

Towards a Digital Transformation of the Health Sector in Algeria: Legal Framework, Prerequisites and Prospects

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Abstract:

This article examines the potential impact of digitalization on the healthcare sector in Algeria, in light of recent public policies. Through desk research, it explores opportunities for value for money to ensure effective and efficient spending. The results highlight the potential of digitalization, particularly through initiatives such as contractualization, to improve the overall performance of the sector. This study thus offers important perspectives for the management and modernization of the health system in Algeria, highlighting the importance of a strategic use of digital technologies.

Keywords : Healthcare, Digitalisation, Performance, Algeria

Jel Classification Codes : I12 O33 D24 O55

I. INTRODUCTION

Major changes in various fields in recent decades have forced public and private companies to adapt to changing situations, characterized by challenges and opportunities. In particular, the technological revolution of the last century has profoundly transformed the economy and society, highlighting the crucial importance of integrating digital tools into organizational strategies.

Today, digital advancements are significantly transforming many aspects of daily life, from work to leisure to health. The most innovative private companies have quickly understood the potential benefits of digital transformation and have integrated it into the core of their strategies. On the other hand, public administrations are facing increasing pressure to reform their services, fueled by criticism from liberal advocates, and the need to improve efficiency and transparency. (Jacob, Defacqz, & Agossou, 2022/12/02)

In this context, Algeria, like other developing countries, plans to follow the wave of modernization by adopting performance indicators to assess and improve its public services. Over the past two decades, the country has undertaken significant economic, political and institutional reforms to strengthen the efficiency of its administrative apparatus.

Digital transformation has thus become a key lever for improving the delivery of public services, promoting a more responsive, transparent and citizen-oriented administration. However, it is important to recognize that digitization is not just a technical issue; It involves profound changes in processes, skills and organizational culture.

In this context, the health sector is of particular importance, given the challenges related to the quality and efficiency of health services. Despite the progress made, Algeria faces organizational challenges that result in inequalities in access to care and a sometimes-unsatisfactory quality of service.

Thus, the fundamental question arises: **what role could the digitalization of the health sector play in improving the performance of public health institutions in Algeria?**

II. METHODOLOGY

Our contribution is based on an in-depth desk research focused on performance concepts in new public management and the impact of the digitalization of the public sector, with a particular focus on health in Algeria. We consulted academic articles, official reports, and Algerian press articles to get a comprehensive overview. This method allowed us to collect relevant data on

public health digitization policies in Algeria and to identify opportunities to improve the performance of health institutions.

III.THEORETICAL FRAMEWORK: DIGITALIZATION IN THE PUBLIC SECTOR

1. From New Public Management to Public Sector Performance

Since the 1980s, the state's management of contributions has sparked heated political debates, often criticized for the waste of resources. This criticism highlights the need for a new, performance-oriented private sector-inspired management model in response to recurrent economic and financial crises. According to Fouchet (1999), performance can be understood according to three main dimensions: efficiency, which measures the relationship between the resources allocated and the results obtained; effectiveness, which assesses managers' ability to achieve set objectives and the gap between forecasts and actual results; and relevance, which assesses the adequacy of stated objectives with the organizational context. (IDRISSI & YAPI)

The foundations of performance are part of the neoliberal concept of New Public Management, which emerged in the 1970s. This concept advocates a reorganization of public administration, emphasizing flexibility, innovation, creativity, entrepreneurship and dynamism, rather than bureaucratic rules and means rather than results. (Lounes, 2018)

The rise of New Public Management reflects the contemporary quest for excellence, equity and personalization of services in the public sector, with a central integration of digital as we will discuss in the next subsection.

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2. The digital transformation of the public sector:

Technology is driving an evolution of work within the public sector, with real-world examples such as the estimate that the U.S. federal government could save 96.7 million man-hours, or US\$3.3 billion, annually through automation and simple artificial intelligence solutions. Initiatives such as AI-driven call center robots have emerged in countries such as Saudi Arabia and Latvia, with the latter providing a shared service to local authorities. The Covid-19 pandemic has also led to the adoption of similar solutions in many countries to meet the increase in call volumes, such as Australia, Argentina, Brazil, Mexico, the United Arab Emirates, Spain and Sweden. In addition, countries such as Denmark, Australia

and the United Arab Emirates have been using data analytics and basic artificial intelligence for forward planning and fraud detection in social services in recent years. As a result, even traditional "white-collar" tasks in the public sector, such as regulatory, financial and human resource management, will be automated, freeing up resources for other tasks such as information system development and management, technology, innovation, change and risk management. (Nielsen, 2022)

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3. The challenges of digitalization:

The digitization of data and the digitalization of the administration present both opportunities and challenges. The digitization of citizens' data aims to improve the quality and efficiency of services, but it also raises data security concerns, including cybercrime and data loss, which could jeopardize efforts.

Thus, modernizing the public sector through digitalization requires a holistic approach, encompassing the review of the organization, the assessment of available resources, the development of skills, as well as the adoption of ethical standards and clear regulations. However, it is essential to note that government digitalization initiatives do not always guarantee a significant improvement in public services, unless they are implemented in an enabling environment and in accordance with certain principles.

According to Heeks, a significant percentage of e-government projects in developing countries have failed or encountered difficulties, mainly due to a "gap between reality and design" on various aspects such as information, processes, technology, objectives, management, skills, time and financial resources. These challenges underscore the need for a thoughtful and well-planned approach to overcome the obstacles associated with the transformation of the public sector through the application of information and communication technologies, particularly in developing countries or countries with economies in transition that may lack the necessary resources and skills. (Kuldosheva, 2021)

IV.RESULTS OF THE DOCUMENTARY RESEARCH: WHY DIGITIZE THE PUBLIC HEALTH SECTOR IN ALGERIA?

1. The Digitalization of Public Health Institutions: Gains and Challenges

As part of the modernization of the healthcare system, which is part of a digitalization strategy, there is a focus on e-health, digital health, digital hospitals

and electronic patient records. All these innovations place digital technology at the heart of solutions for the management of public health facilities, ranging from the delivery of care to administrative management and the rationalization of expenses.

Indeed, these digitization tools make it possible to effectively solve the challenges related to the care pathway by ensuring the rapid transmission of medical data, regardless of the patient's location. Through improved coordination between healthcare stakeholders, digitalization promotes both medical effectiveness and efficient spending. By having access to critical data, physicians can better understand patient needs, anticipate problems, and personalize treatments, thus promoting a precision medicine approach. At the same time, digitalization contributes to a better coverage of expenses by Social Security. (Muller, 2020) (l'usine digitale, 2019) Haut du formulaire

The digital transformation of healthcare can be disruptive, but it also offers considerable opportunities. Technologies such as the Internet of Things, virtual care, remote monitoring, artificial intelligence, big data analytics, blockchain, smart wearables, health platforms, as well as tools that enable remote data exchange and storage and the sharing of relevant information across the healthcare ecosystem, are creating a continuum of care. These advancements have the potential to improve health outcomes by facilitating medical diagnosis, data-driven treatment decisions, digital therapeutics, clinical trials, self-care, person-centred care, and the creation of evidence-based knowledge, skills and competencies for healthcare professionals. (World Health Organization, 2021)

The specific contributions of digital health to each of the health system attributes are as follows: (World Health Organization, 2021)

1. **Quality:** Improved accuracy of diagnosis and treatment, ensuring care is appropriate and evidence-based, improved communication between patients and service providers for person-centred care and improved treatment adherence.
2. **Efficiency:** Optimization of resource use, reduction of fragmentation of care, duplication and unnecessary care, improved institutional effectiveness through access to real-time information.
3. **Equity:** Improved access to quality health services for people with multimorbidity in rural, remote and disadvantaged areas, empowering individuals to make informed health decisions.
4. **Accountability:** Improved transparency and accountability through better information sharing and communication for increased engagement with the general public and local leaders.
5. **Sustainability and resilience:** Strengthening surveillance of public health threats and improving the overall adaptability of the health system.

Many eHealth technologies are already widely used, including electronic medical records, telehealth and telemedicine services, electronic health information systems, medication and chronic disease management systems, e-learning, as well as the use of social media and big data for health issues.

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2. A national policy for the digitalization of public health institutions in Algeria

Algeria is committed to its digital transformation in accordance with the directives of the Head of State, set out during a Council of Ministers, covering all sectors without exception. The Ministry of Health, like other sectors, is beginning the digitization of its services as part of the modernization of the health system. Although the health sector has undergone several reforms aimed at improving its efficiency and quality, coordination issues between actors persist, making digitalization all the more crucial to fill these gaps. The government is committed to providing the necessary resources to implement this strategy and address all related challenges, according to the authorities.

This policy aims to generalize the use of zero paper for all health professionals, which will reduce the number of administrative documents. In addition, it provides for the installation of modern digital equipment connected to computers. While the latter may present challenges, especially with regard to equipment maintenance, digitalization could lead to greater accountability of stakeholders. (Azzegag, 2022)

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According to experts in IT and hospital management, the digitalization of the healthcare sector is now seen as an imperative necessity. They emphasize that digitalization is key to modernizing management, streamlining spending, and improving patient services. Currently, several hospitals nationwide have begun the process of digitizing some of their administrative services as well as patients' medical records. However, the implementation of this transition varies, with some institutions moving faster than others, and some not yet starting the process. (Santé en Afrique, 2022)

Until recently, the absence of a decree on the establishment of the National Agency for Digitalization has delayed progress in this area. However, this decree was eventually enacted¹, marking the creation of a health digitization

¹ Executive Decree No. 22-251 of Aouel Dhou El Hidja 1443 corresponding to June 30, 2022 relating to the National Agency for Digitalization in Health

agency. This agency is designed to provide visibility and data on the state of the sector, including inventory status and human resource management. (Saher, 2022) It replaces the National Agency for Health Documentation and is responsible for coordinating the various services, while seeking to reduce expenses while improving the quality of work (Bounabi, 2022) Haut du formulaire

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As part of the digitalization strategy for the health sector in Algeria, several major projects have been launched. Among these initiatives, six digital projects stand out in particular. First, the project of a digital hospital is underway, aimed at modernizing hospital practices. Secondly, the project to digitise contractual relations with social security institutions will be carried out using data from the Chifa card.

The third project concerns the inclusion of the national biometric ID card identification number in the patient's electronic medical record. This integration aims to improve coordination between health facilities, thus closing the gaps in the communication of medical information between health professionals. Indeed, the transition to a digitized medical record will facilitate the work of healthcare staff and managers, replacing the inefficient and insecure use of paper files.

It is essential to emphasize that the success of this digitization policy depends on the adequate training of staff and the implementation of a secure sharing system, while optimizing IT tools. Without these complementary measures, digitization may not reach its full potential and may even prove less useful than the use of paper.

The fourth project aims at the digitization of the central administration, linking it to health facilities, while the fifth project concerns the digitization of the business plans of health facilities. These initiatives demonstrate Algeria's commitment to modernizing its healthcare system by adopting innovative digital solutions. (Imen.H, 2020) (elmoudjahid, 2022) (Azzegag, 2022)

Finally, the last project concerns the implementation of an electronic pharmacy, with the aim of enabling the establishment to effectively control its needs for medicines in record time. This initiative aims to prevent disruptions and shortages that the healthcare facility may face sporadically. In addition, e-pharmacy will contribute to the control of expenditure and promote forward-looking management of hospital budgets. (APS, 2022)

As far as concrete implementation is concerned, a first digital regional hospital, specialized in medical-surgical emergencies, has been inaugurated in

the wilaya of Annaba. This achievement represents a concrete fulfilment of the political commitments to digitalize the healthcare sector. This is a pilot initiative that will serve as a model for digital medical records management and all the other projects mentioned previously. (BAHRI, 2022)

3. Digitalization: Solution for contractual relations between healthcare actors in Algeria **Haut du formulaire**

The way a sector manages its resources has a significant impact on the efficiency of its services, given their limited nature. In the field of health, the issue of financing is often at the centre of concerns. Indeed, public health sector expenditure is mainly covered by the State and social security funds.

The State is responsible for financing preventive care, medical equipment and care for disadvantaged populations. As for the social security funds, they ensure the financing and reimbursement of health care for their insured, in particular through the hospital lump sum system set up in public health establishments. However, this system has proven to be flawed because it does not always reflect the true costs of services.

In the context of reforms and the revision of the health system in Algeria, contractualization is often proposed as a means of financing, both in the field of health and social security. This approach is expected to improve the management of health facilities, which would ensure more efficient health services. However, despite its creation in the 1990s, this reform strategy has encountered many obstacles that have prevented its effective implementation so far. This funding mechanism aims to revamp the relationship between health care providers and donors, clearly defining the roles and responsibilities of each party. The aim is to improve the organization and management of health facilities, to methodically assess activities and costs, and to rationalize expenditure in order to ensure that care is free of charge (ZEMOURI, 2022)

In emphasizing the crucial importance of the hospital sector, it is necessary to emphasize the need to equip hospitals with modern technology, state-of-the-art interventions and specialized human resources to ensure their functioning. This makes hospital management more complex than ever before. (Sidhoum, 2022)

Conceptually, contractualization aims to reorganize the relationship between health institutions and the main funder, i.e. Social Security. In practice, access to the hospital is conditional on the presentation of a social security card for members, while disadvantaged people must carry a card issued by the National Solidarity Directorates of their wilaya, and the wealthiest must pay the hospitalization fees on their discharge. (IMÈS, 2022)

In addition, it should be stressed that without a prior digitization of the health sector, this contractualization approach is doomed to failure, as digitization is an essential prerequisite for its generalization in all establishments. (Sidhoum, 2022)

As part of this approach, pilot projects will be initiated in several hospitals to experiment with the contracting process and evaluate the care pathway as well as the nature of the medical interventions provided to patients. These pilot projects will mainly focus on specialties such as gynecology, cardiology and nephrology in the public sector. (IMÈS, 2022)

In the private sector, as in the public sector, agreements are concluded between private health care providers and social security funds. An executive decree was promulgated in 2009² to this effect, as published in the Official Gazette. However, private practitioners have voiced their disagreement, arguing that fee levels are not being adequately reassessed. This issue remains topical, with a growing interest in third-party payment facilitated by the Chifa card.

Provided free of charge to panel doctors, a system including a health professional key and operating software (ChifaMed) has been introduced. Registered doctors benefit from free training provided by the Social Security for the use of this software, as well as free maintenance provided by the National Fund for Insured Social Employees (CNAS) for the equipment allowing the use of the Chifa system. (ALGERIE-FOCUS, 2021).Haut du formulaire

The initiative of the social security funds has a definite advantage, especially with regard to the enhancement of the role of the attending physician, an aspect that was highlighted in the 2018 Health Act³ as part of the rehabilitation of the care pathway, together with digitalization.

In addition, the former Minister of Health, Abderrahmane Benbouzid, pointed out during a recent field trip that "75% of the patients who presented themselves at the Mustapha-Pacha University Hospital could have been treated in a local health structure, such as polyclinics. That's why it's so important to rehabilitate these health facilities." (REPORTERS, 2022) This observation highlights the crucial importance of the attending physician in the care pathway, as well as the need for funding supported by an efficient digitization process.

It is also essential to note that the lack of digitization is not the only factor explaining the inability to apply the contracting system. Indeed, as early as

² Executive Decree No. 09-116 of 11 Rabie Ethani 1430 corresponding to 7 April 2009 establishing the standard agreements concluded between social security institutions and medical practitioners

³ Law No. 18-11 of 18 Chaoual 1439 corresponding to 2 July 2018 relating to health

2007, a commission of experts tasked with drawing up a nomenclature of procedures had completed its work, identifying nearly 8,000 acts, compared to only 1,800 in 1985, i.e. an increase of more than 400% in the number of medical, surgical and imaging procedures. This situation, perceived as a threat to the balance of the National Fund for Insured Social Employees, led to the deadlock of negotiations at the level of the pricing commission. (IMÈS, 2022)

V. DISCUSSION OF THE RESULTS: WHAT IMPACT FOR PERFORMANCE

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The Covid-19 pandemic has highlighted the critical importance of rapid exchange of information in the field of health, providing essential data on cases, hospital bed occupancy rates, etc. This sharing of information has enabled stakeholders to make informed decisions to control the spread of the virus.

However, outside of crisis situations, the absence or miscommunication of information can lead to fragmentation of the healthcare sector, undermining the consistency of care pathways and exposing patients to the risk of medical errors. To improve the performance of the health system, a thorough evaluation is needed, followed by well-defined reform and planned implementation, all of which are underpinned by effective information systems. The former Minister of Health stressed that digitalization and digitalization are indispensable to guide health policies in an informed manner. In this sense, the electronic medical record (EMR) occupies a central place, offering advantages such as data traceability, accuracy of information and security of treatment. However, to ensure the proper functioning of these systems, adequate training of medical staff in the use of computers is essential in order to minimize the risk of errors in the handling of medical records. (Gordon, 2022) (HOPIHUB, 2018)

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VI. CONCLUSION:

The digital transformation of the healthcare sector is a complex process that requires many interconnected elements to be put in place. As pointed out (Nielsen, 2022), the success of this transformation depends on a strong legal and regulatory framework, as well as prerequisites such as access to electricity, a mobile signal and internet coverage. In addition, the collection, recording and secure exchange of information about individuals is essential to improve the

delivery of health services. In this perspective, the implementation of a unique identifier for each individual and the adoption of information, interoperability and enterprise architecture standards are fundamental aspects. However, it is crucial to ensure data privacy, security, and confidentiality to prevent harm and abuse. This requires appropriate laws and regulations as well as continued investment in cyber defense.

In addition, the use of digital health tools and applications will lead to changes in health service delivery processes. It is therefore essential to have policies and strategies in place to support the adoption of a digital health system on a larger scale. This includes the implementation of national digital health policies, tailored governance mechanisms, workforce capacity building, and engagement with key stakeholders. (WHO, 2019)

In terms of research perspectives, it would be interesting to further explore the impact of digital transformation on the efficiency and quality of health services, as well as on access to healthcare. In addition, in-depth studies on data protection and cybersecurity best practices in digital health could be conducted to inform future policies and interventions. Finally, research on the specific challenges and opportunities related to the implementation of digital health in national and regional contexts could also provide valuable insights for policymakers and practitioners.

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