.)*. Lawrence Erlbaum Associates Publishers.
- Branderhorst, E. M., & Ruijer, E. (2025). Digital Leadership in Local Government: An Empirical Study of Dutch City Managers. *Local Government Studies*, 51(3), 576–599. <https://doi.org/10.1080/03003930.2024.2363368>
- Elmatsani, H. M., Widianingsih, I., Nurasa, H., Munajat, M. D. E., & Suwanda, S. (2024). Exploring The Evolution of Leadership in Government: A Bibliometric Study from E-Government Era Into The Digital Age. *Cogent Social Sciences*, 10(1). <https://doi.org/10.1080/23311886.2024.2414877>
- Engkus. (2025). The Impact of Digital Transformation on Public Sector Organizational Commitment: A Case Study of Public Management Practices. *Edelweiss Applied Science and Technology*, 9(2), 2256–2269. <https://doi.org/10.55214/25768484.v9i2.5062>
- Faozanudin, M., Rokhman, A., Sulistiani, L. S., & Yamin, M. (2025). Investigating Key Factors Affecting the Slow Digital Transformation in Village Government Public Service Improvement in Indonesia. *International Research Journal of Multidisciplinary Scope*, 6(4), 654–667. <https://doi.org/10.47857/irjms.2025.v06i04.07116>
- Faozanudin, M., Rosyadi, S., & Sulistiani, L. S. (2023). The Preparedness of Village Governments for The Digital Transformation of Public Services In Banyumas Regency, Indonesia. *Public Policy and Administration*, 22(4), 448–462. <https://doi.org/10.13165/VPA-23-22-4-05>
- Firmansyah, A., Irawan, F., & Wijaya, S. (2025). Unlocking Public Sector Excellence: The Synergy of Intellectual Capital and Digital Leadership in Tax Administration. *Intangible Capital*, 21(2), 201–230. <https://doi.org/10.3926/ic.3147>
- Hambrick, D. C., & Mason, P. A. (1984). Upper Echelons: The Organization as a Reflection of Its Top Managers. *The Academy of Management Review*, 9(2), 193–206. <https://doi.org/https://doi.org/10.2307/258434>
- Hunitie, M. F., & Akhorshaideh, A. H. (2025). Digital Drivers of Digital Transformation in Public Sector Organizations. *International Journal of Data and Network Science*, 9(3), 495–502. <https://doi.org/10.5267/j.ijdns.2024.8.016>
- Kane, G. C., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2015). Strategy, Not Technology, Drives Digital Transformation: Becoming a Digitally Mature Enterprise. In *MIT Sloan Management Review and Deloitte University Press*.
- Kraiwanit, T., & Terdpaopong, K. (2024). Digital Transformation Model: The Study of The Governmental Agency in a Developing Country. *Journal of Governance and Regulation*, 13(1 Special Issue), 458–470. <https://doi.org/10.22495/jgrv13i1siart18>
- ly, B. (2025). Leveraging Leadership and Digital Transformation for Sustainable Development: Insights From Cambodia's Public Sector. *Sustainable Futures*, 9(March), 100545. <https://doi.org/10.1016/j.sftr.2025.100545>
- Maulana, R. Y., Durnik, M., & Decman, M. (2024). Collaborative Approach on Digital Government Transformation: In-Depth Analysis from Expert Interview. *NISPAcee Journal of Public Administration and Policy*, 17(1), 94–119. <https://doi.org/10.2478/nispa-2024-0005>
- Mian, A. S., Vlahu-Gjorgievska, E., & Shen, J. (2025). Examining the Collaboration Framework for Achieving Government Performance: A Qualitative Case Study on Digital Transformation. *Digital Government: Research and Practice*, 6(4). <https://doi.org/10.1145/3734696>

- Rizana, A. F., Wiratmadja, I. I., & Akbar, M. (2025). Exploring Capabilities for Digital Transformation in the Business Context: Insight from a Systematic Literature Review. *Sustainability (Switzerland)*, 17(9). <https://doi.org/10.3390/su17094222>
- Sigurjonsson, T. O., Jónsson, E., & Gudmundsdottir, S. (2024). Sustainability of Digital Initiatives in Public Services in Digital Transformation of Local Government: Insights and Implications. *Sustainability (Switzerland)*, 16(24). <https://doi.org/10.3390/su162410827>
- Thakur, A., Bhageerathy, R., Mithra, P., Sekaran, V. C., & Kumar, S. (2025). Navigating Organizational Challenges of Digital Transformation: A Qualitative Study of Meso-Level Public Health Officers in an Indian High-Priority Aspirational District. *Administrative Sciences*, 15(10). <https://doi.org/10.3390/admsci15100397>
- Xanthopoulou, P., & Antoniadis, I. (2024). Navigating the Digital Frontier: A Systematic Review of Digital Governance's Determinants in Public Administration. *International Journal of Electronic Governance*, 16(3), 274–302. <https://doi.org/10.1504/IJEG.2024.142398>
- Zumitzavan, V., Prachumrasee, K., & Pathak, S. (2025). Transformational Leadership Cultivating Innovation and Transparency in Local Government Organisations, Thailand. *Journal of Open Innovation: Technology, Market, and Complexity*, 11(3), 100626. <https://doi.org/10.1016/j.joitmc.2025.100626>