

Article

Navigating Multiple Crises: An Analysis of Digital Transformation in Lebanese Public Administration

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Abstract

Despite global advances, the digital transformation of public services in developing countries often fails to meet its objectives. This study argues that a primary reason for this is an overemphasis on technological solutions and a neglect of the broader institutional context. Through a qualitative case study of Lebanon and applying the Technology–Organization–Environment (TOE) framework, this research identifies the critical drivers and barriers to digital government transformation. The analysis demonstrates that organizational factors (e.g., leadership, inertia) and environmental factors (e.g., political will, economic crisis) are more decisive than technological capacity alone. The findings underscore that digital transformation is a fundamentally socio-technical process, where success depends on managing the complex interplay between political interests, organizational culture, and public demand. This study offers theoretical contributions by validating an integrated view of digital transformation and provides practical implications for reformers in developing nations, highlighting the need for strategies that build dynamic capabilities and navigate contentious political landscapes.

Keywords: digital transformation; TOE framework; social–technological approach; e-government challenges; developing country; Lebanon

1. Introduction

Digitalization is transforming society and reshaping our habits, both in leisure and—for many sectors—in work. This shift involves a radical transformation of work methods and practices, driven by the adoption of cutting-edge technologies to achieve strategic objectives (Mettler, 2025). In line with this perspective, Vial (2019) conceptualizes digital transformation as a strategic process of organizational enhancement. This process is driven by the integrated application of information, computing, communication, and connectivity technologies to trigger significant changes to an entity’s core properties and achieve fundamental improvement.

Since digitization has invaded every corner of our life, the digital transformation in the public sector has become inevitable. Digital governance refers to the adoption of new communication and information technologies by public administrations—both national and local—to streamline internal operations and enhance the quality of public services (Androniceanu, 2023).

In their systematic study of public sector digitization across multiple countries, Latupeirissa et al. (2024) observe that despite a lack of consensus in defining digital transformation, it is widely recognized as a significant step forward for improving public service delivery and governance.



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According to [Pope \(2019\)](#), digital transformation involves restructuring government operations around a central network of shared digital tools, common data standards, and key datasets. This foundation allows civil servants, businesses, and others to build vastly improved public services that are more efficient, secure, and accountable.

Previous research on digital transformation in government has been categorized into three main approaches: Technology-Driven Digital Transformation, Socially Driven Digital Transformation, and Social–Technology-Driven Digital Transformation ([Xiao et al., 2022](#)). The first perspective highlights technology as the primary driver of transformation. Scholars in this category argue that technological advancements are central to reshaping government processes and services ([Luna-Reyes & Gil-Garcia, 2014](#)). The second approach, the socially driven digital transformation, examines how organizations adopt technology in response to external environmental changes. Researchers in this stream emphasize that institutional, contextual, and organizational factors play a crucial role in the success of digital transformation ([Mergel et al., 2019](#); [Luna-Reyes et al., 2005](#)). Finally, the third perspective posits that digital transformation is propelled by both social and technological factors. Scholars in this category argue that a balanced interplay between technological innovation and socio-organizational adaptation is essential for effective transformation ([Simmonds et al., 2021](#)).

Governments worldwide are integrating digital technologies and reforming their processes in order to improve public service delivery and governance ([Androniceanu, 2023](#); [Alvarenga et al., 2020](#)). Digitization of service and work processes is profoundly changing public sector organizations across the Western world ([Plesner et al., 2018](#)). The circumstances and the challenges surrounding the COVID-19 outbreak have accelerated these transformations ([Xiao et al., 2022](#)). However, The push toward mass digitalization stems from multiple factors, including the growing bureaucracy in the public sector, necessitating streamlined processes, the demand for faster access to information and improved communication between citizens and public institutions, the rising personnel costs in government-funded organizations, prompting efficiency-driven solutions, the need to cut expenses in public procurement by adopting digital procedures and efforts to reduce public sector crimes, such as fraud in tax collection, fee payments, and procurement ([Kuzmenko et al., 2023](#); [Androniceanu, 2023](#)).

The state of digitalization varies considerably, as is the case in any other sector. This phenomenon has been particularly notable in certain countries, while in developing nations, challenges and obstacles remain more significant. Public sector digitalization initiatives in China, the UK, Brazil, Indonesia, and elsewhere have led to profound transformations and achieved visible success ([Aminah & Saksono, 2021](#); [Filgueiras et al., 2019](#); [Nicholls, 2019](#); [Xiao et al., 2022](#)). However, the situation in most developing countries is far more complex.

Despite a growing body of e-government research, studies that situate digital transformation within the specific context of the public sector remain limited. This gap is particularly evident in understanding digitization's impact on organizational effectiveness in developing countries ([Setyawan, 2024](#)). Furthermore, the digitalization of the public sector has been identified as an underexplored area within organizational and change management studies ([Plesner et al., 2018](#)). Existing research often focuses narrowly on technology implementation and its immediate challenges, neglecting the broader institutional frameworks. As [Plesner et al. \(2018\)](#) argue, understanding digital transformation requires analyzing the specific context in which it occurs. Advancing this field, therefore, necessitates a stronger focus on effectively defining and measuring digital governance, alongside a more holistic understanding of its drivers ([Eom & Lee, 2022](#)).

This research is timely and critical. Governments increasingly view public sector digitalization as a lever to optimize productivity, enhance service quality, and stimulate

economic development through the transformative power of digital technologies (Alojail & Khan, 2023). This imperative aligns with public demand for more accessible, efficient, and transparent services (Setyawan, 2024). However, in developing countries, this transformation encounters systemic challenges and a high risk of failure (Aneke et al., 2019). This reality underscores the need for a deeper analysis of underlying constraints and policy gaps. Conducting empirical studies to identify success factors and formulate practical guidelines is therefore crucial to help governments overcome these obstacles and tangibly improve online service delivery.

Our research aims to address this literature gap by investigating how digital transformation can improve administrative efficiency and support reform efforts in a developing country. Guided by the Technology–Organization–Environment (TOE) framework, it seeks to identify the key institutional, economic, technological, organizational, and sociocultural factors affecting the adoption of digitalization. This focus is essential: despite numerous initiatives and substantial investments over the past two decades, most essential public services in developing countries remain manual, with limited electronic provision (Pérez-Morote et al., 2020). Citizens are still frequently required to visit government offices in person and navigate complex bureaucratic procedures, perpetuating the e-government gap (Mahlangu & Ruhode, 2021).

To meet the study's objectives, this paper is structured as follows. The theoretical framework section reviews the literature on the key benefits, challenges, and drivers of digital governance, with a focus on emerging contexts, and introduces the Technology–Organization–Environment (TOE) model as the analytical framework. Subsequently, the materials and methods section elaborate on the qualitative approach for data collection and analysis. Finally, the findings are presented and discussed, culminating in a conclusion that summarizes the study's contributions and provides actionable recommendations.

2. Theoretical Framework

This section reviews the literature on digital governance, examining its key drivers, potential benefits, and prevailing challenges. To frame this analysis, the Technology–Organization–Environment (TOE) model is introduced as the foundational research framework.

2.1. Benefits of Digitalization

The development of digital tools—from websites to AI platforms—has reduced the administrative burden on government agencies while making public services more accessible (Saxena et al., 2022). These technologies enhance organizational efficiency by automating routine tasks, lowering costs, breaking down interdepartmental barriers, and improving institutional communication (Ashaye & Irani, 2019; Xiao et al., 2022). For instance, integrating big data optimizes public service delivery through real-time process management and data-driven decision-making (Yukhno, 2024). Similarly, AI streamlines repetitive tasks, analyzes large datasets to support policymaking, and enables personalized, efficient services, all of which significantly improve user satisfaction (Androniceanu, 2023; Xiao et al., 2022). Furthermore, by promoting citizen participation and transparency, digitalization helps strengthen governmental accountability and foster public trust (Afiyah, 2024; Saxena et al., 2022).

Scholars argue that a key governance benefit of e-government is its promotion of democratic values. By making public transactions more visible and subject to scrutiny, it enhances accountability and reduces corruption. This, in turn, builds public trust and aligns with broader public value goals by improving perceptions of governmental integrity and responsiveness (Bannister & Connolly, 2014; Bertot et al., 2010). Similarly, Almufti et al. (2024) highlight e-government's role in reducing corruption, promoting transparency and

inclusivity, fostering socio-economic development, and enhancing administrative efficiency. These advantages position e-government as a transformative system.

[Latupeirissa et al. \(2024\)](#) identify eight key benefits of digitization in public administration through their systematic review: improved governance, enhanced public satisfaction, efficiency gains, citizen-centric services, better customer experience, transparency and accountability, data-driven decision-making, and AI-driven intelligence. Ultimately, digitalization reshapes administrative culture by modernizing procedures and revolutionizing decision-making processes.

[Henman \(2020\)](#) argues that while AI adoption in public sector decision-making remains limited, its potential is significant in three key areas: detecting patterns, sorting populations, and making predictions. For example, governments can leverage social media data to track shifts in public opinion, creating feedback loops that improve responsiveness to emerging issues. AI also enhances public security; governments like the US already use it to detect cyberattacks and national security threats. Additionally, AI aligns with broader digitalization benefits, such as boosting efficiency and transparency. Henman further emphasizes AI's role in strengthening accountability by testing algorithms for accuracy and mitigating biases to ensure fairer outcomes for marginalized groups.

However, to optimize digitalization efforts and enhance overall performance, governments must be prepared to implement urgent reforms and address numerous challenges. These challenges will be discussed in the following paragraph.

2.2. Challenges of Digital Governance

The transition to digital governance is fraught with challenges that can hinder its benefits. Key obstacles include regulatory hurdles, inadequate ICT infrastructure, data integration problems, limited digital literacy, and bureaucratic resistance ([Latupeirissa et al., 2024](#)). A primary concern is the widening digital divide, which exacerbates social inequities and raises issues of inclusion ([Setyawan, 2024](#); [Botrić & Božić, 2021](#)). Furthermore, the shift can reduce direct human interaction, potentially eroding the government's understanding of public needs over time.

The adoption of Artificial Intelligence (AI) intensifies these issues, raising significant concerns about data security, confidentiality, and the ethical implications of algorithmic decision-making ([Henman, 2020](#); [Yukhno, 2024](#)). Broader apprehensions involve accountability and AI's impact on social dynamics. The core challenge is to leverage AI for socioeconomic advancement while mitigating its risks. It is important to note, however, that many AI applications function similarly to traditional algorithms. Thus, the ethical, legal, and social challenges they pose are not entirely new but are dramatically amplified by AI's scale and complexity ([Henman, 2020](#)).

* Digitalization Challenges in Developing Countries

Despite widespread acceptance, digitalization projects in developing countries have a high failure rate ([Aneke et al., 2019](#)). E-government initiatives in these contexts face significant implementation and adoption challenges, though their severity varies ([Mahlangu & Ruhode, 2021](#)). Given the financial constraints in developing nations, digital transformation is critical, as it offers a pathway to more cost-effective and efficient governance. It is within this context that e-governance has gained prominence ([Hazineh et al., 2022](#); [Setyawan, 2024](#)).

[Saaida and Ayyat \(2025\)](#) argue that governance issues hinder Digital Transformation (DT) in developing countries, pointing to consistent problems documented in the literature like infrastructure gaps, digital illiteracy, regulatory rigidity, and financial constraints ([Syed et al., 2022](#); [Olubusola et al., 2024](#)).

[Mahlangu and Ruhode \(2021\)](#) distinguish between six categories of challenges facing developing countries: infrastructure, interoperability, digital divide, human factor, policy

factor, and funding. One of the primary challenges in digital transformation within developing countries is the lack of a robust digital foundation (Rohayati & Abdillah, 2024). The lack of infrastructure or inadequate infrastructure affects digital transformation (DT) in two ways. On the one hand, it prevents administrations from providing citizens with electronic services, and on the other hand, it hinders citizens from accessing the services offered by e-government. Interoperability implies that most systems can communicate with each other and share data. However, this is not the case in developing countries, where most e-government systems operate in “silos,” and digital services are fragmented across ministries. The digital divide reflects the lack of and/or limited access to electronic services by citizens (Mahlangu & Ruhode, 2021; Rohayati & Abdillah, 2024), which restricts the adoption and use of e-government to those who have access to technology and the necessary skills to use e-services. As for the human factor within the administration, several previous studies have highlighted the lack of ICT skills and expertise among public employees to work on and manage digitalization projects (Aneke et al., 2019; Hazineh et al., 2022; Rohayati & Abdillah, 2024; Setyawan, 2024). Additionally, developing countries struggle to establish a clear and well-defined policy for implementing e-government, meaning digitization initiatives are often scattered and originate from multiple sources within the state (administrations, departments, and agencies) (Mahlangu & Ruhode, 2021). Other studies have emphasized the need to align digitalization policies with national development goals and integrate them into development strategies for greater sustainability and inclusivity (Rohayati & Abdillah, 2024). Finally, the lack of funding is a crucial problem. Even with proper planning, financial resources are needed to implement projects, and these are significantly lacking.

2.3. Key Success Factors for Digitalization

A growing consensus in the literature argues that understanding digital government transformation (DGT) requires moving beyond a purely technological view to adopt a comprehensive, multi-dimensional framework. Scholars caution against technologically deterministic approaches, advocating instead for an integrated analysis of political, economic, and social dimensions (Eom & Lee, 2022; Almufti et al., 2024; Hazineh et al., 2022).

This comprehensive view reveals challenges at distinct levels. Hazineh et al. (2022) differentiate between **macro-level** challenges, such as a state’s socio-political and economic context, and **micro-level** ones, like internal human resources and ICT infrastructure. This aligns with Xiao et al. (2022), who identify key promoters including technological readiness, organizational efficiency, and external pressure.

Further, Eom and Lee (2022) categorize influencing factors into contextual (e.g., political regimes), behavioral (e.g., stakeholder attitudes), and organizational (e.g., coordination, competencies) domains. This taxonomy underscores that DGT cannot follow a one-size-fits-all strategy. As Setyawan (2024) emphasizes, success depends on tailoring strategies to specific contexts, aligning technological solutions with distinct organizational needs.

According to (Rekunen et al., 2025), a gap persists in the literature regarding the specific factors determining successful technology adoption in the public sector, particularly within diverse regulatory and cultural environments. Their study identifies a core set of critical success factors, pointing to digital infrastructure, workforce skills, and organizational culture as fundamental. This underscores the foundational need for strategic leadership and a culture of collaboration. Such a view aligns with the broader consensus that maximizing public sector benefits requires a synergistic integration of technological, organizational, and human elements (Limna et al., 2023).

Expanding on this, Saaida and Ayyat (2025) propose a holistic framework for developing contexts, anchoring success in visionary leadership and robust governance structures—

including centralized IT control for security and interoperability—coupled with process standardization and strategic public–private partnerships. They critically emphasize that sustainable transformation is contingent upon continuous capacity-building and digital literacy programs for both public servants and citizens, which are essential to bridge skills gaps, reduce resistance, and ensure equitable service adoption.

Ultimately, successful Digital Government Transformation (DGT) is a negotiated process among diverse stakeholders. Mettler (2025) argues that digital government must balance competing interests, where sustainable solutions require all parties—government agencies, private companies, and citizens—to both contribute to and benefit from the transformation. This process is inevitably shaped by its temporal and cultural context, reinforcing the critical need for a nuanced and comprehensive approach. Therefore, success hinges on implementing well-defined processes that meticulously account for these multifaceted aspects (Escobar et al., 2023), recognizing that the identified success factors are crucial components for achieving transformation within an organizational setting (Osmundsen et al., 2018).

2.4. The Theoretical Model

Several theoretical models can serve as frameworks for analyzing the drivers of digital transformation in public sector organizations, including the Maturity Model, the TOE framework (Technology–Organization–Environment), Institutional Theory, and the Dynamic Capability Approach.

This study adopts the TOE framework as its analytical foundation. Introduced by Tornatzky and Fleischer (1990), the model is distinguished by two primary strengths. First, it is one of the most empirically validated models in innovation adoption research, including within e-government studies, and has been widely applied to digitalization, particularly in developing country contexts (Defitri et al., 2020; Mahlangu & Ruhode, 2021). Second, its conceptual clarity renders it highly operational for guiding research design, as it organizes influencing factors into three coherent categories: the **technological context** (encompassing infrastructure like telecommunications and bandwidth); the **organizational context** (including internal attributes such as management support and skills); and the **environmental context** (involving external influences like policies, regulations, and socio-political conditions) (Mahlangu & Ruhode, 2021). This tripartite structure facilitates systematic data collection and analysis across interconnected domains, moving beyond a narrow focus on technology to capture the full complexity of public sector modernization.

A critical advantage of the TOE framework is its explicit and integral treatment of the external environment as a decisive enabling or constraining force. This feature is especially pertinent to the Lebanese context, where environmental factors—such as profound political instability, economic crisis, and financial collapse—often constitute primary catalysts or barriers to reform. By formally incorporating this dimension, the framework ensures these pivotal contextual forces are central to the analysis. This stands in contrast to alternative models: the Maturity Model (Layne & Lee, 2001) tends to be more descriptive and normative, better suited to assessing outcomes than explaining drivers, while the Dynamic Capability Approach (Teece, 2007), though insightful, focuses predominantly on internal organizational capacities and is often applied to entrepreneurial sectors subject to rapid and dynamic change. The TOE framework, by design, avoids this limitation by weighing all three dimensions equally within its analytical structure.

Moreover, the TOE framework's modular design is complementary to other theoretical perspectives, allowing for a nuanced and integrative analysis that can incorporate, where relevant, insights from Institutional Theory on external pressures or from the Dynamic Capability Approach on internal adaptation processes.

In summary, the TOE framework provides a robust, comprehensive, and context-sensitive structure for this study. Its holistic scope, specific alignment with Lebanon's socio-political realities, and capacity for theoretical integration make it the most appropriate model for a systemic analysis of the determinants of digital transformation in Lebanon's public sector.

2.5. The Context of the Study

The Lebanese context is characterized by a unique political, social, and economic context. The political system, based on sectarianism and a partisan structure, grants political parties a central role in formulating and implementing government strategies. The country suffers from chronic instability and deep divisions among its various political forces, which frequently escalate into acute conflicts that paralyze the activities of public administrations. Lebanon's geographical location also makes it vulnerable to external interference and regional conflicts, exacerbating this instability. On the economic front, the country plunged into an unprecedented crisis starting in 2019, with a financial collapse that severely impacted the banking system and the national currency.

This multifaceted reality has profoundly weakened the public sector, which is plagued by structural inefficiencies, obsolete technological infrastructure, and endemic corruption (World Bank, 2016). Opaque and burdensome administrative procedures consume significant time and resources, degrading public service delivery and eroding citizen trust. Consequently, the state's capacity to undertake a modern digital transformation is critically challenged (OECD, 2020). Despite these profound obstacles, digital transformation is increasingly viewed as a vital catalyst for reform and a pathway out of the crisis. In response, digitalization initiatives are proliferating across Lebanese administrations, and their importance is gaining recognition among authorities.

It is within this challenging environment that Lebanon has officially approved the creation of a Ministry of Technology and Artificial Intelligence (MITAI)—the first new government department in over three decades. With a mandate to formulate a national digital strategy, enhance data protection, and stimulate a knowledge-based economy through public–private partnerships and diaspora engagement, the ministry represents a landmark commitment to modernization. However, this ambitious transition is fraught with technological and organizational obstacles. Identifying the key elements that ensure the success of these initiatives is therefore essential to guiding the Lebanese public sector toward greater efficiency and performance.

3. Materials and Methods

3.1. Study Design and Sample

This study employs a qualitative approach to gain an in-depth understanding of the factors driving technological innovation adoption within the Lebanese public administration. It combined two primary data collection techniques: document analysis and semi-structured interviews. Document analysis involved a systematic review of international and governmental reports related to e-government and public administration reforms in Lebanon, as well as an examination of relevant legislative frameworks and Digital Transformation (DT) policies. The interviews were conducted with key government employees responsible for e-government implementation and senior public managers. Among the many stakeholders concerned with the digital transformation of the public sector, we chose to focus on the perspective of public employees, as their insights are crucial for the successful development of digitization within the administration (Chen et al., 2023). This focus also addresses a gap, as many existing studies have centered primarily on the citizen perspective (Mahlangu & Ruhode, 2021).

Participants were selected using a purposive sampling method, supplemented by snowball sampling. Purposive sampling allows researchers to identify and interview participants who are likely to possess rich, relevant information regarding the research objectives. This technique is appropriate when there is no predefined sampling frame, placing responsibility on the researcher to identify suitable participants (Denscombe, 2010). In this study, initial contact persons from the Office of the Minister of State for Administrative Reform (OMSAR) and from three key public administrations were selected as primary respondents. These individuals subsequently recommended additional relevant contacts, activating the snowball sampling technique.

OMSAR was chosen as a primary entry point because this administration has assisted and supported several other public administrations in their digitalization initiatives. Furthermore, a preliminary review of national documents (OMSAR, 2022) and international reports (OECD, 2020; World Bank, 2016), on digitalization projects in Lebanon helped identify three key ministries that had demonstrated significant progress in this area, from which senior managers were contacted.

Each potential participant was contacted via email or phone to explain the purpose of the study and assure confidentiality. Interviewing concluded after 12 participants, as the principle of data saturation was reached (Yin, 2003). Following the tenth interview, subsequent data yielded minimal new insights. This, combined with the sample's diversity and the defined scope of the research, confirmed that further data collection was unnecessary.

The twelve participants were affiliated with 6 different ministries and two oversight bodies. The ministries included the Minister of administrative reforms ($n = 2$), the Ministry of Economy ($n = 1$), the Ministry of Finance ($n = 2$), the Ministry of interior ($n = 1$), the Ministry of Health ($n = 2$), the Ministry of public works and Transport ($n = 2$). The oversight bodies were the Court of Audit ($n = 1$) and the general inspectorate of finance ($n = 1$).

The sample comprised 8 men and 4 women, including 8 senior official and 4 digital experts, all actively involved in digital transformation efforts within their institutions. Participants ranged in age from 35 to 56 years, with managerial experience varying from 8 to 22 years. All held university degrees, with two participants holding PhDs.

3.2. Data Collection

Following a systematic review of international organizations' reports on their interventions in Lebanon's digitalization strategies since 2018, a preliminary list of key themes was identified. In the second research phase, qualitative interviews were conducted over three months at the end of 2025. Using a blend of face-to-face and online methods, these interviews were guided by a semi-structured protocol (see Appendix A). The interview guide, developed from the literature review, was structured around the study's primary thematic areas as informed by the Technology–Organization–Environment (TOE) framework.

The interviews began by asking respondents about the nature of their current work and associated challenges. The questions then focused on the progress of digitalization within their organization, the challenges encountered, and the expected benefits of these transformations. The discussion subsequently shifted to the organizational, technological, and environmental factors likely to foster this transition. Finally, participants were asked to share their views on the integration of Artificial Intelligence (AI) into public administration and the potential obstacles to its implementation. Interviews lasted between 45 min and one hour and were transcribed verbatim by the researcher.

3.3. Data Analysis

The interview transcripts were analyzed manually using thematic analysis, a method well suited for identifying, analyzing, and reporting patterns (themes) within qualitative

data (Braun & Clarke, 2006). The process involves coding the data, categorizing codes into themes, and interpreting these themes in the context of the research questions (Braun & Clarke, 2013).

The analysis followed several stages. First, the researcher engaged in a detailed, line-by-line reading of the transcripts to achieve immersion and familiarity with the data, taking initial notes. Second, initial codes were generated both inductively from the data and deductively from the research model and key concepts in the literature. The analysis then focused on identifying recurrent themes related to the technological, organizational, and environmental dimensions of digital transformation.

Third, these initial themes were reviewed, refined, and organized into a coherent thematic map throughout the analytical process to ensure their alignment with the research objectives. Finally, the findings were synthesized. This involved defining and naming each theme, selecting illustrative verbatim quotations, and weaving the analysis into a coherent narrative.

To ensure the credibility and trustworthiness of the findings, insights derived from the interviews were systematically cross-checked with themes identified in the document analysis. Furthermore, the emerging themes were validated against established theories and prior empirical research, strengthening the robustness and theoretical grounding of the conclusions.

4. Results

The findings reveal that developing digital governance in Lebanese public sector hinges on addressing challenges and opportunities across three domains: organization, technology and the external environment.

4.1. Organizational Factors

Public servants identify significant organizational impediments, including leadership commitment, institutional inertia, and the governance of collaboration.

4.1.1. Leadership Commitment

(Rohayati & Abdillah, 2024) found that leadership commitment is a critical driver for digital transformation, a point emphasized by several participants.

“This commitment is extremely important—it is an essential condition for the implementation of digitalization. There must be a commitment to digitalization and a deep conviction of its importance for sustainability, otherwise it will be abandoned at any moment”. (P3, October 2025)

“The administration, and especially senior leadership, must avoid both manipulating the digitalization process and withdrawing from it. For example, at the vehicle registration service, it was arranged for citizens to take their turn online. This should not be violated by allowing queues outside the electronic circuit in order to satisfy clientelism. Digitalization alone is not enough; the involvement (commitment) and awareness of the administration are necessary”. (P7, November 2007)

Others stressed the importance of empowering the public sector’s technology experts to drive digitalization. This aligns with an approach focused on capacity building and creating reform-oriented leadership (Doan et al., 2025; Junaidi, 2024). one participant illustrated this point, stating the following:

«There must be true leaders within the IT group, and that is our secret in the ministry. Our experience is atypical in this sense. Currently, everyone seeks

our opinion, and when the minister meets with the ministry's senior officials to discuss the ministry's problems and look for weak points, they solicit our point of view. Since we carried out the work process re-engineering before digitization, we became aware of all the details and all the obstacles, and this has helped to strengthen our role. Another determining element of our success is that we took the initiative instead of the State to implement a unique health ID. The State didn't do it, so we did it in its place. We introduced digitization by changing the management system within the ministry. Thus, digitization became a reality that cannot be avoided. A doctor who refuses to adhere to the digitization system will lose a lot of work because patients who need medication from the Ministry of Health will not go to him". (P3, October 2025)

4.1.2. Institutional Inertia

Organizational resistance and inertia present significant impediments to the process of digital transformation (Nawaz et al., 2025). According to Setyawan (2024), resistance to change, limited resources, and the digital divide are among the most significant challenges of digitalization in developing countries. These factors are more visible in developing countries than in other contexts and consequently hinder digital transformation in these nations. The statements from our interviewees confirm these findings, especially concerning resistance to change.

"A significant challenge in our digital transformation has been employee resistance. Many who were deeply accustomed to manual, register-based processes have refused to adopt new digital tools, clinging to their established workflows and comfort zones. We have resorted to a 'carrot and stick' approach: first, by showing them the tangible benefits of digitization for their own efficiency and roles, and when that fails, we have been forced to threaten them with transfer to different positions". (P4, October 2025)

Another participant highlighted this paradox directly, stating the following: "We equipped the police officers with new tools to monitor the validity of taxi license plates. However, the officers only used this technology briefly before preferring to return to visual surveillance, a method that is far less efficient". (P5, October 2025)

To address this resistance, participants emphasized the paramount importance of thoroughly training employees in digital skills and clearly communicating the benefits of the transformation. This approach is likely to reduce the risks of resistance and secure the necessary buy-in from the public servants (Saaida & Ayyat, 2025).

Several workflow digitization projects had been stalled for years due to significant internal resistance. A senior official tasked with leading a project in partnership with an external organization explained that to successfully implement digitization in his long-delayed organization, teams were established within each department. Their role was to assist in explaining the work process and propose improvements to the entity responsible for implementation. This participation in the change process, aimed at ensuring successful digitization, significantly alleviated employees' fears about this transformation. The approach made staff feel "heard and valued, as if they are part of the project, rather than just being given instructions and directives" (P7, November 2025).

4.1.3. Collaboration Governance

The adoption of new technologies presents complex challenges for collaborative governance, with the potential to reshape governmental structures and interorganizational networks. Evidence suggests that this often complicates coordination between public institutions, private firms, and non-profit entities (Chen et al., 2023).

The participants' perspectives underscore these operational difficulties. One noted that collaboration with external entities "has been a major challenge primarily due to the temporary nature of their assignments" (P3, October 2025). Similarly, another highlighted persistent systemic shortcoming, stating that it is "imperative to strengthen inter-ministerial coordination, particularly in joint operations with security and intelligence agencies" (P5, October 2025).

Effective stakeholder coordination is crucial, as it harmonizes focus areas, facilitates knowledge exchange, and maximizes available resources to achieve sustainable change (Saaïda & Ayyat, 2025). However, collaboration with non-governmental partners introduces further tension. Experts observe that "working with donors, private tech firms, and academia can raise tensions over data ownership, compliance, and accountability" (P1, October 2025). Nevertheless, such partnerships are widely affirmed as vital for innovation, provided they are supported by clear governance and transparency mechanisms. This underscores the importance of building relationships based on transparency and ethics. As one senior official emphasized, "The foundation for harnessing digitization is not control, but credible communication. Truth builds the trust necessary for collaboration, and collaboration is what turns digital ambitions into real transformation. Therefore, no national digitization and AI strategy can succeed without transparent governance and ethical decision-making at its core" (P10, November 2025).

To address these coordination challenges, many participants propose adopting a model inspired by OMSAR's Digital Transformation Unit (DTU). This approach involves establishing a central DTU to set overarching policy and standards, complemented by localized DTUs within individual ministries for implementation. By clarifying mandates and incentivizing cooperation, this model aims to provide a unified framework for managing the digitization of public services.

4.2. Environmental Factors

Public administration is subject to an environmental context characterized by two distinct pressure dynamics. Vertical pressures emanate from the political sphere, including policy directives and electoral cycles that mandate digital transformation. Concurrently, horizontal pressures arise from external stakeholders, including citizen expectations for 24/7 services, competitive emulation of peer governments, private sector technological influence, and relentless media scrutiny. This combination of top-down mandates and peer-influenced demands compels public agencies to innovate in order to demonstrate improved performance, cost savings, and responsiveness (Madan & Ashok, 2023).

Our interviewees identified three key external challenges for digital transformation: political will, regulations, and economic constraints.

4.2.1. Political Will

Scholars posit a fundamental distinction between the operational logics of public and private sectors. Public sector entities function under a unique institutional logic, where their core values and success criteria are not self-determined but are principally mandated by law and political decisions (Bejerot & Hasselbladh, 2013; Du Gay, 2000). These externally imposed values significantly constrain their strategic autonomy. Such structural constraints create a challenging context for modernization initiatives like digital governance—a challenge often exacerbated in developing countries by a lack of political will and severe budgetary constraints (Rohayati & Abdillah, 2024).

In Lebanon's public sector, respondents directly linked the lack of political commitment to a desire for administrative opacity. A senior oversight official explained the core problem as "a lack of firm political decision," arguing that effective reform contradicts the

interests of politicians vested in a system of “clientelism and favors” (P7, November 2025). His conclusion was stark: true digitization would eliminate this room for maneuvering.

4.2.2. Regulations

Regulatory frameworks can often curtail innovation and restrain the scaling of successful projects, particularly when they are outdated, lack supportive policies, or impose excessive procedures (Syed et al., 2022). This challenge is exemplified by the situation in Lebanon. The country’s foundational legal framework for electronic transactions and data protection, Law 81/2018, incorporates principles inspired by the GDPR, such as lawful processing and data subject rights. However, the law’s enforcement is critically hampered because the independent Personal Data Protection Authority (PDPA), which the legislation mandates to oversee implementation, has never been established.

Recognizing this regulatory gap and the increasing prevalence of cyber threats, Lebanon has been discussing new legislative initiatives. These include a draft law to create a National Cybersecurity Agency for national-level defense and a potential new data protection law intended to either replace or strengthen Law 81/2018 with a functional regulator. Despite these efforts, both initiatives remain in the draft phase, stalled by the country’s ongoing political and economic crises.

A participant pointed to systemic regulatory gaps, noting that “There are legal and regulatory ambiguities—particularly around institutional mandates, digital signatures, data protection, and procurement procedures—which create additional barriers to the full rollout of digital public services. There are inconsistent data governance frameworks across public institutions” (P2, October 2025). In this legislative vacuum, the development of specific rules and regulations addressing data biases and their implications would be a productive step. Such regulations could focus on data disclosure, audits, or impact assessments.

4.2.3. Economic Constraints

Lebanon’s public administrations are under severe strain from the ongoing economic crisis and an excessive budget deficit. A critical symptom is the financial suffocation affecting basic operations. As one participant highlighted, “The financial issues are now our top priority. We were forced to cancel a contract with the Internet service provider that connects our ministry to border data centers because we could no longer afford the payments” (P8, November 2025).

However, many respondents point out that several European non-governmental organizations have committed to working with key public administrations to fund digitization projects. The challenge is to take advantage of these temporary financial inflows to complete the projects without delay. Although these initiatives always require follow-up plans and subsequent funding, it is imperative for the moment to make the best use of the donations granted for this purpose.

4.3. Technological Factors

A government’s capacity for digital transformation is built upon two foundational pillars: IT assets and data-related assets. The IT pillar encompasses core technological infrastructure, including cloud computing, processing power, networks, and connectivity, as well as the crucial ability to integrate systems and ensure new technologies are compatible with existing ones. The data pillar involves the accessibility and quality of data, robust database management systems, and effective governance concerning data ownership, sharing between agencies, and secure cloud storage. Together, these interdependent assets form the essential backbone for modern, data-driven governance (Madan & Ashok, 2023).

4.3.1. A Developed Technological Infrastructure

In the Lebanese case, and due to international donations, an excessive focus has been placed on implementing software and programs, while the policy goal must be to digitalize state processes and services to better respond to the aspirations and needs of Lebanon's population (OECD, 2020).

Respondents expressed deep frustration with the public sector's technological stagnation, emphasizing the critical need to invest in infrastructure, ensure a stable energy supply, and reduce internet costs. One participant pointed out the failure to implement even simple technological solutions: "Take, for example, using a QR code to instantly verify sailors' competencies. What saddens me is that despite considerable advancements in AI... we are still lagging in this sector" (P5, October 2025). An official from the same ministry added "Imagine a civil servant having to go to the office in the middle of the night simply to authorize a ship to set sail. Such processes should be managed online to avoid unjustified and unreasonable demands on staff, especially in an era where technological progress has reached such an advanced level" (P6, October 2025).

The core issue is a highly fragmented digital landscape, where each entity operates as an isolated data silo. This "limited interoperability" between ministries severely hinders efficiency. To address it, respondents insisted on a unified, state-level infrastructure driven from the top. A senior manager argued that "*the technological infrastructure must be unified, instead of having several servers scattered across ministries*" (P9, November 2025)—a move that would replace fragmented systems with a centralized cloud.

4.3.2. Data Governance

Successful e-government requires seamless service provision across departments, creating cohesive user experience. This cross-agency integration is crucial to prevent digital services from operating in silos (Margetts & Dunleavy, 2013).

Lebanon's digital transformation continues to be hampered by pronounced administrative fragmentation. A fundamental problem lies in determining which entity should lead e-government initiatives. Responsibility is currently divided between OMSAR, which handles administrative matters, and the Ministry of Artificial Intelligence, which oversees technical ones. Respondents indicated that this division likely stems from *communautarisme*—the country's confessional power-sharing system—which ensures that each major community retains a share of influence. This fragmented governance structure was unanimously identified as a major impediment to a cohesive national digital strategy.

To overcome this, applying robust data governance principles is essential. Standardizing how public organizations handle data leads to higher quality and more trustworthy information (Madan & Ashok, 2023). A critical part of this is boosting the data literacy of public administrators, equipping them with the skills to implement these practices and critically evaluate the data they work with. The critical goal, as an OMSAR expert confirmed, is to establish central oversight and unified governance to break down the silos and create a consistent data governance framework.

5. Discussion and Conclusions

Digital transformation in Lebanon is progressing slowly and encountering significant obstacles, despite the country's experience in developing digital policies and the existing digital capabilities within its public and private sectors (OECD, 2020).

Applying the TOE framework, this study analyzed the technological, organizational, and environmental drivers of digital transformation in public administration. The findings indicate that the organizational context is shaped by leadership, collaborative governance, and institutional inertia. The environmental context is defined by political will, supportive

legislation, and severe economic pressures. The technological context, while foundational, depends on robust ICT infrastructure and unified data governance.

The results align with prior research emphasizing the pivotal role of organizational factors (Madan & Ashok, 2023) and reflect challenges common to developing countries (Aneke et al., 2019; Hazineh et al., 2022; Setyawan, 2024). They are also consistent with studies highlighting cultural and social elements as essential components of such transformations (Hirawan et al., 2023; Rohayati & Abdillah, 2024). As noted by Saaida and Ayyat (2025), overcoming resistance in the public sector, particularly in developing countries, requires fundamental organizational and cultural change. Deeply ingrained bureaucratic cultures and fears of change significantly hamper progress. Success depends on shifting the behaviors and mindsets of all stakeholders—including leaders, employees, and citizens—through strategies such as effective communication, visible leadership, and participatory change management. Furthermore, this study underscores the specific complexities within Lebanon's unique public sector context. Here, digital transformation is viewed not merely as a technical upgrade, but as a critical response to a severe economic crisis—a necessary means to reduce exorbitant public spending, improve administrative efficiency, and enhance transparency in response to public demands for accountability (OECD, 2020).

The Lebanese case demonstrates that the digital transformation of the public sector cannot be reduced to simple technological modernization. It is a holistic process, the ultimate goal of which is the improvement in public services (Dunleavy et al., 2006), and which requires sustained political support (Bejerot & Hasselbladh, 2013; Plesner et al., 2018). However, it is precisely in the political sphere that the main obstacle lies. Despite strong citizen demand for reforms, Lebanon's political structure—inherited from the civil war (1975–1990) and organized around a confessional system and fragile multi-party coalitions—generates chronic instability and frequent government turnover (OECD, 2020). This fragmentation paralyzes policy continuity, prevents stable leadership, and undermines any coherent long-term digital strategy.

While administrative centralization and the country's small size are a priori assets for deploying national policies, they are neutralized by this political reality, which is further amplified by regional instability. Compounding this is a severe human capital challenge: despite an educational landscape that has produced a skilled, multilingual workforce, the public administration has been unable to formally recruit this talent for over a decade due to a prolonged hiring freeze—a direct consequence of chronic political and economic instability. This has led to a “terminal brain drain,” severely limiting the government's internal capacity to lead digital transformation.

Additionally, the political, cultural, and social dynamics of Lebanese society place a high value on in-person relationships, clientelism, and resource networks, all deeply embedded in professional life (Corm, 2003). This system emphasizes relational systems. Consequently, digitalization is often perceived as a direct threat, as transparent online services could disrupt these entrenched patronage networks. As a result, vested interests actively resist such change to protect the existing relational economy.

In this context, the primary obstacle is not necessarily the digital divide (Setyawan, 2024; Botrić & Božić, 2021) nor digital illiteracy (Rohayati & Abdillah, 2024; Olubusola et al., 2024). The path of digitalization in Lebanon is shaped less by technical potential than by a fraught interplay of political fragmentation, economic collapse, institutional incapacity, and embedded socio-cultural resistance. Ultimately, successful digital government transformation requires navigating a delicate equilibrium between the state, the private sector, and citizens—a balance deeply constrained by the country's specific context.

5.1. Theoretical and Practical Implications

5.1.1. Theoretical Implications

Theoretically, our findings address the research gap identified by Eom and Lee (2022) by providing a holistic view of factors influencing Digital Government Transformation (DGT) implementation. We confirm the necessity of an integrated approach that moves beyond technological determinism to encompass the complex interplay of social, political, and economic dimensions (Almufti et al., 2024; Hazineh et al., 2022). This supports the conceptualization of digital transformation as a socio-technical process (Simmonds et al., 2021) and validates the critical importance of context-specific approaches (Heeks, 2002). Our analysis demonstrates that effective digitalization is not a one-size-fits-all formula but must be tailored to unique local conditions.

Consequently, this study enriches the debate on digitalization drivers in the public sector of a developing country. In addition to the organizational, technological, and environmental factors central to the TOE framework, we highlight the crucial importance of the human factor. We show that within a complex context, it falls to the human element to transcend divisions, evolve established cultures, and adopt the postures necessary for successful transformation.

5.1.2. Practical Implications

Practically, the findings provide an actionable roadmap. Successful e-government implementation requires a holistic strategy:

Organizationally, this involves increasing technological awareness among leaders to develop ambitious digitization strategies. Public institutions must build the capacity of existing employees, recruit a new generation of tech-skilled professionals, and manage the cultural shift from bureaucratic, face-to-face encounters to collaborative digital service delivery. Processes should be redesigned to use digitization to alleviate bureaucracy.

Technologically, the focus must be on implementing secure, user-centric online services, supported by a clarified and strengthened legal framework for digital decision-making.

Environmentally, governments should create mechanisms for public–private partnerships and explore diaspora engagement models to mitigate brain drain. To navigate cultural resistance, digitization plans must incorporate change management, incentive structures, and proactive communication to build trust.

Ultimately, public institutions must foster dynamic capabilities—the continuous skill of integrating and reshaping resources—to combat inertia and enable the organizational adaptation necessary to deliver effective, accountable public services.

5.2. Limitations and Future Research

This study has several limitations. The first is the sample size, though this can be justified by the research’s exploratory objectives. A more significant limitation is its exclusive focus on the perspectives of government employees. Future research should incorporate the views of other stakeholders, particularly citizens; a quantitative investigation of public expectations toward digitalization would be a logical next step. Furthermore, examining the implications of digitalization for internal organizational systems—such as HR management and change processes—is crucial for designing the transparent and effective institutional mechanisms required for successful digital governance.

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Appendix A

Table A1. Interview guide.

(1)	What is your function?
(2)	Which challenges are you facing in your work?
(3)	How is digitization integrated in your administration?
(4)	Which challenges are triggered by the implementation of digitalization?
(5)	Which factors (organizational, environmental, and technological) can promote the digital transformation of the Lebanese public sector?
(6)	Which tensions are driven by these transformations and by the work of non-governmental agencies?
(7)	How could digitalization improve public service effectiveness and efficiency? Does it represent a threat to public service values?
(8)	Can we say that AI will be soon integrated in public administration in Lebanon?

Table A2. Interview participants.

1.	P1, digital expert, office of the minister of State for administrative reform, October 2025.
2.	P2, digital expert, office of the minister of State for administrative reform, October 2025.
3.	P3, digital expert, ministry of public health, October 2025.
4.	P4, senior official, ministry of public health, October 2025.
5.	P5, senior official, ministry of public works and transport, October 2025
6.	P6, digital expert, ministry of public works and transport, October 2025.
7.	P7, Financial inspector, general inspectorate of finances, November 2025.
8.	P8, senior official, ministry of Economy, November 2025.
9.	P9, senior official, ministry of finance, November 2025
10.	P10, senior official, ministry of finance, November 2025.
11.	P11, Senior auditor, court of Audit, November 2025.
12.	P12, Senior official, ministry of interior, November 2025.

References

Afiyah, S. (2024). The impact of e-government services, citizen participation, and transparency on public trust in government. *Global International Journal of Innovative Research*, 2(6), 1246–1261. [CrossRef]

Almufti, M., Sellami, R., & Belguith, L. H. (2024, February 19–20). *Validation of a measuring model as a key aspect in the adoption of e-government in developing countries*. 5th International Conference on Advancements in Computational Sciences (ICACS), Lahore, Pakistan.

Alojail, M., & Khan, S. B. (2023). Impact of digital transformation toward sustainable development. *Sustainability*, 15(20), 14697. [CrossRef]

Alvarenga, A., Matos, F., Godina, R., & Matias, J. C. O. (2020). Digital transformation and knowledge management in the public sector. *Sustainability*, 12(14), 5824. [CrossRef]

Aminah, S., & Saksono, H. (2021). Digital transformation of the government: A case study in Indonesia. *Jurnal Komunikasi: Malaysian Journal of Communication*, 37, 272–288. [CrossRef]

Androniceanu, A. (2023). The new trends of digital transformation and artificial intelligence in public administration. *Administratie si Management Public*, 40, 147–155. [CrossRef]

Aneke, S., Bakht, H., & Desta, A. (2019). Challenges to e-government implementation in developing countries. Nigeria Case Study. *Journal of Computing and Management Studies*, 3(2).

Ashaye, O. R., & Irani, Z. (2019). The role of stakeholders in the effective use of e-government resources in public services. *International Journal of Information Management*, 49, 253–270. [CrossRef]

Bannister, F., & Connolly, R. (2014). ICT, public values, and transformative government: A framework and programme for research. *Government Information Quarterly*, 31(1), 119–128. [CrossRef]

Bejerot, E., & Hasselbladh, H. (2013). Forms of intervention in public sector organizations: Generic traits in public sector reforms. *Organization Studies*, 34(9), 1357–1380. [CrossRef]

- Bertot, J. C., Jaeger, P. T., & Grimes, J. M. (2010). Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. *Government Information Quarterly*, 27(3), 264–271. [CrossRef]
- Botrić, V., & Božić, L. (2021). The digital divide and E-government in European economies. *Economic Research*, 34(1), 2935–2955. [CrossRef]
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. [CrossRef]
- Braun, V., & Clarke, V. (2013). *Successful qualitative research: A practical guide for beginners*. Sage.
- Chen, Y.-C., Ahn, M. J., & Wang, Y.-F. (2023). Artificial intelligence and public values: Value impacts and governance in the public sector. *Sustainability*, 15, 4796. [CrossRef]
- Corm, G. (2003). *Le liban contemporain, histoire et société*. La Découverte.
- Defitri, S. Y., Bahari, A., Handra, H., & Febrianto, R. (2020). Determinant factors of e-government implementation and public accountability: Toe framework approach. *Public Policy and Administration*, 19(4), 37–51.
- Denscombe, M. (2010). *The good research guide for small scale research projects* (4th ed.). Open University Press.
- Doan, U., Chu, H., & Van Vu, T. (2025). Digital transformation influencing civil administrative services at grassroots governance and social development. *Law and Development Review*. [CrossRef]
- Du Gay, P. (2000). *In praise of bureaucracy: Weber-organization-ethics*. Sage.
- Dunleavy, P., Margetts, H., Bastow, S., & Tinkler, J. (2006). New public management is dead—Long live digital-era governance. *Journal of Public Administration Research and Theory*, 16(3), 467–494. [CrossRef]
- Eom, S. J., & Lee, J. (2022). Digital government transformation in turbulent times: Responses, challenges, and future direction. *Government Information Quarterly*, 39(2), 101690. [CrossRef]
- Escobar, F., Washington, A. H. C., & Varajão, J. (2023). Digital transformation success in the public sector: A systematic literature review of cases, processes, and success factors. *Information Polity*, 28(1), 61–81. [CrossRef]
- Filgueiras, F., Flávio, C., & Palotti, P. (2019). Digital transformation and public service delivery in Brazil. *Latin American Policy*, 10, 195–219. [CrossRef]
- Hazineh, S. A., Eleyan, D., & Alkhateeb, M. (2022). E-government: Limitations and challenges: A general framework to consider in both developed and developing countries. *International Journal of Scientific & Technology Research*, 11(1), 97–103.
- Heeks, R. (2002). Information systems and developing countries: Failure, success, and local improvisations. *The Information Society*, 18(2), 101–112. [CrossRef]
- Henman, P. (2020). Improving public services using artificial intelligence: Possibilities, pitfalls, governance. *Asia Pacific Journal of Public Administration*, 42(4), 209–221. [CrossRef]
- Hirawan, B., Atje, R., Saraswati, V., & Teguh, R. (2023). *Digital silk road and inclusive development in Indonesia* [Document research report]. Centre for Strategic and International Studies. Available online: <https://www.csis.or.id/publication/digital-silk-road-and-inclusive-development-in-indonesia/> (accessed on 1 August 2023).
- Junaidi, W. (2024). Strategic use cases of digital transformation implementation in cities in developing countries. *Business Economic, Communication, and Social Sciences Journal (BECOSS)*, 6(3), 201–210. [CrossRef]
- Kuzmenko, O., Bilan, Y., Bondarenko, E., Gavurova, B., & Yarovenko, H. (2023). Dynamic stability of the financial monitoring system: Intellectual analysis. *PLoS ONE*, 18(1), e0276533. [CrossRef] [PubMed]
- Latupeirissa, J. J. P., Dewi, N. L. Y., Prayana, I. K. R., Srikandi, M. B., Ramadiansyah, S. A., & Pramana, I. B. G. A. Y. (2024). Transforming public service delivery: A comprehensive review of digitization initiatives. *Sustainability*, 16, 2818. [CrossRef]
- Layne, K., & Lee, J. (2001). Developing fully functional e-government: A four-stage model. *Government Information Quarterly*, 18(2), 122–136. [CrossRef]
- Limna, P., Kraiwanit, T., Jangjarat, K., Klayklung, P., & Chocksathaporn, P. (2023). The use of ChatGPT in the digital era: Perspectives on chatbot implementation. *Journal of Applied Learning & Teaching*, 6(1), 64–74. [CrossRef]
- Luna-Reyes, L. F., & Gil-Garcia, J. R. (2014). Digital government transformation and internet portals: The co-evolution of technology, organizations, and institutions. *Government Information Quarterly*, 31, 545–555. [CrossRef]
- Luna-Reyes, L. F., Zhang, J., Gil-Garcia, J. R., & Cresswell, A. M. (2005). Information systems development as emergent socio-technical change: A practice approach. *European Journal of Information Systems*, 14, 93–105. [CrossRef]
- Madan, R., & Ashok, M. (2023). AI adoption and diffusion in public administration: A systematic literature review and future research agenda. *Government Information Quarterly*, 40(1), 101774. [CrossRef]
- Mahlangu, G., & Ruhode, E. (2021). Factors enhancing e-government service gaps in a developing country context. In S. Masiero, & P. Nielsen (Eds.), *IFIP working group 9.4: Implications of information and digital technologies for development*. IFIP. Available online: <http://ifiptc9.org/wp-content/uploads/sites/4/2021/05/Book-of-Abstracts-IFIP-9.4-Virtual-2021-24.05.2021.pdf> (accessed on 20 February 2022).
- Margetts, H., & Dunleavy, P. (2013). The second wave of digital-era governance: A quasi-paradigm for government on the Web. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 18, 20120382. [CrossRef]

- Mergel, I., Edelmann, N., & Haug, N. (2019). Defining digital transformation: Results from expert interviews. *Government Information Quarterly*, 36, 101385. [CrossRef]
- Mettler, T. (2025). Digital transformation. In N. Soguel, P. Bundi, T. Mettler, & S. Weerts (Eds.), *Understanding and shaping public administration* (pp. 193–202). The IDHEAP Model.
- Nawaz, M. K., Eltweri, A., Abbas, K., Al-Karaki, W., Edghiem, F., Foster, S., & Adali, M. (2025). Public sector transformation in emerging economies: Factors affecting change adoption in Pakistan. *Administrative Sciences*, 15(4), 126. [CrossRef]
- Nicholls, T. (2019). Local government performance, cost-effectiveness, and use of the web: An empirical analysis. *Policy & Internet*, 11, 480–507.
- OECD. (2020). *Digital government in Lebanon: Governance for coherent and sustainable policy implementation*. OECD Digital Government Studies. OECD Publishing. [CrossRef]
- Olubusola, O., Mhlongo, N. Z., Falaiye, T., Ajayi-Nifise, A. O., & Daraojimba, E. R. (2024). Digital transformation in business development: A comparative review of USA and Africa. *World Journal of Advanced Research and Reviews*, 21, 1958–1968. [CrossRef]
- OMSAR. (2022). *Lebanon digital transformation (2020–2030): National strategy*. OMSAR.
- Osmundsen, K., Iden, J., & Bygstad, B. (2018, September 28–30). Digital transformation drivers, success factors, and implications. In *Mediterranean conference on information systems* (Volume 37). 2018 Proceedings. AISel.
- Pérez-Morote, R., Pontones-Rosa, C., & Núñez-Chicharro, M. (2020). The effects of e-government evaluation, trust and the digital divide in the levels of e-government use in European countries. *Technological Forecasting and Social Change*, 154, 119973. [CrossRef]
- Plesner, U., Justesen, L., & Glerup, C. (2018). The transformation of work in digitized public sector organizations. *Journal of Organizational Change Management*, 31(5), 1176–1190. [CrossRef]
- Pope, R. (2019). *A working definition of government as a platform*. Medium.com. Available online: <https://medium.com/digitalhks/a-working-definition-of-government-as-a-platform-1fa6ff2f8e8d> (accessed on 20 February 2022).
- Rekunenko, I., Koldovskyi, A., Hordiienko, V., Yurynets, O., Abu Khalaf, B., & Ktit, M. (2025). Technology adoption in government management: Public sector transformation analysis. *Journal of Governance & Regulation*, 14(1), 150–160. [CrossRef]
- Rohayati, Y., & Abdillah, A. (2024). Digital transformation for era society 5.0 and resilience: Urgent issues from Indonesia. *Societies*, 14, 266. [CrossRef]
- Saaida, M., & Ayyat, S. J. (2025). The faltering start of digital transformation of public services in developing countries. *IKR Journal of Arts, Humanities and Social Sciences (IKR/AHSS)*, 1(4), 177–192.
- Saxena, D., Muzellec, L., & McDonagh, J. (2022). From bureaucracy to citizen-centricity: How the citizen-journey should inform the digital transformation of public services. *International Journal of Electronic Government Research (IJEGR)*, 18, 1–17. [CrossRef]
- Setyawan, A. C. (2024). Enhancing public service delivery through digital transformation: A study on the role of e-government in modern public administration. *Global International Journal of Innovative Research*, 2(10), 2439–2453. [CrossRef]
- Simmonds, H., Gazley, A., Kaartemo, V., Renton, M., & Hooper, V. (2021). Mechanisms of service ecosystem emergence: Exploring the case of public sector digital transformation. *Journal of Business Research*, 137, 100–115. [CrossRef]
- Syed, R., Bandara, W., & Eden, R. (2022). Public sector digital transformation barriers: A developing country experience. *Information Polity*, 28, 5–27. [CrossRef]
- Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13), 1319–1350. [CrossRef]
- Tornatzky, L., & Fleischer, M. (1990). *The process of technology innovation*. Lexington Books.
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, 28(2), 118–144. [CrossRef]
- World Bank. (2016). *Lebanon: Promoting poverty reduction and shared prosperity*. Available online: <https://documents.worldbank.org/curated/en/951911467995104328/pdf/103201REPLACEMENT-PUBLIC-Lebanon-SCD-Le-Borgne-and-Jacobs-2016.pdf> (accessed on 20 February 2022).
- Xiao, J., Han, L., & Zhang, H. (2022). Exploring driving factors of digital transformation among local governments: Foundations for smart city construction in China. *Sustainability*, 14(22), 14980. [CrossRef]
- Yin, R. K. (2003). *Case study research: Design and methods* (3rd ed.). Sage.
- Yukhno, A. (2024). Digital transformation: Exploring big data governance in public administration. *Public Organization Review*, 24, 335–349. [CrossRef]

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