

Digital administrative law: Data management and electronic government services

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Abstract

This research aims to examine digital administrative law in Jordan, with a focus on governmental data management and the provision of electronic services, reflecting the strategic transformation of public administration toward the digital environment. The research problem lies in the legal, administrative, and technical challenges facing governmental institutions, which may affect the quality of services delivered to citizens, the protection of their personal data, and the legal liability arising from decisions issued through digital systems. The study further seeks to clarify how traditional legal principles can be integrated with the requirements of digital transformation to ensure efficiency, transparency, and accountability in administrative work. The research has reached several key findings. First, digital administration is no longer merely a technical update; rather, it represents a comprehensive transformation in administrative thought that necessitates reformulating legal rules and adapting constitutional principles to fit the digital environment. Second, the study demonstrated that secure and transparent management of governmental data, in accordance with legislations such as the Personal Data Protection Law and the Electronic Transactions Law, constitutes the cornerstone of successful digital transformation and the safeguarding of individual rights. Third, while electronic services offer significant advantages in terms of speed and flexibility, they impose legal responsibility on the administration for technical failures and errors in automated decisions, which calls for the development of effective oversight systems and human review of decisions supported by artificial intelligence. In light of these findings, the research recommends strengthening the legislative framework to include regulation of artificial intelligence use in public administration, expanding detailed guidelines for data protection and digital service governance, and enhancing both technical and human capacities to ensure the efficiency and continuity of electronic platforms. It also recommends increasing coordination among governmental institutions, unifying standards, and fostering partnerships with the private sector to adopt innovative solutions that improve service quality and build citizens' trust in digital administration.

Keywords: Digital administrative law, Electronic government services, Government data management, Cybersecurity and data protection, Administrative liability and artificial intelligence.

Introduction

In light of the accelerating technological revolution and the widespread use of communication and information technologies, states have shifted toward adopting digital governance policies, relying on e-government to deliver public services in a rapid, efficient, and reliable manner. The transition from traditional paper-based administration to digital administration represents a qualitative leap in the way governmental services are provided, requiring a clear legal and regulatory framework to govern digital transactions, protect data, and safeguard individual rights.

In the Hashemite Kingdom of Jordan, legislative efforts have been undertaken to regulate this transformation through the enactment of laws that accommodate the digital reality, recognize electronic transactions and documents, and establish controls for data protection and sanctions against digital

violations.

This legal framework—referred to as “Digital Administrative Law”—constitutes a fundamental pillar for activating e-government, protecting rights, and strengthening trust between citizens and public institutions (Aawishe, Al-Hassan, & Mansour, 2024).

This research aims to analyze the legislative and regulatory framework of digital administration in Jordan, assess its effectiveness, and review the challenges and opportunities associated with it.

The study also engages in comparative analysis with international experiences to highlight strengths and weaknesses, and to propose recommendations for the development of legislation and practice (Magableh, 2024). The adopted methodology is the legislative-comparative approach, involving the analysis of legal texts, applied studies, and a review of challenges.

Chapter one

The theoretical framework of digital administrative law

First: The concept of digital administrative law

Digital administrative law refers to the legal framework that governs how public administration relies on modern technological tools in performing its functions, making decisions, and delivering services to individuals (Entrepreneurship, 2025). This concept represents a natural extension of traditional administrative law; however, it does not merely transfer existing rules into the electronic environment. Rather, it involves a reformulation of the philosophy of public administration, whereby technology becomes an integral component of its organizational and procedural structure. In this sense, e-administration is not simply a technical tool, but a comprehensive system through which administrative powers are exercised and the relationship between citizens and administrative authorities is reorganized (Cristina, 2021).

Digital administrative law goes beyond the mere recognition of electronic documents or the authorization of digital signatures. It encompasses a detailed regulation of the digital infrastructure upon which administration is based, including governmental databases, decision-making mechanisms through automated systems, privacy safeguards, and cybersecurity requirements. Thus, digital administrative law emerges as a modern branch that combines classical principles of administrative law—such as legality, the prohibition of abuse of power, and equality before public services—with technological imperatives imposed by the digital environment, such as securing electronic systems, ensuring data integrity, and providing effective communication infrastructure (Berbecaru, Liroy, & Marian, 2019).

The rapid digital transformation in Jordan in recent years has reinforced this new legal orientation, particularly with the expansion of e-government service platforms and the growing reliance of official institutions on digital systems for citizen interaction and internal management. This evolution has been

accompanied by legislative developments, giving digital administrative law distinct features and a clear identity that differentiate it from the traditional framework.

Second: Digital transformation in Jordanian administration

Public administration in Jordan has undergone a qualitative transformation in its functional structure as a result of adopting digital transformation as a national strategy. The state recognized early on that reliance on traditional paper-based procedures was no longer capable of achieving the efficiency required to address administrative and economic challenges. With the establishment of the Ministry of Digital Economy and Entrepreneurship, a new phase began, characterized by the re-engineering of governmental procedures, the interconnection of institutions through unified electronic systems, and the provision of digital services distinguished by speed, accuracy, and continuous accessibility (Times, 2021).

This transformation has directly impacted the nature of administrative work. Administration is no longer conducted within offices and paper archives; instead, it now relies on digital platforms, automated data, and electronic records. Consequently, traditional decision-making methods have been reformulated, with administrative decisions increasingly based on digitally collected information that flows through integrated electronic systems. Such a transformation requires a high level of technical and administrative readiness, which Jordan has sought to strengthen by developing digital infrastructure and expanding the scope of secure governmental internet services (Portal, 2024).

The impact of digital transformation became particularly evident during times of crisis, most notably during the COVID-19 pandemic, which highlighted the importance of a governmental system capable of delivering services remotely. The government relied on a wide range of applications and platforms that later became a permanent component of administrative practice, thereby fostering a culture of electronic interaction among both citizens and institutions. In this way, digitization has evolved from a developmental project into a legal necessity and an effective regulatory tool (Times,

COVID pandemic propels Jordanian businesses' digital transformation, 2021).

Third: The legal foundations of digital transformation

Digital transformation in Jordan is built upon a broad legal foundation that collectively forms an integrated legislative framework responsive to the requirements of the digital age. Foremost among this framework is the Electronic Transactions Law, which established the legal recognition of electronic records and digital signatures, granting electronic documents evidentiary value provided that they meet specified technical conditions. This law helped dispel many concerns regarding the nature of digital documents and paved the way for governmental institutions to adopt electronic records as substitutes for traditional paper-based records.

The most significant legislative development is the enactment of the Personal Data Protection Law of 2023, which represents a central turning point in regulating the relationship between administration and citizens. It sets precise rules for the collection, processing, and storage of data, while granting individuals clear rights that ensure their control over personal information. The law obliges governmental institutions to adhere to principles of transparency and necessity, and requires each entity to appoint a Data Protection Officer, thereby reinforcing legal accountability in the digital environment (Entrepreneurship, Personal Data Protection Law, 2023).

The legal foundations of digital transformation also extend to cybersecurity legislation, which focuses on securing the state's digital infrastructure and protecting governmental systems from intrusion or disruption. These laws are based on a national policy adopted by the National Cybersecurity Center, aimed at establishing a comprehensive protection system that includes encryption, monitoring, and incident management. Additionally, the directives of the Telecommunications Regulatory Commission contribute by setting mandatory technical standards that directly affect the performance of governmental electronic systems (Entrepreneurship, FAQs: Personal Data Protection Law, 2025).

Taken together, these legislations have not only created a legal environment conducive to the development of digital administration, but have also reaffirmed the principle of legality in its modern form. Compliance with digital regulations has become an inseparable component of the legality of administrative decisions themselves. Thus, technical legislation integrates with constitutional and administrative principles to form the legal foundation of contemporary public administration

Chapter two

Government data management in digital administrative law

First: The concept and importance of government data

Government data constitutes the fundamental pillar upon which public administration in Jordan relies in performing its functions, formulating policies, and making decisions. It is not merely scattered information, but rather a strategic resource with significant legal, administrative, and economic value. Government data encompasses all information collected, produced, or stored by public institutions in the course of their duties—whether personal data relating to citizens, institutional data concerning the operational structure of official entities, or general data pertaining to services, resources, or national statistics. With the state's transition to the digital environment, the volume and value of data have increased, making it the foundation of contemporary administrative practice (Development, 2025).

The importance of government data lies in its role as the driving force behind rationalizing administrative decision-making and enhancing its accuracy and objectivity. The higher the quality and reliability of data, the more effective administrative decisions become in serving the public interest. Data also contributes to strengthening oversight and transparency, enabling the tracking of administrative procedures and the evaluation of governmental efficiency. Moreover, it plays a vital role in improving service quality by analyzing citizens' usage patterns and identifying weaknesses in the administrative system. In addition, data is a central element in digital transformation projects based on artificial

intelligence, as it provides the information upon which automated systems rely to deliver services or make semi-automated decisions (Wang, Zhou, Ma, & Choi, 2025).

With the expansion of data use in Jordan, protecting this resource has become a legal and regulatory necessity to prevent misuse, particularly since it is linked to constitutional rights such as the right to privacy and the right of individuals not to have their data disclosed without authorization. Consequently, the regulation of government data has emerged as one of the most critical pillars of digital administrative law, as it directly intersects with the relationship between citizens and the state, and with the legality of decisions that the administration bases on databases.

Second: The legislative framework for data management in Jordan

The Jordanian legislator recognized early on that digital transformation could not succeed without a solid legal framework regulating the management of governmental data and safeguarding individual rights in the digital environment. The enactment of the Personal Data Protection Law of 2023 marked a pivotal turning point in the legislative system (Entrepreneurship, Personal Data Protection Law, 2023). This law established precise rules governing the collection, processing, storage, and transfer of data, while setting principles that ensure respect for individual will and privacy. It obliges governmental entities to inform individuals about the methods of data collection and the purposes of its use, and grants data subjects the right to object to processing or to request correction or deletion of their data once the purpose of retention ceases.

The Electronic Transactions Law further regulates the relationship between administration and the digital environment by recognizing electronic records and their legal validity. This facilitated the transition of many traditional governmental records into digital systems, thereby consolidating reliance on electronic data as a substitute for paper-based records. Complementing this legislative framework are cybersecurity laws, which impose strict rules to protect governmental systems from intrusion or tampering. The National Cybersecurity Center has

established a set of instructions and policies aimed at ensuring the confidentiality, integrity, and availability of governmental data.

Taken together, these legislations demonstrate that data management is no longer merely a technical administrative function, but has acquired a legal dimension that obliges governmental entities to comply with constitutional principles—particularly the protection of privacy, the prohibition of data use beyond its intended purpose, and the provision of technical safeguards against unauthorized access. Thus, while Jordan's legal framework for data regulation is considered advanced, it still requires expansion and the issuance of more detailed instructions to clarify implementation mechanisms.

Third: Mechanisms of data collection and processing

Governmental entities in Jordan employ multiple mechanisms for data collection, all of which rely on the digital environment as the primary platform for ensuring a continuous flow of information. With the expansion of electronic services and governmental platforms, data collection has become automated and systematic, conducted through electronic forms, governmental applications, and digital records linked to various official institutions. This transformation reduces reliance on paper-based transactions and enables real-time data updates, which positively enhances the accuracy of administrative decisions (sector, 2025).

The processing of governmental data involves a series of interconnected steps. It begins with data entry and verification to ensure accuracy and eliminate errors, followed by storage and organization within specialized databases that allow for rapid retrieval of information when needed. The processing stage is subject to several legal principles, foremost among them the principle of data minimization, which requires that only the data necessary for achieving the administrative purpose be processed, without excess or exaggeration. It also requires adherence to the principle of transparency, obliging the administration to inform individuals about the methods of data collection and the reasons for its use, in addition to the principle of proportionality, which prevents the administration

from collecting data beyond what is strictly necessary (Kuner, Cate, Millard, & Svantesson, 2020).

Digital processing mechanisms contribute significantly to improving the quality of administrative work, as they enable broader data analysis and the identification of patterns that can assist in developing public policies. They also facilitate interconnection among governmental institutions, ensuring secure and efficient information exchange (DESA, 2023). Nevertheless, these mechanisms require clear governance standards to prevent misuse of data or its employment in ways that conflict with individual rights or the principle of equality before public services.

Fourth: Data protection and cybersecurity

The protection of governmental data represents one of the most pressing challenges in the digital environment, as the vast volume of data exchanged between governmental institutions and citizens makes it a potential target for cyberattacks or intrusion attempts. This imposes on the state a heightened obligation to secure its digital infrastructure. Jordan has taken advanced steps in this field through the establishment of the National Cybersecurity Center, which oversees the formulation of national policies related to data and governmental system protection, and supervises their implementation across public institutions (ENISA, 2023).

Data protection requires the adoption of multiple technical and administrative measures to ensure confidentiality and information integrity. These measures include the use of encryption techniques, intrusion detection systems, database access monitoring, and restricting access privileges to sensitive information so that only authorized personnel may view it. They also encompass incident response mechanisms designed to ensure immediate handling of potential breaches or system malfunctions, thereby minimizing damage to data or governmental services (Standardization, 2022).

Data protection acquires additional legal significance because it is directly linked to constitutional rights, particularly the right to privacy. Any failure to

safeguard data may result in the disclosure of sensitive personal information, exposing public administration to legal accountability. Consequently, Jordanian legislation is moving toward strengthening trust in the digital system by imposing explicit legal obligations on governmental entities, requiring them to adopt necessary protective measures, apply national cybersecurity standards, and document every data-processing operation to ensure traceability when needed (Entrepreneurship, National Cybersecurity Framework and Data Protection Guidelines, 2023).

It is anticipated that Jordan's data protection framework will continue to evolve in the coming years, especially with the increasing reliance on artificial intelligence and machine learning systems, which themselves demand more sophisticated safeguards to preserve information security and protect individual rights in a rapidly changing digital environment.

Chapter three: Electronic government services and administrative liability first: the legal nature of electronic government services

Electronic government services represent a modern extension of the concept of the public utility. Public administration no longer delivers its services through traditional paper-based methods or direct interaction between officials and citizens; instead, it increasingly relies on digital platforms, electronic portals, and smart applications. This means that although the medium of service delivery has changed, the legal nature of the governmental service remains intact as a public activity aimed at meeting citizens' needs in pursuit of the public interest.

The legal status of citizens is not affected when receiving services through electronic platforms, since Jordanian law recognizes the validity of electronic records and documents issued by digital systems. This grants electronic services the same legal force as paper-based services. The Electronic Transactions Law illustrates this principle by establishing equality between paper and digital documents, provided that the required technical conditions are met. As a result of this legislative development, administrative decisions issued electronically now carry full legal authority, whether they involve licenses, permits,

civil documents, financial services, or any other type of governmental service delivered through digital means (law, 2015).

Legal recognition of electronic services is also grounded in the principle of continuity of public utilities, which obliges the administration to provide its services consistently. Technology has become a more effective means of fulfilling this principle. Therefore, the shift toward electronic services is not merely a technical choice but a legal transformation aimed at reinforcing administrative legitimacy and ensuring equitable access to governmental services without discrimination (Al-Bnian, Al-Hammouri, & Al-Billeh, 2024).

Second: regulations governing the provision of electronic services

Delivering governmental services through digital platforms requires the administration to adhere to a set of legal and regulatory safeguards that ensure services reach citizens in a proper and orderly manner. These safeguards are grounded in the general constitutional principles that govern administrative action, foremost among them the principle of equality, which obliges the administration to make services accessible to all citizens without discrimination based on geographic location, technical capacity, or level of digital literacy. Accordingly, the Jordanian government works to provide easily accessible platforms and technical support services to help citizens overcome any difficulties encountered while using them (AlOmrani & Al-Qassaymeh, 2023).

The provision of electronic services also requires compliance with the principle of transparency, which obliges the administration to clearly outline the conditions, procedures, and stages of service delivery within the electronic platform. This principle strengthens trust between citizens and administrative authorities, as clarity of information reduces the likelihood of arbitrariness or error and ensures that users fully understand their rights and obligations when utilizing the service (Portal, 2024).

Governmental electronic platforms must further be supported by technical guarantees related to system integrity and service continuity, since any interruption may disrupt citizens' interests or

deprive them of rights tied to specific deadlines. The administration bears responsibility for providing the necessary infrastructure to prevent malfunctions and to ensure the readiness of electronic systems around the clock. Moreover, the administration must safeguard user data against unauthorized disclosure or unlawful processing, which makes the regulations governing electronic services closely linked to the Personal Data Protection Law.

Third: Administrative liability for technical failures

Technical failures affecting governmental electronic systems have become a significant legal issue that has sparked wide debate within the framework of digital administrative law, as such failures may result in the loss of rights or the forfeiture of legally prescribed deadlines for citizens. The prevailing legal view holds that the mere occurrence of a technical error on an electronic platform does not exempt the administration from responsibility, since it remains obliged to ensure the reliability of the means it has chosen to deliver services. This principle is grounded in the rule that public administration is presumed to provide appropriate means for service delivery and must bear responsibility for any shortcomings in those means, whether due to weak technical safeguards, poor maintenance, or system unavailability at the time of need (Entrepreneurship, E-Government Services Guidelines and Data Protection Measures, 2023).

Administrative liability further extends to cases where the malfunction arises from a contractor engaged by the administration, such as companies responsible for developing or maintaining governmental platforms. The administration remains accountable to citizens because it retains primary jurisdiction and authority in selecting contractors (DESA, 2023). Liability persists even when failures stem from external factors, provided they could reasonably have been anticipated and mitigated through precautionary measures or by offering alternatives that ensure service continuity.

Fourth: Liability for automated decisions supported by artificial intelligence

Public administration in Jordan and worldwide faces a new challenge in the use of artificial intelligence

technologies for administrative decision-making, whether in the form of systems for evaluating applications, algorithms for setting priorities, or analytical programs employed to issue semi-automated decisions. This transformation raises legal questions regarding the nature of the responsibility borne by the administration when an error arises from an intelligent system (Crotoft, 2021).

Administrative jurisprudence holds that a decision issued by a system based on artificial intelligence must be regarded as a full administrative decision, since it is the administration that chooses to employ the system, defines its parameters, monitors its performance, and ultimately endorses its outcomes. Accordingly, an error produced by an algorithm is not considered a mere technical fault but an administrative error for which the administration is accountable, even if no employee directly participated in making the decision (Katz, Bommarito, & Blackman, 2017).

This approach is grounded in a fundamental principle of administrative law: the administration is responsible for the tools it selects to perform its functions, whether human or digital. Consequently, the administration is obliged to ensure the integrity of intelligent systems, verify that they are free from bias or programming errors, and confirm that the data upon which they rely is accurate and up to date (Taddeo & Floridi, 2018). It must also provide mechanisms for human review of automated decisions, since leaving decisions entirely to intelligent systems may result in outcomes that affect individual rights or undermine the principle of equality.

Chapter four

Challenges and future prospects of digital administrative law

First: Legal challenges

Legal challenges in managing data and electronic government services represent one of the most significant obstacles to digital transformation in Jordan. Despite the existence of foundational legislations such as the Electronic Transactions Law and the Personal Data Protection Law, the rapidly

evolving digital environment requires continuous updates to these laws and the issuance of detailed regulatory guidelines that align with practical realities. Among these challenges are the need to regulate the use of artificial intelligence in administration, to define governmental liability for automated decisions, and to ensure mechanisms for verifying the validity of digital transactions before administrative courts (OECD, 2022).

The absence of certain detailed provisions also renders the practical application of laws less effective in some cases, particularly in dealing with big data and machine learning systems. This situation necessitates the development of comprehensive legislation that sets clear boundaries for digital administrative practices, balancing the need for technological flexibility with the protection of citizens' fundamental rights, thereby reflecting the principle of the rule of law in the digital sphere.

Second: Administrative and technical challenges

Digital administration in Jordan faces administrative challenges related to institutional and human capacity in managing digital transformation. The shift of governmental institutions to digital platforms requires specialized expertise in legal technology, as well as the ability to maintain systems and ensure their uninterrupted operation. Coordination among different institutions also constitutes a fundamental issue, since the lack of integration of databases or the inconsistency of standards across governmental entities may lead to fragmented information, delays in service delivery, and reduced effectiveness of administrative decisions.

Technical challenges are equally significant, particularly in safeguarding the digital infrastructure against breaches or malfunctions. Any system failure or cyberattack can disrupt governmental services and expose citizens' personal data to risk (Crotoft, 2021). For this reason, the government places considerable emphasis on developing digital infrastructure, applying cybersecurity standards, and establishing specialized teams to manage digital risks and respond to incidents swiftly and effectively.

Third: Future prospects of digital transformation in Jordan

Despite the existing challenges, Jordan faces significant opportunities to strengthen its digital administration system. The future is oriented toward expanding legislation to encompass artificial intelligence and regulating the use of algorithms in governmental decision-making, thereby contributing to greater justice and transparency. The government is also working on developing a digital identity system and linking it to all governmental services, which will facilitate citizens' access to services in a seamless and secure manner (Tortorella & Cagliano, 2020).

It is further anticipated that future prospects will include the adoption of a unified smart platform model, enabling governmental institutions to interconnect and exchange data in an integrated and secure way. This will enhance the quality of decisions and services provided to citizens. Partnerships between the public and private sectors are also expected to play a crucial role in fostering innovation and providing advanced technological solutions, thereby increasing administrative efficiency and reducing operational costs.

Moreover, strengthening digital culture among employees and citizens is a fundamental pillar for the success of digital transformation. Awareness of modern technologies and understanding individuals' rights and obligations in the digital environment will maximize the benefits of these services (DESA, 2023). Thus, it becomes clear that digital transformation in Jordan is not merely a technical update, but rather a comprehensive strategic process encompassing legislation, institutions, infrastructure, and human capacities to ensure a modern, effective, and future-oriented public administration.

Conclusion

The research demonstrates that digital administrative law represents a qualitative shift in Jordanian public administration, combining the traditional principles of administrative law with the requirements of the modern digital environment. The study has shown that managing data and electronic services requires a robust legal framework, precise mechanisms for data protection, assurance of service effectiveness, and clear determination of legal liability in cases of technical failures or automated

decisions. Moreover, the legal, administrative, and technical challenges confronting digital transformation are not obstacles to progress; rather, they serve as incentives for the continuous updating of legislation and the development of institutional and technical infrastructure.

Accordingly, digital transformation emerges as an ongoing strategic process aimed at achieving a more efficient and transparent public administration, while safeguarding citizens' rights and strengthening their trust in the digital system. The research affirms that the success of this process depends on the integration of legislation, the enhancement of technical and human capacities, and the continuity and modernization of digital infrastructure—factors that position Jordan's digital administration as an advanced model aligned with global developments in public governance.

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