

Digital services in Algeria - Health Model –

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Abstract

The world has recently experienced a rapid surge in technological advancements, leading many countries to shift from traditional systems to fully digital processes across various sectors. This paper sheds light on the opportunities and challenges of digital transformation in Algeria by analyzing the current state of digitization within the country. The findings indicate that Algeria has initiated steps toward digital transformation, particularly through the digitization of its healthcare sector. However, progress remains slow, highlighting the necessity for actionable recommendations to strengthen this sector and provide accessible, high-quality digital health services. The study adopted an analytical and descriptive approach, To collect and interpret data to shed light on the state of digital health in Algeria.

Enhancing Algeria's healthcare digitization requires focused efforts on developing digital skills and expertise among the workforce while establishing a robust legislative and regulatory Framework. The Algerian government is actively working toward achieving a high standard of digital and administrative efficiency in healthcare services. However, reaching these goals will require collaboration between the government, private sector, and civil society to unlock the full potential of digitalization. Despite ongoing efforts, further initiatives are essential to advance healthcare digitization and maximize its impact on improving medical services in Algeria.

Keywords: Digital transformation; health sector; services; Algeria, information technology.

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1. Introduction :

Algeria's digital transformation encompasses the modernization of various sectors, notably the health sector, which now integrates applications, digital platforms, and information systems within its institutions. These technologies have become fundamental tools for managing health-related data, particularly in light of rapid advancements in technology. Consequently, the quality of healthcare is increasingly tied to the efficiency of these digital systems.

To adapt to technological progress and enhance services for all citizens, Algerian health institutions should utilize the Digital Transformation Portal. This platform serves as a crucial resource for addressing internal and external challenges, meeting e-governance requirements, and maintaining alignment with breakthroughs in information and communication technology (ICT).

The study adopts an analytical and descriptive approach, leveraging scientific methodology to collect and interpret data that shed light on the state of digital health and evaluate the impacts of digital transformation across Algerian society. Through statistics and field studies, it provides a clear depiction of the phenomenon and its manifestations. The overarching goal is to explore the future vision that Algeria envisions via the Digital Transformation Portal, aiming to establish outstanding and efficient electronic health services through proper digitization and improved service delivery.

From this context arises the central question:

To what extent has Algeria's digital transformation bolstered the development of digital health services?

The study's key topics are as follows:

1.1 The study's conceptual framework

This study focuses on examining the concept and key characteristics of digital transformation, with particular attention to its requirements. Additionally, it delves into the concept and distinctive features of digital health.

1.1.2 Digital Transformation Concept

The successful implementation of a digital transformation within an organization necessitates profound structural and cultural shifts. According to insights from the Boston Consulting Group, fostering an organizational culture that not only embraces change but also aligns with and supports the company's overarching strategic objectives is essential for achieving progress in digital transformation efforts.(Natalja & Jelena , 9–10 May 2019, p. 720).

The effects of digitization on the economy and society are referred to as digital transformation, digital the conversion of analog data and processes into machine-readable formats is what digitization is all about, format. Digitalization involves using digital technologies and data, as well as their interconnection, this leads to new or changes to existing activities.(OECD, 2018).

Digital transformation is driven by the fusion of advanced technologies and integration, marked by the convergence of physical and digital systems. This evolution highlights the rise of innovative business models, the introduction of new processes, and the creation of intelligent products and services.(European Commission, 2019)

The field of management is undergoing significant transformation driven by advancements in digital technology. These innovations are breaking down barriers and unlocking new opportunities that profoundly influence individuals and organizations alike. In recent years, the pace of technological progress has intensified, aiming to streamline operations, enhance efficiency, and lower costs in the business landscape.(George Westerman, 2014, p. 12)

1.1. 3 Digital Technology Characteristics:

Digitization provides an opportunity to improve government by:(Burlacu & al, 2021, p. 35)

- ✓ Effective planning is essential.
- ✓ Plays a key role in promoting sustainable development, which will be increasingly important in the future.
- ✓ Facilitates the delivery of public services through tailored ICT solutions.
- ✓ Encompasses the incorporation of e-service technologies into the General Annex.

Many advantages have been developed by researcher "Anushka Kanongo" most notably:(Anushka , 2017, p. 2)

- ✓ Real-time data and information entry.
- ✓ Stop paper verification, movement, storage and processing.
- ✓ Promote a paperless environment free of forged documents and secure data.
- ✓ The funds are easy to access, recover, transfer and transfer in a transparent manner.

Ada Scupola is the researcher's addition : (Scupola, 2019, p. 274)

- ✓ The public sector's work procedures and delivery methods are continually developed and improved by digitization.
- ✓ Offers the most exceptional service, develops and implements public administration and leadership initiatives.
- ✓ Digitization enhances the efficiency of users and leads to responsible management of strategy implementation.

Many countries, including Algeria, are promoting electronic management because of its practical applications:(Hamidani & Hamidani, 2024, p. 19)

- ✓ The relationship between employees and senior management is reinforced through attributes of modernity, innovation, and the utilization of real-time information.
- ✓ The system is designed to oversee and manage all human and material resources efficiently, replacing traditional outgoing and incoming record systems with email communication.
- ✓ Centralized decision-making is facilitated by managing departments collectively, improving monitoring processes and offering better support.
- ✓ Standardized methods for data collection and linking help minimize obstacles in the decision-making process .
- ✓ The primary goal of this modernization effort is to foster transparency and reduce bureaucracy by leveraging international accountability standards and electronic controls, ultimately promoting a community-focused approach.

1.2.1 Challenges and pitfalls arise when introducing electronic administration to the government platform for public services

Digital public service platforms play a vital role in delivering services to citizens and streamlining access to public resources. It is worth highlighting the parallels between the digital economy and information and communication technologies (ICT) in relation to the administrative domain. Within these frameworks, data is digitized to fuel initiatives that generate goods and services, ultimately driving the economy's digital transformation, as outlined in reports from the OECD and INTECH.(Hamidani & Hamidani, 2024, p. 23).

1.2.2 Define digitalization in healthcare

Digitalization within the healthcare sector encompasses the transformation of health-related information and services into digital formats, ultimately optimizing accessibility, precision, and operational efficiency. This process incorporates the utilization of advanced digital technologies to convert traditional data into electronic forms, thereby streamlining healthcare delivery and management. Notable examples include electronic health records and telemedicine, both of which play a pivotal role in enhancing the quality of care while simultaneously lowering operational expenses.(Kernane & Mordjane, 2024, p. 53).

Recognizing the transformative potential of digital technologies in driving progress toward the Sustainable Development Goals, the main aim is to support health systems worldwide in fostering health promotion and disease prevention. This includes prioritizing enhanced accessibility and ensuring healthcare services are both high-quality and affordable.(World Health Organization, 2018, p. 1)

2. Algeria's health sector adopts digital services

Algeria's digital transformation of healthcare is a significant milestone, aiming to modernize health services and increase access to care. The sector is seeking more efficient management and improved service quality by integrating digital technologies.

2. 1. Algeria's experience with digitalization in the health sector

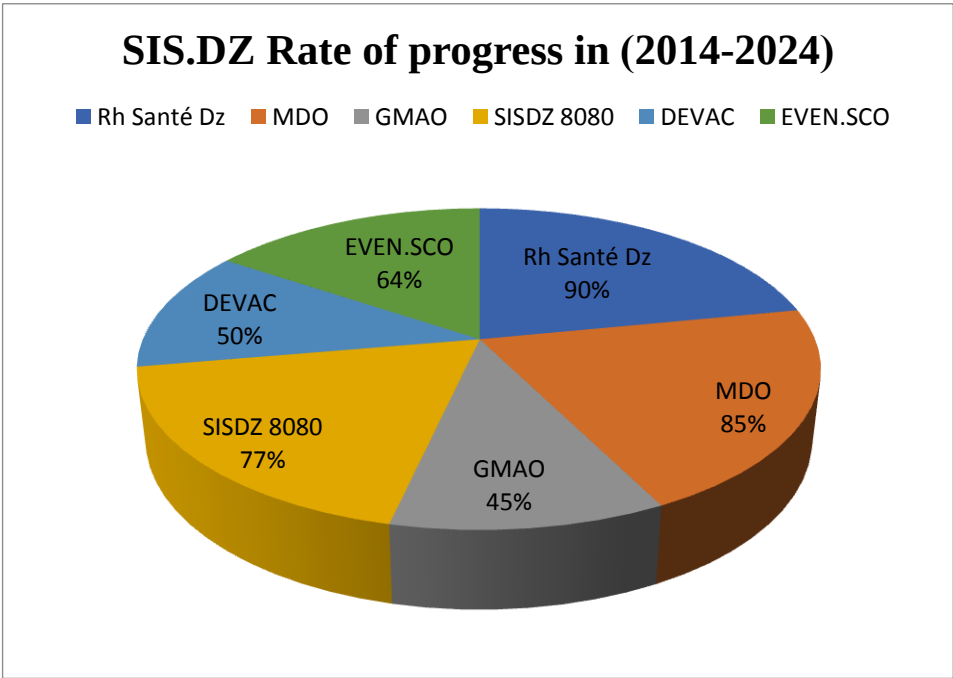
2. 1. 1. Algeria's Health Information System (SIS DZ)

They consist of six applications:(Algerian Ministry of Health, 2015, p. 5)

- ✓ Human Resources Information System (**Rh Santé Dz**).
- ✓ Compulsory Disease Declaration Information System (**MDO**).
- ✓ Maintenance Information Systems (**GMAO**).
- ✓ Health Activities Application (**SISDZ 8080**).
- ✓ Information systems on the electronic file for vaccination (**DEVAC**).
- ✓ Scorpion Poisoning Information Systems (**EVEN.SCO**).

The Algerian authorities, through the Health Information System (**SIS DZ**), aim to address the digital gap within health facilities by leveraging information technology to deliver essential and accessible healthcare services to citizens anytime and anywhere. This initiative represents a significant step forward in modernizing the country's health sector.

Fig.1. Percentage Progress of Digital Applications for Information System (SIS. DZ)



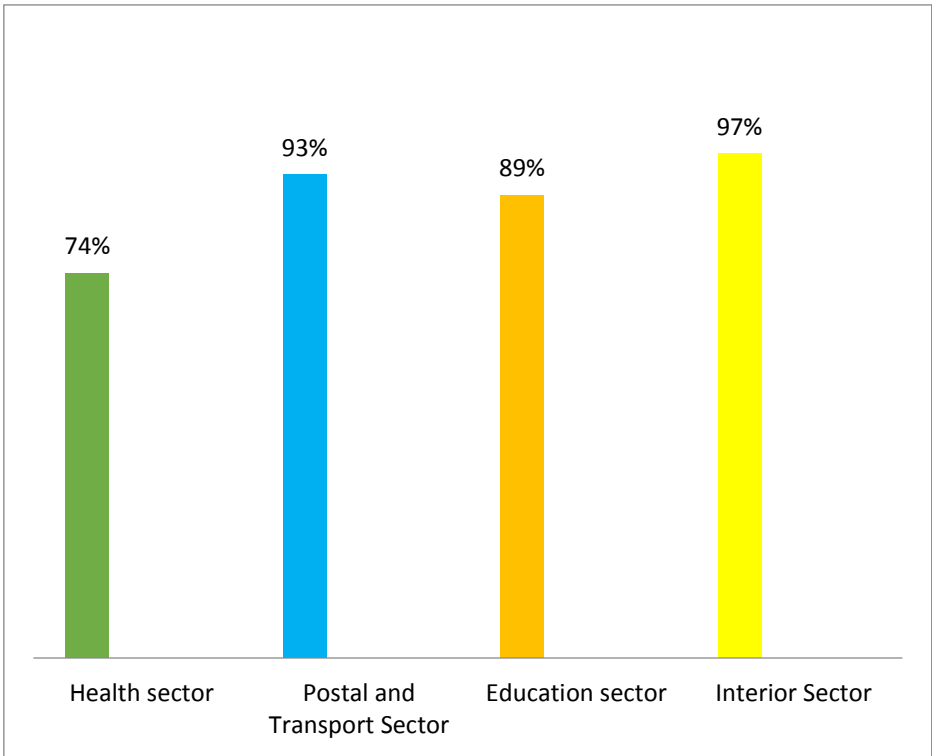
Source: Based on, according to the author APS, 2024

The Algerian Health Information System (**SIS.DZ**) has been meticulously designed, developed, and implemented as part of the Health Sector Support Programme in collaboration with the European Union. The initiative aims to integrate the electronic file seamlessly into any health information system. Its primary function is to collect data from various sources to generate consistent reports that support health monitoring, sector planning, and the management of resources, including human, financial, and material assets.

2. 1. 2. Digital Portal for Patient Electronic Medical File (DEM)

The introduction of medical electronic files in Algeria's health sector stems from an agreement established between the Ministry of Health and the European Union in 2002. This initiative aims to advance the health sector by facilitating the implementation and operationalization of a comprehensive modernization strategy.(Chougrani S & et Autre, 2004, p. 335).

Fig.2. Percentage of Digital Health Services Progress Compared to Other Sectors Until 2021



Source: Prepared by the researcher

2. 1. 3. Algeria's most prominent digital health initiatives

The Algerian health sector is actively pursuing the universal implementation of digitization as part of a strategic framework designed to ensure equitable access to quality healthcare services for all citizens.

This initiative was articulated by the Minister of Health, Abd al-Rahman bin Bouzid, during an evaluation meeting held in the capital on December 20, 2020. During this session, he elaborated on the efforts undertaken by the Ministry toward digitizing the sector, emphasizing that the proposed strategy hinges on the modernization of healthcare infrastructures through the integration of various digital projects:(Ayyad, Mustafa, 2021)

2. 1. 3.1 Digital Hospital Project

The patient's electronic medical records are maintained within a database on a digital platform, encompassing details such as diagnoses, treatments, analyses, and contributions from both public and private healthcare providers. This system facilitates the electronic exchange of data and information with ease.

The Digital Hospital initiative represents a significant leap forward in modernizing and enhancing e-services in the healthcare sector. It aims to provide citizens with access to top-quality health services efficiently, at minimal cost, while paving the way for the development of the virtual hospital concept, built upon a unified electronic medical file system

2. 1. 3.2 Digitalization project for health structures

This project can accurately and quickly assess the physical and human aspects of healthcare structures, the effectiveness of healthcare structures will be enhanced and necessary data will be provided to ensure quality in future healthcare services.(Kernane & Mordjane, 2024, p. 58).

2. 1. 3.3 Contracts with social security agencies being digitalized

The activation of the Shifa Card is facilitated through collaboration between the Social Security Authority and the Health Administration, utilizing a specialized digital platform designed to manage their contractual interactions. This initiative aligns with the broader digital transformation strategy, which is structured around four core pillars aimed at modernizing public services. By implementing such applications, the strategy seeks to offer citizens convenient access to electronic services, streamline daily processes, enhance the proximity of administrative functions, and alleviate the workload on public employees.(Algeria's Ministry of Labour, Employment and Social Security, 2021).

The close relationship between social security and health will put health e-services on the right path towards the effective and explicit application of the healing card.

2. 1. 3. 4 Digitization of the central administration and linking with health institutions

This project aims to enhance the efficiency and quality of the healthcare sector by integrating medical records into a centralized health network database. This integration facilitates seamless management of medical information across all healthcare institutions nationwide. Additionally, the active role of human expertise remains crucial in addressing technological challenges and effectively managing advanced systems. (APS, 2018).

Benefit-driven digital transformation can be reintroduced and implemented within large-scale organizations. Although government and healthcare sectors share common challenges in developing virtual digital services, the distinctive complexity and risks inherent in healthcare make its digital transformation hurdles particularly unique. This uniqueness often results in delayed recognition of tangible outcomes.(Katherine & Henry , 2018, p. 3).

2. 1. 3. 5 Electronic Pharmacy Project

Which includes the database of the consumed drug and knowing the hospital needs accurately so that optimal rationalization and real consumption know the quantity and quality, this liberates the national pharmaceutical complexes and creates a competitiveness that benefits both the product and the consumer.

The Central Pharmacy has focused on enhancing health performance by improving the drug stockpile, advancing its digitization processes, and optimizing its operational systems. These measures are implemented to meet the demands of various hospital institutions across Algeria. To streamline this process, electronic requests are utilized for a more efficient response to their needs.(APS, 2018)

Utilizing a database to oversee drug consumption enables hospitals to more effectively address their requirements, optimize costs, and enhance competitiveness in the pharmaceutical sector. The Minister of Health highlighted the importance of expediting the implementation and maximizing the benefits of this digital platform as a key component of the Electronic Algeria 2013 initiative.(Kernane & Mordjane, 2024, p. 58).

2. 1. 3. 6 Draft approval of the national identification number for the biometric identification card and its incorporation into the patient's electronic medical file

This project facilitates and accelerates the hospitalization process, also allows doctors and medical practitioners to access, process files and

inspect data easily as soon as possible, and also allows the patient to access his accurate health information.

Healthcare professionals can easily access patients' medical records, ensuring swift retrieval of necessary information. Additionally, patients are allowed to review their own records.(Kernane & Mordjane, 2024, p. 57).

Table.1Experts and individuals in Algeria have developed digital health applications

Digital Health Applications	Year of launch	The healthcare system is influenced by applications.
Click’doc	2020	Follow-up and careful health surveillance of the patient's digital file and enable programming to identify impossible medicines in the national market and reduce fraud in prescribing.
Esiha Algerie	2020	The platform offers a unified account for the entire family, enabling access to a wide range of services, including nearby doctors, diagnostic centers, radiology facilities, and semi-medical clinics.
Eyadaty	2021	A bridge seamlessly links patients with doctors and healthcare professionals within a digital platform, simplifying communication with medical practitioners and clinics near their location.
Docta	2021	This platform is designed to streamline the process of scheduling medical appointments and managing Bayan T patients and their medical records, thereby improving the flow of communication between doctors and patients.

Source: by the author on my platform information base

This table shows some health applications created by Algerian specialists and experts in the field of information and communication technology in order to improve the health service and provide the best medical care for the patient.

3. Recommendations :

The study advocates for the creation of a digital health platform in Algeria, supported by a digital transformation firm, and integrated with the Ministry of Health as well as accredited public and private hospitals. This platform would grant patients and healthcare professionals secure, instant access to medical records, while enabling providers to exchange data

securely. Such connectivity aims to enhance care quality and address public health challenges more efficiently.

Investing in these areas will enhance the quality of health care, increase sustainability of the health system, and bring significant social and economic benefits.

Enhancing the ability to monitor care, analyze data for managing health crises, and control epidemics relies on robust strategies. Strengthened national and international collaborations can be fostered through effective disease surveillance, the dissemination of reliable statistics, support for scientific research, and the establishment of specialized registries tailored to specific diseases.

It is advisable for hospital administrators to uphold their dedication to delivering comprehensive medical services to patients. Furthermore, it is essential to enhance both material and moral support for healthcare institutions to ensure the provision of necessary resources that facilitate the effective implementation of electronic health services.

E-healthcare providers should prioritize delivering accurate and essential medical information to patients, ensuring quality care while fostering the development of optimal health services tailored to individual needs.

4. Conclusion:

This study critically examines Algeria's approach to e-government, with a particular emphasis on its digital strategy within the healthcare sector. The government's initiative seeks to enhance and modernize health services, aiming to deliver superior care while addressing sectoral challenges through digital transformation. In light of the increasing demands placed on healthcare systems, digital technologies are emerging as innovative and indispensable solutions to improve efficiency and patient outcomes. Empirical evidence from successful implementations underscores the potential for these technologies to reshape patient experiences positively.

To facilitate progress, the integration of sustainable development principles plays a pivotal role, fostering alignment with global healthcare standards and enabling the identification and remediation of deficiencies in service quality. Effective health communication further serves as a cornerstone of this transformation, establishing a continuous process that empowers stakeholders to take an active role in healthcare management. The prioritization and optimization of modern communication technologies enable more cohesive interactions and bridge existing gaps in service delivery.

By adopting a comprehensive and forward-looking approach, Algeria positions itself to advance digital health initiatives, with the overarching aim of fostering a healthier and more equitable future for its population. The digital revolution within the healthcare sector is not only a step toward modernization but also a critical pathway to addressing systemic challenges and promoting better health outcomes for all citizens.

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