

Digital Transformation and the Reconfiguration of Institutional Organizations in Algeria : A Sociological Approach to Structures, Actors, and the Dynamics of Administrative Change

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Abstract:

Digital Transformation represents one of the fundamental pillars for enhancing institutional performance and achieving sustainable development in Algeria, as reflected in the launch of the National Digital Transformation Strategy 2030. This study aims to analyze the reality of digital transformation from the perspective of organizational structures, with a focus on the structural challenges it faces, and to propose effective administrative mechanisms to accelerate the pace of transformation. The study adopted a descriptive approach by diagnosing the strategic and legislative framework, while reviewing relevant sectoral applications. The findings revealed a tangible gap between the declared ambitions and the institutional reality, where entrenched bureaucratic culture and the lack of digital competencies stand out as major organizational obstacles, surpassing infrastructure-related challenges. Moreover, the absence of a comprehensive legislative framework supporting digitization undermines the legal credibility of digital transactions. The study recommends redesigning administrative processes prior to their digitization, accelerating the issuance of laws related to digitization to strengthen the legal framework, and investing in the development of digital skills while activating incentive mechanisms within institutions, thereby ensuring the success of digital governance and enhancing the efficiency of public administration in Algeria.

Keywords: *Digital Transformation, Organizational Structure, Digital Governance, Public Administration, National Strategy 2030*

Introduction

The world today is witnessing rapid technological development, especially in the field of information and communication technologies, which has made digital practices an essential and irreplaceable element in various sectors and at the level of all countries. These practices have become a vital means of adapting to the requirements of the digital age, and a lever for institutional and administrative modernization.

In the Algerian context, the features of digital transformation are gradually taking shape, as organizations are moving towards adopting digital business models aimed at developing innovative products and services, and creating new sources of income that enhance added value and competitiveness. This trend was clearly highlighted during the 2020 crisis, which revealed

the urgent need to accelerate the pace of digitization in light of unprecedented health, economic and social challenges.

The Problem of the Study

Digital Transformation is an unprecedented driving force to reshape the relationship between governments, citizens and institutions, as it is no longer just a complementary option to improve performance, but has become an essential pillar for achieving success and excellence in an increasingly competitive global environment. Digital transformation is defined as the process in which an organization integrates digital technology in all areas of business, which entails reshaping operational processes to enhance efficiency and pave the way for the adoption of modern technologies such as cloud computing and Artificial Intelligence.

In the context of Public Administration, this transformation requires going beyond the traditional limits of paper bureaucracy and shifting towards the "digital government" model, which focuses on providing integrated, accessible and transparent services; the effectiveness of this transformation depends on the extent to which institutions are able to adapt their internal structures and organizational culture to keep pace with the requirements of the digital age, as Algeria has realized the strategic importance of digitization as a lever for economic growth and a key axis in building a modern state. This importance is manifested in the strong political will that borders the highest authority in the country, where the president of the Republic attaches great importance to the digitization file and follows it personally, which translates a firm political commitment towards achieving a comprehensive digital transformation. In this context, The High Governorate for Digitization (HCN) was established and the national strategy for digital transformation (SNTN) for the period 2025-2030 was launched, which is the first national reference to organize and frame this path. However, translating this ambitious national vision into concrete results requires that institutions go beyond mere formal compliance and master a concrete framework for reinventing the public institution.⁹this calls for studying the relationship between digital transformation and the existing institutional organization.

Despite the ambitious strategic framework and concrete sectoral initiatives (in sectors such as justice and finance) ², the Algerian public administration still faces deep organizational, human, and legal challenges that hinder the hoped-for radical transformation. Digital transformation requires a thorough re-engineering of structures and processes, which may contradict the established bureaucratic culture.

Based on this discrepancy, the following main problem arises: What is the reality of digital transformation in Algerian public institutions how can the institutional organization (administrative mechanisms) be restructured and adapted to meet the requirements of comprehensive digitization, while overcoming the existing structural and legislative challenges The following sub-questions branch off from this problematic

1. What is the exact distinction between the concepts of digitization, e-management and digital transformation in the Algerian Context?
2. What are the main challenges (administrative, legislative, human) that hinder the radical transformation of the Algerian institutional structures?

3. What effective management mechanisms and strategies are proposed to ensure the success of digital governance and the development of competencies in Algeria?

Objectives of the Study: this study aims to achieve the following:

- Thoroughly know the key concepts of management transformation and evaluate the National Strategic Framework (SNTN 2030).
- Monitor and evaluate the structural and institutional challenges facing the Algerian public sector in the process of digitization.
- An attempt to propose a roadmap for the administrative mechanisms necessary for the reinvention of the public institution and the development of digital human capital.

The Importance of the Study: the importance of this study is highlighted on two levels:

- Trying to enrich the Arabic research literature linking digital transformation and institutional reform in North African countries, and providing a theoretical and applied framework for researchers.
- Provide a knowledge base and procedural recommendations for decision makers, especially the high preservation of digitization, to support the effective implementation of the national strategy.

Second: *The Conceptual Framework of Digital Transformation and Institutional Organization*

1-The Concept of Digital Transformation and its related Concepts:

The term digital transformation is one of the terms that have not been defined accurately, and there are many definitions depending on the context used, and although many references have used the term digital transformation as a synonym for the term digitization, some studies have distinguished between the term digital transformation and the term digital disruption, as the latter differs in its concept from the previous ones¹; as digital transformation is a phenomenon that includes fundamental strategic changes for the entire organization and it indicates the strategic opportunities resulting from modern technology². Digital transformation is also known as the process of integrating digital technology radically in all corners of the organization, leading to profound changes in how to work and deliver value. This transformation is not just a technical upgrade, it is a cultural and organizational change based on harnessing modern technologies such as cloud computing, advanced analytics, artificial intelligence (generated and autonomous) to increase productivity, improve operational efficiency and support decision-making³. Digital transformation also includes several deliberate changes that take advantage of advanced technology; it can also be defined as the transition of organizations towards big data analysis, cloud computing, and mobile technologies to offer their products and services via social networks .it also represents an

¹ **Khouassa, Mostafa & Grariri, Nouredine:** *Digital Transformation in the Business Sector: Fundamental Concepts*, Algerian Journal of Globalization and Economic Policies, Vol. 14, No. 01, University of Algiers 3, 2023, p. 52. Available at: <https://asjp.cerist.dz/en/article/234634>

² **Stefan Strohmeier:** *Digital Human Resource Management: A Conceptual Clarification*, German Journal of Human Resource Management (Zeitschrift für Personalforschung), 34(3), 2020, pp. 345–365.

³ What Is Digital Transformation? Available at: <https://aws.amazon.com/ar/what-is/digital-transformation> (Accessed on 06 November 2025 at 21:45).

opportunity to change organizational elements, processes, and cultures to become more responsive to the effects of technological innovation in the market¹. So, digital transformation includes:

- 1) Redefining and re-examining organizational boundaries
- 2) Provide feedback from the community and reduce property rights
- 3) Restructuring of product and organization identities

In addition, these changes affect the recruitment of employees, leaders and the restructuring of organizational culture. There is a growing concern among public organizations about transforming their organizations to reap the benefits of digitization; therefore, delivering digital transformation in public organizations requires new approaches to working with stakeholders, new ways of providing services, and new relationships². Digital transformation can also be defined as a process that requires the organization to integrate digital technologies into all activities of the enterprise.

- It is a special effort initiated by the organization in designing a distinctive business system, which allows it to invest in communication and information technologies to the greatest extent, which is reflected in its enjoyment of all the possibilities offered by digital technology for work and performance that were not available before, in addition to enjoying the advantages of designing an intelligent business system that achieves a head start in the competition³

Digital transformation is a "technical process" that makes technology digital. It involves converting a visual or physical object into a digital form that can be used by an information system. Thanks to digital transformation, it has become possible to consolidate information into a single form and process it using the same technologies⁴.

Digital transformation «refers to a comprehensive process of change affecting the organizational culture of an enterprise, in which it is integrated into all aspects of business and services. Digital transformation aims to radically transform how we work and deliver services, boosting innovation and efficiency, and completely reshaping operational processes and models⁵.

Based on the above, it is necessary to distinguish between digital transformation and similar terms that are often confused in the Algerian literature⁶. This distinction is crucial to understanding the nature of the change required in institutional structures:

¹ **Bora Ly**: *The Interplay of Digital Transformational Leadership, Organizational Agility, and Digital Transformation*, Journal of the Knowledge Economy, March 2023, pp. 3–4. <https://doi.org/10.1007/s13132-023-01377-8>

² **Bora Ly**: *The Interplay of Digital Transformational Leadership, Organizational Agility, and Digital Transformation*, *ibid.* p. 4.

³ **Mina Nassif Fikry Sadeq**: *Requirements of Digital Transformation for Achieving Organizational Development in the Directorate of Organization and Administration in Minya*, **The Scientific Journal of Social Work**, Vol. 3, No. 23, 2023, p. 268.

⁴ **Alexandre, L., Catanzaro, A., Favre-Bonté, V., & Saoudi, L.**: *What Is the Impact of Digital Transformation on the Internationalization of Small and Medium-Sized Enterprises?* International Journal of SMEs (Revue internationale P.M.E.), 36(3–4), 2023, pp. 12–35. <https://doi.org/10.7202/1107632ar>

⁵ **Ben Ahmed, Fatima Zahra & Ben Ahmed, Nadia**: *Digital Transformation in Algeria: Reality and Challenges – A Case Study*, Algerian Journal of Public Finance, 15(1), 2025, p. 503

⁶ **Sardou, Zine El Abidine & Djazar, Mustapha**: *The Role of Digitalization in Improving the Quality of Public Service in Algeria: The Municipality as a Model*, Algerian Journal of Law and Political Sciences, Vol. 08, No. 02, University of Tissemsilt, Algeria, pp. 648–664. Available at: <https://asjp.cerist.dz/en/article/238327>

1-1-Digitization: digitization is a modern term of Use, and is generally defined as the process of converting data from analog to digital form¹, that is, it is the initial process of converting information from its traditional form (digitization) to digital form (digitization). This step is a necessary starting point, but it does not change the fundamental process of work.

1-2-Electronic Management (E-Government): electronic management is one of the most important modern terms whose emergence has been associated with the technological development witnessed by the world and is defined as : " : "The process of converting business and administrative services at high speed without the use of paper, which contributes to achieving efficiency in the provision of services²; it also refers to the use of information and Communication Technology in the provision of government services and facilitating access to them via the internet, focusing on improving the user interface and raising the efficiency of delivery. However, the internal structure and traditional administrative processes may remain the same without experiencing a fundamental shift in their bureaucratic pattern.

Many of the efforts currently being made in Algeria are in the field of digitization or electronic management (for example, the conversion of civil status records into digital form, to name a few ...), while true transformation requires a complete reinvention of how the enterprise works³. In addition to the above, we will try to distinguish between the concepts mentioned above, where we find that there are some concepts associated with the process and concepts associated with the result; the concepts associated with the process refer to the activities, while the concepts associated with the result refer to the outputs of these activities. It is obvious that such concepts as "digitization», «mass digitization», «digital transformation", in organizations are characterized by activities, and therefore are concepts related to the process. As for the term "digital" (Digital), it describes a certain state of the enterprise, so the "digital enterprise" is a concept related to the result. Since there is a clear relationship between the concepts associated with the process and those associated with the result, the first gives rise to the second. For example, the digitization of a department or university represents a process that ultimately leads to the creation of a digital department or university as a result⁴. In addition, there is a distinction between (technical concepts and socio-technical concepts); where we find that technical concepts refer to purely technical phenomena, while socio-technical concepts are broader and include both technical and human phenomena. Based on what is stated in the literature, "digitization" can be understood as a purely technical concept; digitization refers to the technical conversion of analog information into binary numbers (hence the name), with the aim of automated processing of this information⁵.

¹ Rémy Rieffel: *The Digital Revolution: A Cultural Revolution?* Translated by Saïd Mabkhout, Alam Al-Ma' rifa Series, National Council for Culture, Arts and Letters, Kuwait, 2018, p. 27

² Sardou, Zine El Abidine & Djazar, Mustapha: *The Role of Digitalization in Improving the Quality of Public Service in Algeria: The Municipality as a Model*, Algerian Journal of Law and Political Sciences, previously cited.

³ El Aïdoudi, Yassine: *Reinventing the Algerian Public Institution in the Digital Age*. Available at: <https://2u.pw/r2Gr3J>

⁴ Stefan Strohmeier : **Digital human resource management: A conceptual clarification**, *ibid* , p p 347-348

⁵ *ibid* ;p348

By contrast, such concepts as " mass digitization", " digital transformation"... It integrates technical and human phenomena, thus preparing broader socio-technical concepts. Thus, the comprehensive digitization of a particular field can be understood as a purposeful technical digitization of that field. Since there is a clear relationship between technical concepts and socio-technical concepts, the latter include the former but go beyond them. For example, social digitization is a technology of management or an enterprise that includes purely technical digitization, but by passes it by taking into account human goals and tasks during the digitization process¹. Based on the above, we will try to summarize the most important Fundamental differences between these concepts in the following table:

Table No. (01): Differences between the Key Concepts of Administrative Transformation

Term	Primary Objective	Focus	Organisationnel Impact
Digitization	Converting analog data into digital data	Media conversion (paper to digital file)	Limited; does not fundamentally change core processes
E-Government	Delivering government services online	Simplifying and providing existing services	Improves the service interface, while the internal structure often remains largely unchanged
Digital Transformation	Comprehensive redesign of operational and business processes	Integrating technology into the core of operations and reshaping them	Radical; requires comprehensive cultural and organizational restructuring

Source: Prepared by the researchers.

Institutional Organization and the Requirements of the Digital Age

In light of the rapid transformations witnessed by the digital age, digital transformation is no longer just the introduction of technological tools into the work environment, but has become a fundamental catalyst for the reinvention of corporate organization at the level of structure, culture, and functions. Traditional organizational structures, which are based on vertical specialization, hierarchy, and excessive centralization, often hinder the speed of decision-making and integration of services, which are essential elements in a digital environment that requires instant interaction and integration between systems. Where corporate organization in the digital age requires the following:

- **Organizational Agility:** modern institutional organization requires being flexible and able to quickly adapt to technological and legislative changes. An agile organizational structure not only reduces decision levels, but also redistributes power and encourages multidisciplinary teams to make quick and effective decisions. As Hanelt et al point out. (2021), successful digital

¹ [Stefan Strohmeier](#) ,ibid , p 348

transformation is closely linked to an organization's ability to quickly reshape its internal processes in response to digital opportunities¹.

- Focus on **service and data integration (Interoperability & Service Orientation)**: digital transformation requires moving from the logic of "procedure management" to the logic of "Integrated Service Management", where the enterprise becomes citizen-oriented or end-user oriented. This transformation forces the development of organizational structures that support interoperability between systems; facilitate the flow of data between different sectors. Franzl et al. also stands out. (2023) that interoperability is a decisive factor in the success of digitization, because it enables effective integration of multiple systems inside and outside the enterprise²

- **Investing in digital skills**: digital transformation cannot succeed without a real investment in human competencies. Digital skills are no longer a luxury; they have become a prerequisite for effective organization. As confirmed by Tursunbayeva et al. (2025), organizations that redesign their structures to support continuous learning and digital professional development are more adaptable and innovative³.

Second: Digital transformation in Algeria: Strategic Framework and Practical Reality

1-National Strategy for Digital Transformation 2030 (SNTN): The national strategy for digital transformation "for a digital Algeria 2030" is the first frame of reference that organizes and guides the path of digitization at the national level, as a comprehensive roadmap aimed at achieving a qualitative transformation in the pattern of Service Management and relations between the state and The Citizen. This strategy has been prepared according to a participatory approach that brought together various actors from the public and private sectors and civil society, in order to enhance its legitimacy and realism. This vision seeks to improve the quality of life of citizens and improve the performance of institutions through the digitization of administrative transactions, and the provision of accessible, safe, and effective public services, in line with the requirements of the digital age and entrenches a culture of innovation and modernization in the national system⁴; where the strategy is based on five basic integrated axes aimed at achieving:

1.1-Basic Infrastructure: its goal is to ensure high-quality communication for everyone. The goals include connecting public bodies and institutions by 100% and increasing the return on investments in the field of connectivity. It also includes owning more than 5 national data

¹ Bora Ly: "The Interplay of Digital Transformational Leadership, Organizational Agility, and Digital Transformation, *ibid*, p 05

² Gerald Franzl , Christoph Wanzenböck and Angela Berger : **Interoperability as a key factor for digitalisation** — a success story for cross-sector knowledge transfer. *Elektrotech. Inftech.* **140**, 471–477 (2023). <https://doi.org/10.1007/s00502-023-01143-3>

³ Aizhan Tursunbayeva, Francesco Virili, Alessio Maria Braccini :*Technology-Driven Transformation: The Future of Work and Organizations*. Lecture Notes in Information Systems and Organisation, Vol. 79. Springer. See link ; <https://link.springer.com/book/10.1007/978-3-032-01396-5>

⁴ **Hadj Moussa, Shahira**: *The Content of the National Strategy for Digital Transformation: Horizons 2030*, El Moudjahid Newspaper, 12 May 2025. Available at: <https://2u.pw/6OZewy>

centers compliant with international standards and providing competitive service offers for cloud computing¹.

1-2-Human Resources, Training, Research and Development: this axis focuses on the development of human capital. The goal is to reduce the migration of talent abroad by 40%. This requires providing the public and private sectors with qualified labor².

1-3-Digital Governance: aims to organize and frame the path of embodiment. It includes two main pillars: the legal and regulatory aspect (currently working on the preparation of the digitization bill), and the second pillar related to digital security and the protection of data and systems from cyber threats³.

1-4-Digital Economy and Digital Society: they aim to develop a wealth-creating national economy and achieve sustainable socio-economic development⁴.

2-Applied Models of Digitization Efforts in Vital Sectors

In recent years, Algeria has witnessed tangible transformations in the field of digitization of services across a number of vital sectors, where practical models have been adopted that embody the gradual transition from traditional manual methods to digital systems, and this trend reflects a clear desire to improve the effectiveness of management, simplify procedures, and enhance the quality of services provided to citizens, in line with the requirements of the digital era and institutional organization, as:

1-Digitization of the Justice Sector: this sector is considered one of the most advanced in the use of information and communication technologies. The efforts have resulted in the development of systems for the management of judicial work and human resources, and the provision of most judicial services remotely to citizens inside and outside the country (such as criminal record sheets and citizenship certificates...). The transformation included the digitization of litigation procedures, starting from the prosecution's electronic platform, tracking the progress of cases, to the use of video conferencing technologies in courts, and the application of the electronic bracelet in prisons⁵. This has facilitated access to justice and simplified procedures.

2.2. Service Sector:

Several public administrations have developed 454 electronic public services. Currently, there are 178 public services under digitization, the aim of which is to facilitate and simplify administrative procedures to speed up and expand the digitization process, in addition to the development of the digital economy and e-commerce. Algeria post has issued 10 million electronic payment cards, and annually receives applications from hundreds of thousands of

¹ **High Commission for Digitalization:** *The National Strategy for Digital Transformation in Algeria: Toward a Digital Algeria 2030*, August 2024 edition. Available at: <https://hcn.dz/SNTN-Ar.pdf> (adapted).

² **High Commission for Digitalization:** *The National Strategy for Digital Transformation in Algeria: Toward a Digital Algeria 2030*, August 2024 edition. Available at: <https://hcn.dz/SNTN-Ar.pdf> (adapted).

³ **Hadj Moussa, Shahira:** *Previously cited reference.*

⁴ *Ibid.*

⁵ **Ben Cheikh, (Suleiman):** *The Impact of Justice Digitalization on Improving Public Service in Algeria*, Master's Thesis for the Degree of Master in Law, specialization in State and Institutions, Department of Law, Faculty of Law and Political Science, University of Djelfa, 2024-2025. Available at: <http://dspace.univ-djelfa.dz:8080/xmlui/handle/112/7138?show=full>

new users and university students. It also provided an electronic payment service for online registration fees for university students and students applying for intermediate and baccalaureate degrees, in addition to applications provided by this institution to pay all bills.

In the field of personal data protection, the state has established a legislative and institutional framework, represented by the National Commission for the prevention and Combating of crimes related to information and communication technologies in accordance with Law No. 04 – 09 dated August 5, 2009, which includes the special rules for the prevention and Combating of crimes related to information and communication technologies, whose tasks are to:

A. Activation and coordination of operations to prevent and combat crimes related to information and communication technologies

B. To assist the judicial authorities and the judicial police in the investigations carried out in relation to crimes related to information and communication technologies, including the collection of information and the completion of judicial expertise.

C. The National Authority for the protection of personal data was established in accordance with Law No. 25-11 dated July 24, 2025, amending and supplementing Law No. 18-07 dated Ramadan 25, 1439 corresponding to June 10, in order to collect all useful data in order to identify the perpetrators of crimes related to information and communication technologies and determine their whereabouts¹, and the National Authority for the protection of personal data was established, in accordance with Law No. 2018, related to the protection of natural persons in the field of processing data of a personal nature², and aimed at "ensuring that the use of Information and Communication Technologies does not involve any risks to the rights of persons, public freedoms and private life"(Article 25 of law 25-11) 'Its tasks are to:

1. Granting licenses and receiving declarations related to the processing of personal data
2. Inform the persons concerned and responsible for the processing of their rights and duties
3. Providing consultations to persons and entities that resort to the processing of data of a personal nature, or that conduct experiments or experiences of a nature that may lead to such processing
4. Receiving protests, appeals and complaints regarding the implementation of the processing of data of a personal nature and informing the owners of their fate
5. Licensing the transfer of data of a personal nature abroad in accordance with the conditions stipulated in this law
6. Ordering the necessary changes to protect the processed personal data, with the order to close, withdraw or destroy data
7. Submit any proposal that would simplify and improve the legislative and regulatory framework for the processing of personal data

¹ **Law No. 09-04**, dated 14 Sha'ban 1430 AH, corresponding to 5 August 2009, laying down specific rules for the prevention and combating of crimes related to information and communication technologies, Official Gazette (2009), No. 74, p. 8.

² **Law No. 25-11**, dated 24 July 2025, amending and supplementing Law No. 18-07 dated 25 Ramadan 1439 AH, corresponding to 10 June 2018, relating to the protection of natural persons with regard to the processing of personal data, Official Gazette (2025), No. 48.

8. Publishing the licenses granted and the opinions expressed in the National Register referred to in Article 28 of this law
9. Development of cooperation relations with similar foreign authorities taking into account reciprocity
10. Issuing administrative penalties in accordance with the provisions of Article 46 of this law
11. Setting standards in the field of protection of personal data
12. Establishing the rules of conduct and ethics that govern the processing of personal data¹

Because digital transformation has become a data exposure for citizens and a threat to states, the latter has sought to provide legal protection of data from anyone, and has included criminal penalties for it².

2.3. Education Sector:

As one of the effects of the corona crisis, the Ministry of Higher Education and Scientific Research has developed a hybrid education system that allows students to continue their education remotely, and benefit from the contents and explanations that support the attendance pedagogical classes. In addition to encouraging professors and students to use approved electronic platforms such as the Google MIT progress platform and others for the digitization of scientific, pedagogical and research works, the ministry has also included platforms for managing promotion files for professors and lecturers, for evaluating scientific research activities, encouraging the use of artificial intelligence in administrative work, perhaps the establishment of the National Committee for the transition to the University of the fourth generation 4.0 , and the establishment of a digitization strategy office in all higher education institutions

2-4-Digitization of public Finance: the Ministry of Finance has worked to popularize the digitization of internal processes and procedures and keep abreast of technological developments. Programs have been implemented to digitize budget management and accounting, and improve integrated information systems to support decision - making and Budget Management and control with high efficiency³.

2- 5-Digital Investor Platform: in an effort to improve investment attractiveness⁴, Algeria has established a digital platform for registration and follow-up of investment projects. The platform has registered 158 investment projects during a certain period⁵. This project clearly

¹ **Law No. 18-07**, dated 25 Ramadan 1439 AH, corresponding to 10 June 2018, relating to the protection of natural persons with regard to the processing of personal data, Official Gazette (2018), No. 48, p. 17.

² DARANI SAMIRA: *Protecting Personal Data Privacy in the Context of Digital Transformation*, International Journal of Early Childhood Special Education (INT-JECSE), 17(01), (2025), p1334, DOI: 10.48047/intjecse/v17i1.105 ISSN: 1308-5581

³ **Nawi, Ikram:** *The Reality of Integrated Information Systems for Budget and Accounting Management in Light of the Implementation of the Public Finance Digitalization Program in Algeria*, Algerian Journal of Public Finance, University of Tlemcen, Vol. 15, No. 01, 2025, pp. 189–203. Available at: <https://asjp.cerist.dz/en/article/264044>

⁴ **Chabni, Sofiane & Yahia, Samia:** *The Digital Platform as an Innovative Technology to Enhance Investment Attractiveness in Algeria*, Journal of the Circle of Legal and Political Research and Studies, Tipaza University Center, Vol. 08, No. 02, June 2024, pp. 141–162. Available at: <https://asjp.cerist.dz/en/article/245464>

⁵ **Office of the Prime Minister:** *Registration of 158 Investment Projects via the Digital Platform for Investors*, Algerian Press Service, Tuesday, 4 April 2023. Available at: <https://2u.pw/Yaw6Ih/>

demonstrates the need for interoperability between different sectors and bodies, as the effectiveness of the platform depends on coordination and linkage with other systems.

3-Structural Challenges facing radical Transformation: the main challenges in Algeria appear as deep administrative, security and structural obstacles¹, which prevent the transition from partial digitization to comprehensive institutional transformation:

A. Administrative and Cultural Challenge (Resistance Bureaucracy):

Bureaucratic culture is a major structural challenge that hinders the success of digital initiatives, instead of re-engineering processes, outdated and complex paper procedures are often digitized, resulting in an "electronic bureaucracy". Resistance is manifested in the difficulty of switching from traditional to electronic style².

The bureaucratic culture is also a challenge that hinders the development of digital skills among employee³. The absence of a flexible and stimulating work environment makes investing in training unfeasible, pushes employees to stick to outdated procedures for fear of change or loss of authority.

B. Legislative and Legal Challenge:

The absence of a solid legal and legislative framework is one of the main challenges in Algeria. The success of digitization requires that every digital action has a well-established and reliable legal dimension. Hence, the recommendations resulting from sectoral studies (such as Justice) emphasize the urgent need for the constitutional embodiment of the terms "digitization" and «electronic management" in all laws issued to ensure strong legal force. The absence of a solid legal and legislative framework is one of the main challenges in Algeria. The success of digitization requires that every digital action has a well-established and reliable legal dimension. Hence, the recommendations resulting from sectoral studies (such as Justice) emphasize the urgent need for the constitutional embodiment of the terms "digitization" and «electronic management" in all laws issued to ensure strong legal force.

C. The Challenge of Human Capital and Brain Drain

The success of any digital initiative largely depends on the readiness of human competencies, and not only on the acquisition of technology⁴. Algeria faces a major challenge in providing qualified labor⁵ and retaining digital skills

The strategic goal to reduce the emigration of talent abroad by 40% illustrates the scale of this problem. The bureaucratic culture, the lack of incentives and the absence of integrated national strategies are factors that directly determine the ability to develop and retain skills. Digital

¹ Amer, Iman & Attiq, Sheikh: *Difficulties and Challenges in Confronting Digital Transformation in Algeria: A Case Study*, Algerian Journal of Public Finance, University of Tlemcen, Vol. 15, No. 01, 2025, pp. 448–461. Available at: <https://asjp.cerist.dz/en/article/264056>

² Amer, Iman & Attiq, Sheikh: *Previously cited reference*, pp. 451–452 (adapted).

³ Abdel Fattah, Haiba: *Developing Digital Skills of Public Administration Employees in Algeria as a Fundamental Requirement for the Success of Digital Transformation and the Integration of Artificial Intelligence*, National Conference on Transforming Public Administration in Algeria through the Integration of Artificial Intelligence and Digital Technologies, University of Algiers 3, held on 29 June 2025. Available at: <https://2u.pw/FhyrE> (accessed on 9 November 2025 at 09:51).

⁴ Abdel Fattah, Haiba: *Previously cited reference*.

⁵ High Commission for Digitalization: *Previously cited reference*.

competencies are looking for flexible and stimulating work environments; when they do not find them in public administration, they migrate, which hinders the implementation of advanced infrastructure projects and the full use of planned national data centers. In addition to the above, these challenges and their relationship to the axes of the national strategy can be summarized in the following matrix:

Table No. 02: matrix of corporate organization challenges in the light of the national strategy

Domain SNTN 2030 Axis	Main Objective	Major Institutional and Administrative Challenge	Impact on Radical Transformation
Digital Infrastructure	Achieve 100% connectivity and establish advanced data centers	Lack of funding and inadequate infrastructure, along with legal risks associated with digital technologies	Hinders the shift toward cloud computing and results in an insecure digital environment
Human Resources	Reduce brain drain by 40%	Bureaucratic culture and resistance to change, as well as a shortage of specialized digital skills	Failure of automation initiatives due to insufficient employee readiness, highlighting that the human dimension precedes the technological one
Digital Governance	Establish a comprehensive legal framework and ensure data protection	Absence of constitutional recognition of “digitalization” and weak operational coordination	Failure to establish a solid legal foundation that guarantees the legitimacy and effectiveness of digital decisions

Source: Prepared by the researchers based on previous literature and studies.

Third: Restructuring Organizational Governance as a Lever for Digital Transformation

Digital transformation in Algeria, particularly within public institutions, requires a comprehensive process of **organizational reinvention**¹ that goes beyond superficial changes and addresses the core of institutional structures and operational processes.

1-Administrative Restructuring Requirements:

To keep pace with the demands of the digital age, a public organization must adopt new structural requirements:

¹ El Aïdoudi, Yassine: *Reinventing the Algerian Public Institution in the Digital Age*. Available at: <https://2u.pw/r2Gr3J>

A-Developing the Organizational Structure of Technology: it requires a structure that supports modern technology¹ and allows flexibility and rapid innovation. Barriers between managerial and technical interests should be dissolved to facilitate the process of integrating technology into the core of the business, rather than treating it as an External Auxiliary Service.

B-Transformation from Procedure Management to Service Management: the organization must redesign its processes to become results-oriented and centered on the citizen or investor. This requires eliminating redundant procedures and re-engineering processes, before proceeding with their automation, to ensure that radical transformation is adopted instead of just digitizing the old bureaucracy.

C-Centralized Governance and Interoperability: the creation of successful platforms, such as the Digital Investor platform, necessarily requires interoperability between various sectors and government agencies². This dictates the creation of a centralized data governance framework, possibly under the supervision of the high governorate for digitization, to impose unified standards for the collection, storage and exchange of data to ensure the integration of services.

2-The Legislative Pillar as a Basic Regulatory Mechanism

Legislative reform is a necessary regulatory mechanism for building trust in the digital environment. The biggest challenge is that the law still needs to fully recognize digital transactions and documents as a legal original that cannot be dispensed with the paper version³. The need for legislative reform requires speeding up the preparation of the digitization bill, which the Supreme governorate is currently working on. This law should ensure the realization of the so-called "Digital Trust" by:

- Give full and final legal force to digital documents and transactions.
- Provide a solid legal dimension of electronic management and digitization to be rooted in all laws.

When the legal and legislative embodiment is carried out first, the required trust in the digital environment is achieved, which allows sectors to completely end dependence on paper copies and accelerates integration and radical institutional transformation⁴.

Fourth: The Proposed Administrative Mechanisms to Promote Digital Transformation

Achieving the goals of digital transformation in the Algerian context cannot be achieved through exclusive reliance on technical solutions, but requires the adoption of an integrated management system that is concerned with building institutional capacities in a sustainable manner, and deeply addresses the roots of structural and organizational problems that hinder change. This trend requires a review of the traditional management pattern and the development of administrative mechanisms to ensure:

¹ **Rami, Mortada et al.:** *Government Digital Transformation in the Middle East: Accelerating Implementation and Sustaining Impact*, HR Echo Magazine, Federal Authority for Government Human Resources, Issue 19, December 2024, pp. 16–17. Available at: <https://www.fahr.gov.ae/ar/media-center/hr-echo/>

² **Rami, Mortada et al.:** *Previously cited reference*, pp. 18–19.

³ **Ben Cheikh, Suleiman:** *The Impact of Justice Digitalization on Improving Public Service in Algeria*, previously cited reference.

⁴ *Ibid.*

- **Digital Human Capital Development:** the development of digital competencies of a public servant is an investment in the future of governance effective¹. In order to develop these capacities sustainably and meet the challenge of bureaucratic culture², four main axes must be focused on:

1.1-Sustainable Education and Training: training programs should be designed not only to teach technical tools, but also to promote thinking about how to apply administrative mechanisms and processes innovatively³. Training programs should focus on changing the management culture towards innovation and flexibility⁴. The integration of ICT and digitization in education and training for the benefit of all actors is mandatory, as institutions seek to cooperate with universities, technology detachments and other institutions to obtain the digital talent required for the implementation of digital transformation strategies⁵.

1-2-Motivation and Job restructuring: the incentive system should be reviewed to ensure the retention of competencies and reduce their migration⁶.

This requires the provision of financial and professional incentives commensurate with the requirements of digital work, linking promotion and career development to the extent of adopting digital practices⁷.

1-3-Partnerships: strengthening cooperation between academic institutions and the private sector is one of the main pillars to support digital transformation, as this cooperation contributes to the transfer of advanced technological knowledge and skills to the institutional environment, and provides opportunities for the exchange of experiences and the development of innovative solutions. Through these partnerships, it is possible to build a sustainable training system that leads to the provision of a qualified workforce that meets the needs of both the public and private sectors, and keeps pace with the requirements of the digital economy. This approach is also an effective way to link scientific research with practical application, and to ensure the alignment of academic programs with the accelerated technological transformations in the labor market⁸.

1-4-Supporting Infrastructure: effective digital transformation requires the provision of an integrated technical infrastructure that forms the basis for any modern business model, whether

¹ **Abdel Fattah, Haiba:** *Developing Digital Skills of Public Administration Employees in Algeria as a Fundamental Requirement for the Success of Digital Transformation and the Integration of Artificial Intelligence*, National Conference on Transforming Public Administration in Algeria through the Integration of Artificial Intelligence and Digital Technologies, University of Algiers 3, held on 29 June 2025. Available at: <https://2u.pw/FhyrTE> (accessed on 9 November 2025 at 09:51).

² **Ibid.**

³ **Madiou, Leila:** *Digitalization within the Framework of Law 22-18: A Mechanism to Enhance Transparency in the Investment Sector*, Academic Journal of Legal and Political Research, University of Laghouat, Vol. 09, No. 01, 2025, pp. 637–661 (adapted). Available at: <https://asjp.cerist.dz/en/article/265463>

⁴ **Abdel Fattah, Haiba:** *Previously cited reference.*

⁵ **Ben Ahmed, Aïcha:** *Dynamic Capabilities and Their Impact on Digital Transformation: The Mediating Role of Strategic Renewal – A Case Study of Public Commercial Banks in Ghardaïa Province*, Doctoral Thesis submitted for the completion of a PhD in Management Sciences, specialization in Organization and Digital Transformation, Faculty of Economics, Business and Management Sciences, University of Ghardaïa, 2024–2025, p. 16.

⁶ **High Commission for Digitalization:** *The National Strategy for Digital Transformation in Algeria: Toward a Digital Algeria 2030*, August 2024 edition, p. 16. Available at: <https://hcn.dz/SNTN-Ar.pdf>

⁷ **Abdel Fattah, Haiba:** *Previously cited reference.*

⁸ **High Commission for Digitalization:** *Previously cited reference*, p. 17 (adapted).

remote or hybrid. This includes equipping organizations with advanced digital devices, secure and reliable communication networks, enabling employees to perform their tasks efficiently, ensuring data protection and continuity of operations in real time. The construction of this digital environment is not limited to the technical aspect, but is an organizational condition to ensure operational flexibility, speed of interaction, and reduce interruptions, in line with the requirements of the digital age¹.

2-Digital Governance and Data Control Mechanisms

Digital transformation generates huge amounts of data, and if management structures specializing in advanced analytics are not developed, technological investment will be limited to automation without achieving forecasting and pioneering. Therefore, the following mechanisms should be adopted:

- **The Imperative of Managing Data as an Asset:** organizational structures must shift from being dedicated to "file management" to "data management". This requires the application of effective data optimization strategies and advanced analysis tools that allow data to be collected from everyday files and applications and analyzed to support strategic decision-making.
- **Centralized structure of supply and Risk Management:** a clear organizational structure should be developed for the "supply strategy" of technological projects, ensures the feasibility of technology, and undertakes risk management and legal approvals to minimize the challenges associated with technical application².
- **Sustainability and security planning:** modern security and data protection compliance should be an integral part of any new corporate organization, to deal with cyber threats and ensure trust in government systems.

3- Technical and institutional implementation mechanisms: technical mechanisms require a focus on sovereign and reliable infrastructure:

1. **The adoption of national cloud computing:** the transfer of hardware, software and workloads from local environments to the cloud is a key goal³. To ensure data sovereignty, Algeria must ensure the possession of national data centers that comply with international standards.
2. **Focus on interoperability:** the high province of digitization should impose technical standards to ensure coordination between professional and technical structures in different ministries⁴, facilitating the work of common platforms, such as those used to simplify investment procedures.

¹ *Ibid.*, pp. 14–15 (adapted).

² **Rami, Mortada et al.:** *Government Digital Transformation in the Middle East: Accelerating Implementation and Sustaining Impact*, HR Echo Magazine, Federal Authority for Government Human Resources, Issue 19, December 2024, pp. 16–17. Available at: <https://www.fahr.gov.ae/ar/media-center/hr-echo/>

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Conclusion

Digital transformation in Algeria represents an existential challenge that goes beyond the technical dimension to the deep organizational and institutional dimension. The national strategy for digital transformation 2030 shows strong political will and clarity of vision, and tangible achievements have been achieved in sectoral digitization (such as justice and finance). However, the success of a radical transformation remains dependent on the ability to bridge the gap between this vision and bureaucratic-organizational reality.

Change-resistant bureaucratic culture and human capital challenges (lack of competencies, migration) are major organizational obstacles. These problems are deepened by the lack of a solid legislative framework that would give full legal force to digital transactions. Investing in digital competencies and restructuring the institutional organization to become agile and service-oriented, coupled with proactive legislative reform, is the only path that will ensure the transformation of digitization from a simple automation of outdated procedures to a radical transformation that enhances transparency and effectiveness in public administration. In order to turn structural challenges into levers for success, the following administrative and organizational mechanisms are proposed, which we deem appropriate to put forward this abstract, especially from the following aspects : legislative and regulatory (governance), at the level of human capital and the availability of financial and technical resources, as well as infrastructure .

- 1) **Proactive Legislative Reform:** expedite the preparation and approval of the digitization bill, and ensure the constitutional and legal embodiment of the terms digitization and electronic management to ensure the legal force of transactions.
- 2) **Process Re-engineering (BPR):** obliging public institutions to implement a comprehensive process re-engineering before embarking on any automation, to ensure that bureaucracy is eliminated rather than digitized.
- 3) **Establishment of a Central Structure for Data Governance:** the establishment of a central national reference under the supervision of the high governorate for digitization, whose task is to impose unified data standards to ensure effective interoperability between sectors.
- 4) **Fight against Bureaucratic Culture:** adopt motivational and training programs focused on changing the culture of employees, from a culture of compliance to a culture of innovation, service and accountability
- 5) **Competency Retention Strategy:** reviewing the system of wages and incentives to reduce the migration of digital competencies by the target 40%, and providing clear and motivating career paths for competencies specialized in artificial intelligence and advanced analytics.
- 6) **Leadership-Oriented Training:** launching specialized training programs aimed at senior management levels to develop their readiness in data-based decision - making and digital transformation management.
- 7) **Strengthen Institutional Cyber Security:** security and data protection compliance should be an essential part of the organizational structure; with investment in advanced cyber security infrastructure to protect national data centers.

- 8) **Provide Flexible Work Infrastructure:** support the advanced technical infrastructure needed for remote work and hybrid mode to ensure efficiency, security and shift away from restricted centralization.

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