



ORIGINAL PAPER

The global model of digital governance and its adaptation in Romania: international lessons and implementation directions

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Abstract: Digital governance has become a cornerstone of public administration modernization, providing new tools for efficiency, transparency, and civic participation. This study proposes a framework for adapting global digital governance models to the Romanian context and examines how these models can strengthen administrative efficiency, information security, and public trust in the state. To address this, the research employs a qualitative comparative methodology, analyzing the models of Estonia (interoperability), Denmark (citizen services), and Singapore (strategic coordination) against Romanian policy documents, such as the National Strategy on the Digital Agenda and the activity of the Authority for the Digitalization of Romania (ADR). The analysis shows that while Romania has made progress, its adaptation is currently hindered more by institutional fragmentation and limited interoperability than by technological gaps. Successful adaptation requires structural reform and alignment with European standards (Network and Information Security Directive 2 - NIS2, electronic Identification, Authentication and Trust Services - eIDAS, General Data Protection Regulation - GDPR) to enhance administrative efficiency and strengthen public trust in digital governance. These findings provide practical policy directions for strengthening digital governance and accelerating administrative modernization in Romania.

Keywords: *digital governance; public administration; interoperability; public trust; policy adaptation*

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1. Introduction

Digital modernization of public administration goes beyond the mere implementation of IT solutions. It depends on flexible public leadership, digital skills, and an organizational culture that supports innovation and collaboration (Androniceanu & Štreimikienė, 2025). Over the past two decades, digital modernization has become a global priority, driven by the widespread use of information technologies and growing citizen expectations for accessible public services. The digitization of governance is now seen as an important element in strengthening the capacity of institutions to respond to complex challenges, from public data management to ensuring social engagement in increasingly sophisticated digital environments (United Nations Department of Economic and Social Affairs [UN DESA], 2024).

The development of digital governance at the international level has been accompanied by the emergence of common theoretical frameworks, supported by international organizations such as the United Nations and the Organization for Economic Co-operation and Development (OECD), which emphasize the importance of flexible, transparent, and citizen-oriented administrative systems. These frameworks aim to combine digitization resources with broader sustainable development goals, emphasizing interoperability, robust digital infrastructure, and appropriate technological skills in the public sector (OECD, 2023). For Romania, digital governance is essential for improving institutional efficiency, reducing bureaucracy, and strengthening public trust. Digital tools can simplify administrative procedures and improve the accessibility, transparency, and quality of public services (Androniceanu, 2023). Although progress has been made in recent years through initiatives such as the Digital Agenda, the development of e-government platforms, and the creation of the Romanian Digitalization Authority, the transformation process remains uneven due to institutional fragmentation and a lack of interoperability between systems (Vevera & Vasiloiu, 2024: 73–84).

In this context, analyzing successful international models becomes an important exercise. Countries such as Estonia, Denmark, and Singapore provide distinct models of digital governance based on interoperability, user-centered services, and centralized coordination. Estonia is often cited as an example of "institutional leapfrogging" due to its ability to rapidly develop integrated digital solutions in a challenging socio-political context (Metcalf, 2019: 1-12). Denmark has succeeded in improving relations between citizens and the administration through a strong culture of collaboration and focus on digital actors (Curry, 2019). At the same time, Singapore confirms that centralizing innovation and coordination can support a long-term national digitization strategy (Woo, 2018).

This study aims to assess the extent to which the principles of global digital governance can be adapted to the Romanian context in order to develop information security, administrative performance, and public trust. The main question of this research is: how can the Romanian state integrate international lessons to build a coherent, efficient, and sustainable digital governance model?

2. Conceptual and methodological framework

2.1. Defining key concepts

Digital governance encompasses all the processes, institutions, and mechanisms through which public administration uses technology to deliver efficient services, manage public data, and support citizen participation in decision-making processes (UN DESA, 2024). Unlike computerization, which focuses on automating certain activities,

digital transformation involves a structural change that is user-oriented and supported by institutional leadership (Curry, 2019). Interoperability refers to the ability of digital systems to communicate and exchange data in a standardized manner, both within and between institutions. It is considered an essential requirement for the provision of integrated public services, eliminating administrative overlaps and reducing operational costs (Vevera & Vasiloiu, 2024: 73-84).

Institutional trust is the population's perception of the state's ability to act competently and transparently, influencing the adoption of online services and citizens' openness to technological change (Efthaltsidou et al., 2025: 795; Woo, 2018).

2.2. Principles of the global digital governance model

International institutions are outlining a framework of common guidelines that define advanced digital governance. The United Nations supports the importance of a citizen-centered approach, the effective use of public data, and the development of digital infrastructure as a foundation for modern public services (UN DESA, 2024).

The Organization for Economic Co-operation and Development highlights the importance of digital governance based on the visibility of public actions, coherent integration of platforms and citizen involvement, accompanied by strong government capacities and a well-structured regulatory system (OECD, 2023). At the same time, it emphasizes the relevance of interinstitutional collaboration and the use of data in the public policy-making process (Kitsing, 2019).

The European Union is organizing the European digital governance framework based on directives such as NIS 2, GDPR, and eIDAS, which establish standards for digital security, digital identity, and data security, with the aim of creating a unified and secure European digital space.

2.3. Research methodology

In order to analyze how Romania can integrate the global model of digital governance, the study applies a comparative method based on the analysis of relevant case studies. This method facilitates the identification of structural differences between countries and highlights aspects that can be adopted and adapted to the Romanian context (Espinosa & Pino, 2024).

The choice of case studies — Estonia, Denmark, and Singapore — is based on criteria of administrative diversity and consolidated digital progress: Estonia for its advanced institutional connectivity and unique digital identity, Denmark for its focus on user needs and inter-institutional collaboration, and Singapore for its focused institutional coordination and strategic integration of technology into national progress (Woo, 2018).

The analysis examines national practices using a set of criteria recognized in the specialized literature: administrative performance, transparency, cyber protection, equitable digital access, and institutional sustainability (UN DESA, 2024). The three case studies are reinforced by a thematic analysis of Romanian public policy documents in order to detect inconsistencies between the stated strategy and its actual implementation (Dumitrescu, 2024: 167-173). This integrated approach allows for the formulation of practical recommendations tailored to the Romanian administrative context.

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Table 1. Methodological approach and research objectives

Method	Analytical focus	Research objective
Comparative case analysis; Selection criteria;	Estonia, Denmark, Singapore;	Identification of transferable digital governance practices;
Evaluation dimensions;	Digital maturity, institutional coordination, user orientation;	Ensuring diversity and relevance of models;
Policy document analysis (Romania);	Performance, transparency, cybersecurity, digital inclusion;	Assessing governance effectiveness;
Integrated synthesis.	National digital strategies and reforms; Cross-country comparison and national assessment.	Identifying implementation gaps; Formulating context-specific recommendations.

Source: Author's own work

3. International case studies

3.1. Estonia – the *e-Estonia* model

Modern European models of digital governance show that the efficiency of public services is influenced by the integration of data infrastructures and inter-institutional cooperation, which ensure the provision of integrated services and reduce bureaucracy, while the absence of these mechanisms maintains administrative fragmentation in countries with a low level of digital maturity (Androniceanu & Štreimikienė, 2025: 78–81). Estonia represents one of the most advanced digital governance models, based on interoperability, digital identity, and secure data exchange between institutions (Metcalf, 2019; Kitsing, 2019).

A key component is the X-Road system, which enables secure and real-time data exchange between public institutions and private actors (Espinosa, 2024). Digital identity enables broad access to integrated public services, including e-voting, digital prescriptions, and electronic tax systems (Curry, 2019). Following the 2007 cyberattacks, Estonia significantly strengthened its cybersecurity infrastructure (Metcalf, 2019).

Public services are organized around ‘life events’, simplifying citizens’ interaction with the state (Espinosa, 2024). This organization has enabled the Estonian state to achieve high levels of transparency and efficiency, as digital interactions leave verifiable traces, reducing the scope for corruption and direct contact between ordinary citizens and civil servants (Efthaltsidou et al., 2025).

The Estonian example provides several significant lessons for the modernization of digital governance in Romania. First, it is important to have an interoperability infrastructure that facilitates data exchange between institutions, eliminating the fragmentation of public systems (Vevera & Vasiliou, 2024). Second, the implementation of a unique and mandatory digital identity is a basic requirement for the

coherent provision of online public services (Metcalf, 2019). Finally, Estonia shows that the success of digital transformation depends not only on technology, but also on strategic continuity, political leadership, and an administrative culture oriented towards collaboration and innovation (Kitsing, 2019).

Lessons for Romania

The Estonian model highlights the need to develop a national interoperability infrastructure that enables secure data exchange between institutions and reduces administrative fragmentation. The implementation of a unique and mandatory digital identity is an essential condition for the coherent provision of online public services and increased administrative efficiency. Furthermore, continued investment in cybersecurity, together with maintaining a long-term strategic vision and collaboration with the private sector, are fundamental to building citizen trust and ensuring the sustainability of the digital transformation.

3.2. Denmark – citizen-centric digital governance

Denmark is a leading example of citizen-centered digital governance, focusing on simplifying administrative interactions through digital platforms such as Digital Post and NemID/MitID (Curry, 2019).

The Danish model focuses on simplifying interaction with the administration and reducing bureaucratic burdens through a systematic approach to restructuring administrative processes around the needs of the end user (OECD, 2006). An important aspect of the Danish state's success is Digital Post, a national platform that integrates official communication between citizens, institutions, and companies, eliminating paper correspondence and shortening administrative processing time (Curry, 2019). The introduction of the NemID⁴⁵ digital identity, gradually replaced by the modern MitID solution, has strengthened the security of online transactions and enabled uniform access to public and private services, thus creating a coherent digital infrastructure at the national level. At the same time, the Danish state has invested heavily in digital literacy, implementing a variety of national programs that support vulnerable groups in using digital services, which has helped maintain a high level of social inclusion (OECD, 2006).

The Danish model is based on strong collaboration between public institutions and the private sector, supporting innovation and efficient service delivery (Curry, 2019).

Another fundamental element is the extensive use of public data in decision-making, through data-sharing infrastructures that allow complex sets of information to be analyzed in order to improve public policies. By standardizing processes and adopting common technological standards, Denmark has managed to prevent the fragmentation of public digital systems and develop a coherent ecosystem that is easy for citizens to use (Curry, 2019). This administrative coherence has led to a very high level of citizen satisfaction, as services are easy to access, intuitive, and integrated into users' daily activities (OECD, 2006).

⁴⁵ NemID is the national digital identity solution used in Denmark for authentication in public and private online services, later succeeded by MitID.

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Lessons for Romania

The development of unified platforms for official communication, such as Digital Post, is a solution that can inspire Romania in its efforts to reduce institutional fragmentation. Investment in digital literacy is also important, as citizens' trust and skills directly influence the degree of adoption of e-government services (OECD, 2006).

The involvement of all public administration actors in digital projects, in partnership with the private sector, is a necessary condition for the development of modern public services tailored to users' needs (Curry, 2019).

3.3. Singapore – *Smart Nation*

Singapore represents a centralized model of digital governance, in which the Smart Nation initiative integrates digital technologies into national development strategies. This model is based on strong institutional coordination, real-time data use, and significant investments in digital infrastructure and skills, while also emphasizing public–private collaboration and cybersecurity. Despite this success, challenges persist related to limited civic participation and reliance on top-down coordination (Woo, 2018).

Lessons for Romania

The Singapore model highlights the importance of centralized coordination, real-time data use, and sustained investment in digital skills for effective digital governance. It also emphasizes the role of public–private collaboration in accelerating innovation and improving public services (Woo, 2018).

Tabel 2. Comparative analysis of digital governance models and policy lessons for Romania

Country	Key elements of the digital model	Main instruments/structures	Results achieved	Lessons relevant to Romania
Estonia	Mandatory unique digital identity; Full interoperability; Decentralized but standardized architecture;	X-Road system for data exchange; National e-ID; Fully digitized services (electronic voting, prescriptions, taxes, digital signature).	High administrative efficiency; Transparency; Reduced corruption;	The need for a national interoperability infrastructure; Implementation of unique digital identity; Strategic continuity.
Country	Key elements of the digital model	Main instruments/structures	Results achieved	Lessons relevant to Romania

Denmark	Citizen-centered approach; <i>Digital by default</i> ; Interinstitutional collaboration.	Digital Post (single communication platform); NemID/MitID; Common data infrastructures.	Reduced bureaucracy; Intuitive services; High public satisfaction.	Creating unique platforms for interaction; Technological standardization; Investments in digital literacy.
Singapore	Centralized national strategy; Integration of emerging technologies; Single institutional coordination.	Smart Nation & Digital Government Group; Integrated data platforms; Smart sensor networks.	Optimization of urban and administrative services; Data-driven public policies; Advanced digital security.	The need for a strong central coordinating authority; The use of data for public decision-making; Digital skills training;

Source: Authors' own work

4. Romania in the context of digital governance

The Romanian state ranks significantly below the European Union average in terms of the digital transformation of public services, predominantly in the automation of administrative procedures and electronic access to documents, which points to systemic problems in the implementation of digital governance (Bucur et al., 2025).

Over the past two decades, Romania has pursued gradual digital modernization, driven by European obligations and the need to improve administrative efficiency (Dumitrescu, 2024: 167-173). An important impetus was generated by the National Recovery and Resilience Plan, which set clear objectives in the field of e-government and allocated financial funds for the modernization of public digital infrastructures (OECD, 2023). Key institutions such as the ADR, alongside central government bodies, play an important role in implementing digital policies (Dumitrescu, 2024). In Romania, security and protection of digital infrastructures are managed by specialized institutions, such as STS and DNSC, which ensure system resilience and respond to cyber incidents. Despite the development of digital platforms such as ghişeu.ro, the overall level of digitalization remains below the European average (UN DESA, 2024).

Romania faces a sharp institutional fragmentation, as many ministries and agencies develop their own IT systems without a common architecture, which affects interoperability and leads to duplication of databases (OECD, 2023).

Another major impediment is the lack of technological standardization, as public institutions use incompatible IT solutions, which slows down the process of integrating public services into a unified technological system (Vevera & Vasiloiu, 2024). Additional challenges include uneven digital skills among public employees and disparities in technological infrastructure across institutions (OECD, 2023). The research emphasizes the idea that the Romanian state's delays in digitizing its administration are

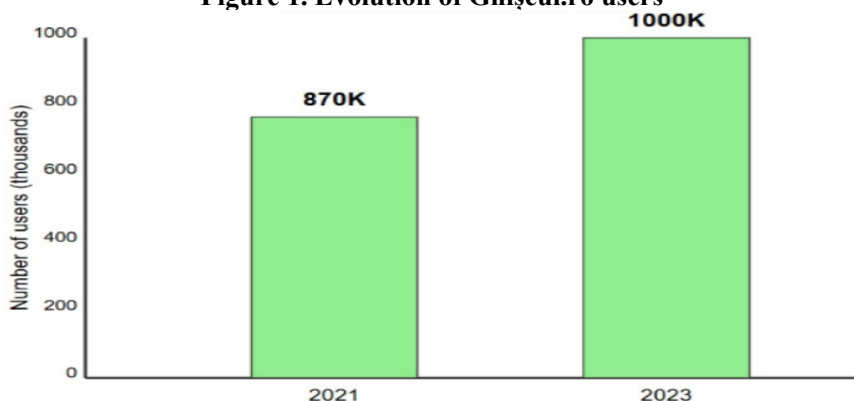
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largely due to reduced administrative capacity, organizational resistance to change, and the absence of common data infrastructures, which keep the use of online public services low compared to developed countries like Denmark (Dragomir & Vasiu, 2025: 175–197).

Low levels of public trust further limit the adoption of digital services in Romania (Efthaltsidou et al., 2025: 795). The insufficiency of an institutional culture based on information represents another challenge, as many institutions do not capitalize on the analytical potential of the information they possess, which limits the administration's ability to base administrative decisions on evidence (Dumitrescu, 2024). Despite these challenges, Romania benefits from significant opportunities for digital transformation, supported by European funding and a strong private IT sector (UN DESA, 2024).

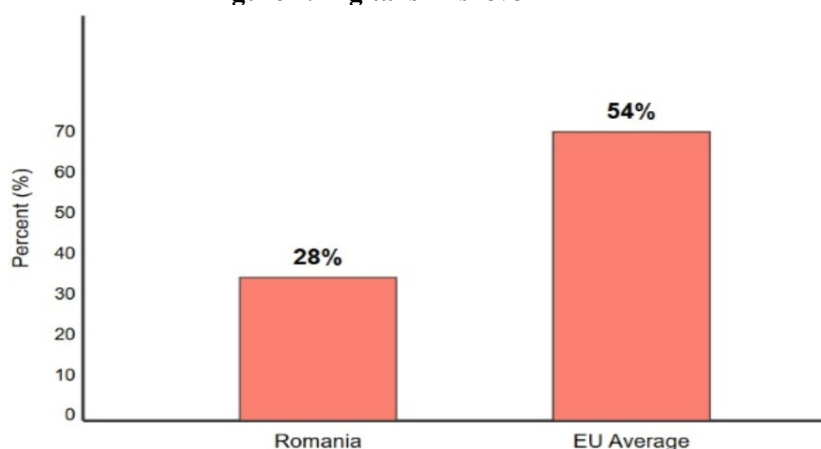
The recent development of digital public services in Romania and the level of digital skills among the population can be illustrated by the data summarized in Figures 1 and 2.

Figure 1. Evolution of Ghișeul.ro users



Source: Dragomir & Vasiu (2025)

Figure 2. Digital skills level



Source: Dragomir & Vasiu (2025)

The data shows a steady increase in the use of the ghişeu.ro platform between 2021 and 2023, alongside a considerable gap in digital skills compared to the European Union average, which confirms the uneven nature of the digital transformation in Romanian public administration.

5. Adapting the global model to the Romanian context

The digital transformation of Romanian public administration is largely slowed by organizational resistance, limited digital skills, and unstable funding rather than by the absence of infrastructure (Bucur et al., 2025).

The analysis of Estonia, Denmark, and Singapore shows that effective digital governance requires a coherent strategy, institutional coordination, and sustained investment in infrastructure and human capital (UN DESA, 2024). The comparative study indicates that the states that have succeeded in digitizing the administration have consistently pursued the same principles: centralization of digital governance and user orientation (OECD, 2023). For the Romanian state, adapting this model requires the development of a coherent digital architecture that reduces fragmentation and inconsistencies between public systems (Vevera & Vasiloiu, 2024). The Estonian experience shows that interoperability reduces operating costs and facilitates citizen–state interaction (Espinosa, 2024).

The Singapore example highlights the relevance of centralized management, where a single structure ensures the unitary implementation of the digital strategy at the national level, avoiding overlapping competencies and institutional dysfunctions (Woo, 2018).

In addition to coordination, the Romanian state must adopt coherent legislation on digital identity, information security and public infrastructure, aligned with European regulatory frameworks such as NIS2, eIDAS and GDPR. A clear and transparent regulatory framework allows for the improvement of secure public services, a fundamental element for increasing citizens' trust in digital interactions with the state (Efthaltsidou et al., 2025). Automated public services require human supervision to remain transparent and trustworthy (Burcea, 2025).

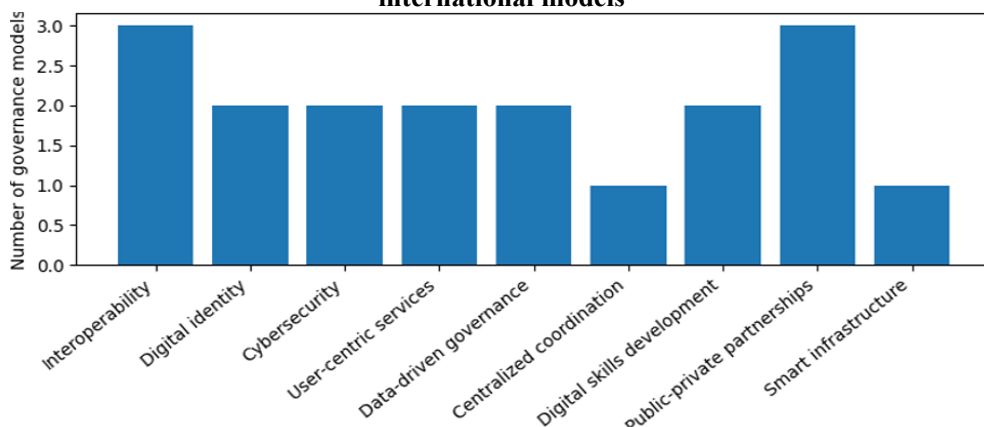
Denmark's comparative analysis shows that countries that have adopted an integrated approach to digitization, based on interoperable systems and unified institutional coordination, have generated productive and heavily used public services, while administrative fragmentation in Romania has reduced the impact of digital initiatives (Dragomir & VasIU, 2025).

Digital skills training among civil servants is another pillar of adapting the global model, as insufficient training of staff reduces the capacity of institutions to apply modern administration tools (Curry, 2019). The models of Denmark and Singapore show that permanent training, certification of digital skills and the creation of professional communities of practice are fundamental for the sustainable transformation of the administration (Woo, 2018). Public-private collaborations represent a significant opportunity for the Romanian state, as the private sector has developed technical competence that can accelerate the development and implementation of digital services (Kitsing, 2019). In addition, cooperation with the private sector supports innovation and allows rapid testing of technological solutions, contributing to the creation of a competitive digital ecosystem (Woo, 2018).

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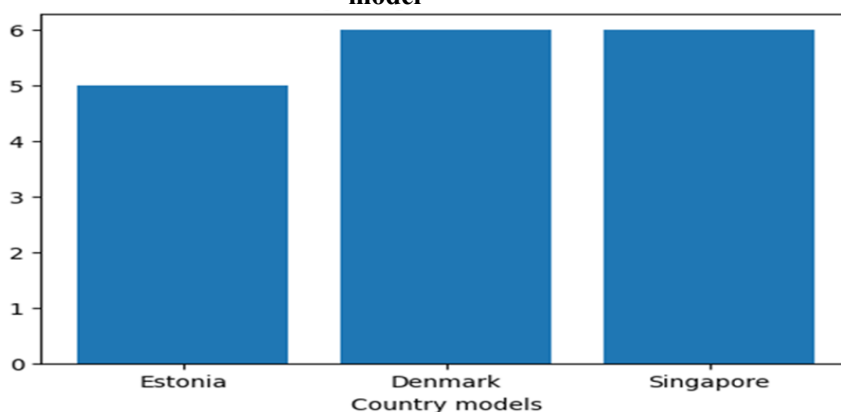
Figures 3 and 4 illustrate the main digital governance dimensions identified across the international case studies. Interoperability is common to all three models, confirming its fundamental role in enabling integrated public services. Digital skills development is emphasized in Denmark and Singapore, highlighting the importance of human capital in sustaining digital transformation. Centralized coordination characterizes the Singaporean approach, ensuring coherence in the implementation of national digital strategies. Public-private partnerships are present in all models, underlining their contribution to innovation and the modernization of public administration.

Figure 3. Distribution of digital governance dimensions across selected international models



Source: Authors' own work

Figure 4. Comparative coverage of digital governance components by country model



Source: Authors' own work

To guarantee the long-term viability of digital transformation, the state is obliged to implement a user-oriented perspective, developing public services according to the requirements of the population, as is the case in the Danish state, where simple interfaces and intuitive processes have increased the adoption of online services (OECD,

2006). Adapting the global model requires data-driven decision-making to improve policy effectiveness and reduce administrative fragmentation (Dumitrescu, 2024).

Conclusions and policy recommendations

Digital restructuring of public administration represents a structural transformation in how public authorities operate and deliver services. Effective digitalization involves automating procedures, integrating databases, and tailoring services to users. When these elements are properly integrated, the administration becomes faster, more transparent, and more predictable.

Digitalization in Romania remains uneven and fragmented. Many authorities use various platforms that are not interoperable with one another, which leads to digital bureaucracy rather than administrative simplification. The lack of interoperability, limited digital skills, and limited use of data-driven decision-making in the decision-making process remain the main barriers to the development of a functional digital administration. International models show that interoperability, the ‘once-only’ principle, and integrated services are essential for administrative efficiency, reducing redundancy and improving service delivery.

Romania should prioritize the development of a unified digital architecture based on interoperability, common standards, and citizen-centered services. Strengthening digital skills within the public administration and systematically evaluating the performance of IT systems are essential. When implemented strategically, digital transformation can reduce bureaucracy, improve the quality of public services, and strengthen the relationship between the state and citizens.

References:

- Androniceanu, A. (2023). The new trends of digital transformation and artificial intelligence in public administration. *Administrație și Management Public*, 40, 147–155.
- Androniceanu, A., & Štreimikienė, D. (2025). Reinventing public managers in the digital age: Competencies and innovative governance models across the European Union. *Administrație și Management Public*, 45, 69–90.
- Burcea (Scintee), A. A. (2025). Digital governance in local public administration: Between transparency and hypercontrol. *Ovidius University Annals – Economic Sciences Series*, 25(1), 301–307.
- Bucur (Cosconel), A. M., Stănescu, S. G., Anica-Popa, L. E., & Diaconeasa, A. A. (2025). Digital transformation of public administration services: Lessons for Romania. *Proceedings of the International Conference on Business Excellence*, 3834–3846.
- Curry, R. (2019). *Digitalisation beyond borders: Estonia and Finland’s collaboration on cross-border ICT development* [Master’s dissertation, King’s College London].
- Dragomir, A. N., & Vasiiu, A. N. (2025). Digital transformation of public administration: Challenges and perspectives in Romania and Denmark. In H. Takemura & S. O. Michael (Eds.), *Public law at the crossroads of technology* (pp. 175–197). ADJURIS Publishing.

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- Dumitrescu, C. (2024). Digitalization of public administration in Romania: The way towards efficiency and accessibility. *Perspectives of Law and Public Administration*, 13(1), 167–173.
- Efthalitsidou, K., Spinthiropoulos, K., Vittas, G., & Sariannidis, N. (2025). Digital governance, democracy and public funding efficiency in the EU-27. *Information*, 16(9), Article 795.
- Espinosa, V. I., & Pino, A. (2024). E-government as a development strategy: The case of Estonia. *International Journal of Public Administration*.
- Kitsing, M. (2019). Alternative futures for digital governance. In *Proceedings of the ACM Digital Government Research Conference*.
- Metcalf, K. N. (2019). How to build e-governance in a digital society: The case of Estonia. *Revista Catalana de Dret Públic*, 58, 1–12.
- Mureșan, D. (2025). Transforming public governance in Romania through digital tools. *Scientia Moralitas – International Journal of Multidisciplinary Research*, 10(2), 440–449.
- OECD. (2006). *OECD e-government studies: Denmark*. OECD Publishing.
- OECD. (2023). *Digital government review of Romania: Towards a digitally mature government*. OECD Publishing.
- Scupola, A. (2018). Digital transformation of Danish public services: Actors and policies. In *CMI International Conference Proceedings*.
- Vevera, A. V., & Vasiloiu, I. C. (2024). E-government in Romania and Estonia: Comparative analysis and future directions. *Romanian Cyber Security Journal*, 6(2), 73–84.
- Woo, J. J. (2018). *Singapore's Smart Nation initiative: A policy and organisational perspective*. Lee Kuan Yew School of Public Policy, National University of Singapore.

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