

Digital Government in Algeria: Reality and Challenges

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Abstract: This study aims to identify the concept of digital transformation of government, with the most important stages of digital government development, as well as the factors and determinants of digital government. This study adopted the descriptive-analytical approach in order to identify the maturity levels of electronic government services in Algeria during the period from 2021 to 2023. by focusing on the evaluation of the GEMS index published by the United Nations Economic and Social Commission for Western Asia (ESCWA). This study concluded that e-government services in Algeria are at a moderate level of maturity, so the Algerian government should promote the use of mobile digital services through digital literacy campaigns. In addition, it should expand the scope of official applications and update them regularly. As for people with disabilities, features must be provided that take into account their ease of access to digital government services, such as simplified language options, text alternatives for images, and other features that combine organization, design, and monitoring.

Keywords: Digital Transformation; Digital Government; GEMS index; Algeria.

1. Introduction

The world economy has undergone a significant and quickening digital revolution, giving rise to novel products and services as well as new business models. Devices have been replaced by digital information technology, and in this new digital era, data has become a valuable commodity. (Hayet & Abderrahmane, 2024, p. 369). The Fourth Industrial Revolution has started a new era that is more than just "technology-driven change." It is a chance to help everyone. (Abdulrahim & Mabrouk, 2020). Digitalization has the potential to bring about revolutionary change. (Abdelghani & Sakina, 2025, p. 156)

Before diving into the importance of digital transformation, it's crucial to grasp the underlying reasons driving this change. The shift toward digital isn't just a trend; it's a response to the evolving demands of consumers and the ever-shifting landscape of the market. Traditional methods are becoming increasingly obsolete, not just due to their limitations but also because they pose risks in the current environment. Meanwhile, the fervent need for innovation is essential for staying relevant and competitive. One powerful motivator behind this transformation is the opportunity to harness new and emerging technologies (Alenezi, 2022, p. 01).

Digital governance plays a pivotal role in reshaping how governments function and deliver services, making them more responsive and dependable for the public. The COVID-19 pandemic underscored this importance, as it allowed governments to maintain their operations amidst chaos and ensure that essential services reached citizens and businesses without delay. Yet, to achieve this lofty goal, we need to build robust foundations. This means establishing flexible governance frameworks, creating reliable and resilient digital

public infrastructure, and embracing a forward-thinking mindset that taps into emerging technologies, like artificial intelligence. (OECD, 2024).

Despite challenging circumstances and successive crises, the Arab region is witnessing a significant digital advancement, evident in the rapid development of digital government services. In some Arab countries, standing in queues for hours to obtain an official document is no longer a common practice. Digital platforms have become a reality, offering a wide range of services to both individuals and institutions (ESCWA, 2023, p. 07).

The majority of developing governments have recently engaged in e-services designed to help the public save time, money, and effort. The Algerian government wants to set up an electronic system that will allow its residents to take use of the e-services it offers in a number of areas. However, the e-government project ran into numerous issues with infrastructure, responsible technology use, service quality, and citizen accessibility. (Benaida, 2023, p. 680). In light of these challenges, the following research question emerges as an urgent necessity:

1.1. Research Problematic

What is the reality of the realization of digital government in Algeria through the GEMS index during the period 2021-2023?

To answer this main question, we proposed the following hypothesis:

- The performance of digital government in providing public services is of average quality in Algeria.

1.2. Research Aims

This study aims to identify the concept of digital government and its importance in achieving the requirements of development, as well as the factors and determinants of digital government. The study also aimed to assess the state of maturity of electronic government and mobile services in Algeria in order to identify the most important strengths and weaknesses of digital government.

1.3. Methodology

This study relied on the descriptive-analytical method, which is based on the detailed description of a phenomenon, to obtain scientific results in an objective manner, and this method was used to describe and analyse the various main pillars expressing the level of maturity of e-government services in Algeria during the period from 2021 to 2023. The added value of the GEMS Index, compared to other international indicators, is that it goes beyond measuring digital readiness (like EGDI) and instead captures the real-world maturity, integration, and accessibility of electronic and mobile public services, with a strong focus on mobile delivery and citizen experience. This makes it especially valuable for countries where mobile-first solutions are central to digital government strategies.

We will try to answer the question by addressing the following axes: The basics of Digital government, Factors and Determinants of Digital government, and the reality of Government Electronic and Mobile Services index in Algeria.

2. Basics of Digital government

The 1990s saw the rise of "e-government" and the claim that countries that used ICT in the public sector could provide services more efficiently by preventing bureaucracy, ameliorate government links, reducing costs, and boosting economic growth. (Elsafty & Yehia, 2023).

2.1 The concept of Digital Government

Digitalization is the application of culture, processes, business models, and technologies of the Internet age to respond to people's growing expectations. While digital transformation

means changing the way an organization manages itself (UNDP, 2022) to a progressive model that maintains digital innovations in the business world (Meroua & Nabila, 2024, p. 231). Also, Digitalization can help entrepreneurs establish a business with much less bureaucracy. (Erkut, 2020, p. 02).

Digital change is not without its difficulties, though. It demands a substantial time and effort commitment in addition to financial resources. Employees must be open to embracing new technologies and ways of working, which calls for a shift in culture and mindset. Additionally, because technology is changing so quickly, businesses need to be alert and flexible all the time to stay up to date with new advancements. (Tatiana & al, 2023)

E-governance is important for many benefits to economic growth, it is intended for any type of different levels in society, so that the implementation of e-governance is beneficial to all affiliated levels of government. (OKTAVIA & al, 2023). Therefore, Political and cultural considerations, technology advances, and organizational changes all affect digital government to support and reform governments. (Apleni & Smuts, 2020). Digital government is about providing government services to citizens through a cohesive network of legacy systems augmented by modern technologies. E-government, in its broadest sense, is the use of information and communication technologies by the government to deliver public services (Mokone & al, 2018).

Digital government can be defined as "the use of information technology to ameliorate the efficiency of government services." (Benaida, 2023, p. 680). According to the United Nations, digital government means "the use of information and communication technologies to provide government services that are autonomous in terms of time, geographical distance and organizational complexity." (Méndez-Rivera & al, 2023, p. 03).

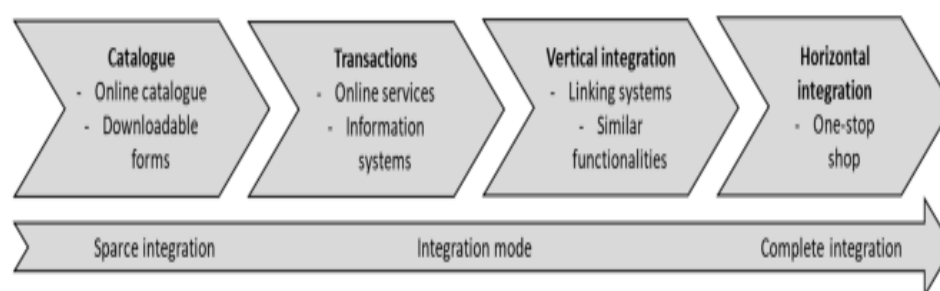
Using digital technologies in government can unlock additional economic and social benefits for society. (Martins & Veiga, 2022, p. 01). So, The main objective of digital government is to enhance public value, with the current focus on implementing a range of e-services at various local or municipal levels. This approach aims to maximize the value of service offerings to citizens (Hamzah Ritchi, 2016).

2.2 The main stages of the development of Digital government

Digital government is the state-of-art paradigm in public administration science. (Allessie & al, 2019). It improves the efficiency of public services and increases user and public satisfaction. The services provided by e-government make the previous activity more effective and flexible for all those who benefit from it, as it shortens a lot of time (OKTAVIA & al, 2023).

Figure N°01 delineates the four primary phases of digital government development: from cataloging to transactions, vertical integration, and culminating in horizontal integration, which facilitates the establishment of a "one-stop shop" for delivering comprehensive governmental services to citizens. Additionally, the full integration guarantees full integration across many systems and functions.

Figure. 01. the stages of the development of digital government



Source: Tatiana et al, 2023, p 02

As Figure number1 makes clear, this integration process moves from partial integration to full integration in four easy steps that each government must consider if it wants to create e-governance systems that its citizens would find acceptable and appealing. Establishing direct lines of communication with every person using digital tools can help create an efficient e-government by allowing the government to respond to their requirements individually and create plans that are specifically tailored to each citizen's needs (Tatiana & al, 2023).

2.3 Factors and Determinants of Digital government

The factors and determinants of digital government can be categorized from the previous literature into the following: External and internal enablers and barriers.

2.3.1 External enablers: This component consists of two factors: political competition and citizen adoption. Political competition, produced through competition between politicians and policymakers for votes, is a governmental trait that should remain reasonably constant in helping to generate e-government adoption and increased usage.

The second factor is also important, especially for local governments, as individuals' preferences for digital developments and increasing population growth are driving local governments to provide more services (Manoharan & Ingrams, 2018, p. 03).

2.3.2 Internal enablers: Organizational attributes, including professional and technological competencies and workforce size, are important for e-government implementation. Internal strategies adopted by technology agents are also essential. Research by Ho and Ni (2004) found that e-government development decisions are mainly determined by competency concerns of general managers. (Manoharan & Ingrams, 2018, p. 04). In this context, a successful e-government manager plays an important role by being willing to take risks in adopting untested technologies, reallocating organizational resources, or collaborating with new partners (Shu & Feeney, 2016).

2.3.3 Barriers: Some of the most common barriers include Lack of human competencies in the fields of technology or web, insufficient financial resources, lack of information about e-government applications, and lack of support from government officials. In addition to barriers associated with poor planning and implementation of local e-government adoption. (Manoharan & Ingrams, 2018)

3. The reality of Government Electronic and Mobile Services index in Algeria

ESCWA has developed a tool to measure the maturity of digital government services. According to the Government electronic and mobile services maturity index. Maturity means that the service is digitized at all stages, accompanied by marketing campaigns and awareness about its use, and that it is used properly by individuals and businesses. The GEMS index was launched in 2014 because most international indicators do not cover these aspects, but rather focus more on measuring the availability of the service (ESCWA, 2023, p. 07).

According to the index results, Algeria reached a total value of 37 percent in 2023, with a regional ranking of 9th out of 17 Arab countries. Its overall score improved compared to 2022 and 2021. The number of resident services increased from 34 services in 2021 to 50 services in 2023. While the number of resident institutions reached 36 institutions according to the 2023 report, as the increase in the number of institutions indicates the state's interest in implementing digital transformation in various development sectors.

Table .01. the overall scores of the GEMS index

	2021	2022	2023
GEMS score (%)	35	19	37
regional ranking	08	10	09
Number of assessed services	34	36	50
Number of assessed entities	17	13	36

Source: ESCWA, GEMS index report 2021, 2022 & 2023

Table .02. Distribution of evaluated services by sector

Sector	2022	2023
Transport/Traffic/Police	4	3
Trade and industry	5	4
Cross government affairs	4	4
Education	4	6
Health		5
Interior	6	6
Municipal affairs	1	1
Labour	1	3
Social affairs	2	4
Finance	2	2
Utilities	3	5
Migration	1	1
Justice	3	4
Tourism		2
Total	36	50

Source: : UNESCWA, GEMS index report 2022 & 2023

It is clear from the table above that the number of assessed services in Algeria increased in 2023 by 50 services compared to 2022, when the indicator included only 36 services. Based on the evaluation of the index in 2023, the health, education, interior and utilities sectors saw an increase in the number of evaluated services.

The increase in the number of assessed services indicates the state's interest in digitising government services.

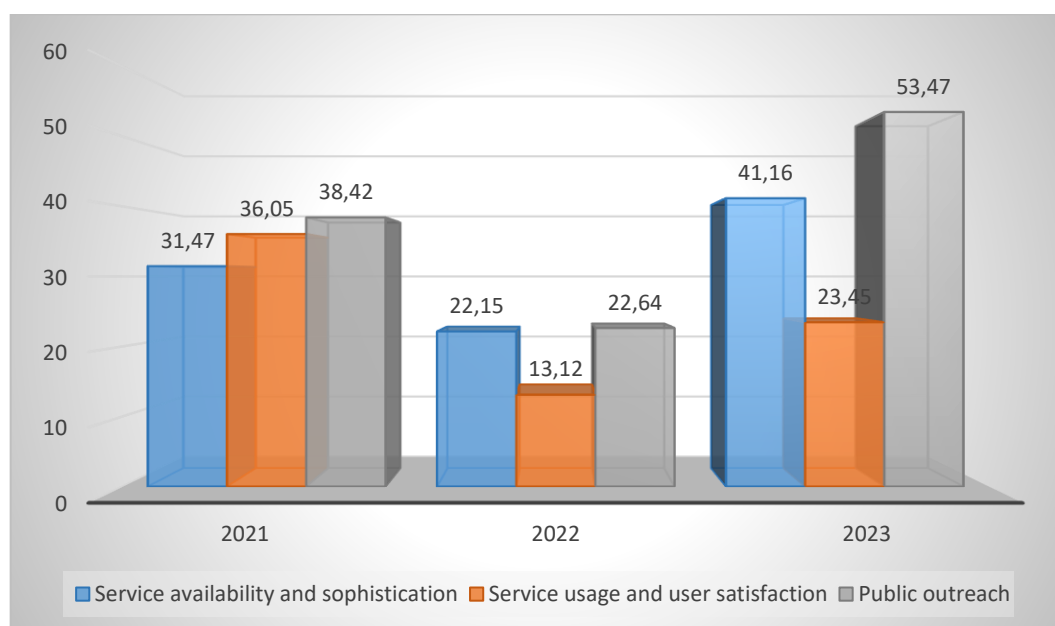
The following table shows the scores for the three main pillars in 2023 and compares them to the 2022 & 2021 scores.

Table .03. the scores for the three main pillars of GEMS index

Pillar	2021	2022	2023
Service availability and sophistication	31.47	22.15	41.16
Service usage and user satisfaction	36.05	13.12	23.45
Public outreach	38.42	22.64	53.47

Source: ESCWA, GEMS index report 2021, 2022 & 2023

Figure.02. The three main pillars of GEMS index 2021-2023

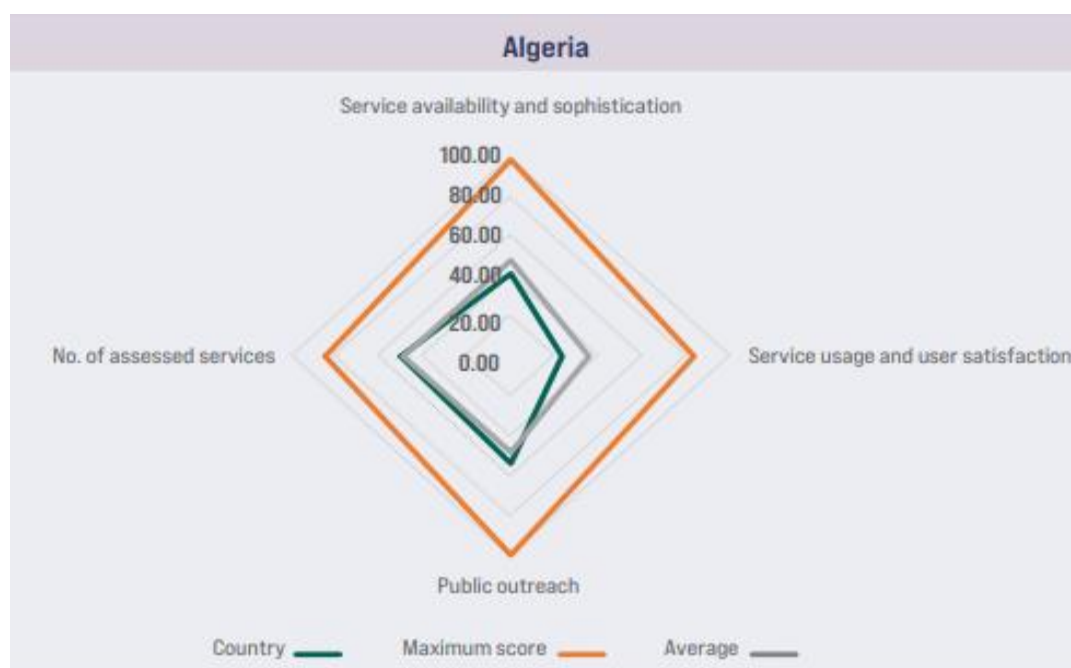


Source: ESCWA, GEMS index report 2021, 2022 & 2023

From the results of the reports, we conclude that the pillar of Public outreach improved significantly during 2023 to exceed the average value by 53.47. Algeria also achieved an acceptable improvement in the pillar of Service availability and sophistication by 41.16 in 2023 from an estimated 31.47 in 2021. While the pillar of service usage and user satisfaction remains with poor performance of 23.45 in 2023.

The following radar chart compares the index pillar scores and the number of services assessed in 2023, with the regional average and maximum score recorded.

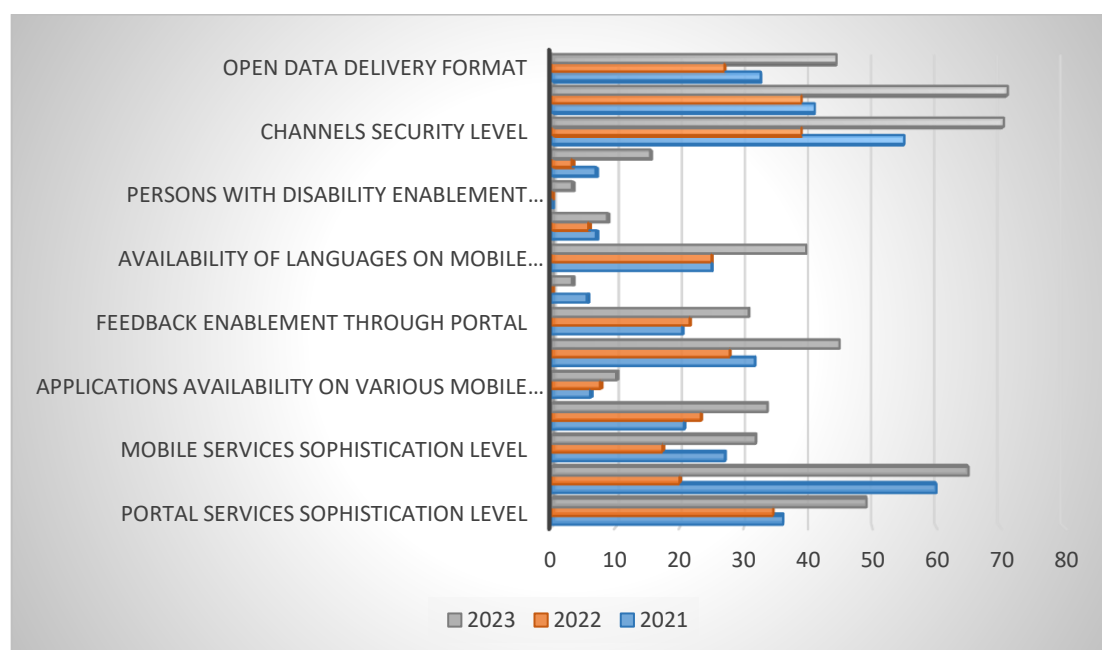
Figure.03. The radar chart of GEMS index



Source: UNESCWA, GEMS index report 2023

3.1 Service availability and sophistication KPIs

Figure. 04. The Service availability and sophistication index



Source: UNESCWA, GEMS index report 2021, 2022 and 2023

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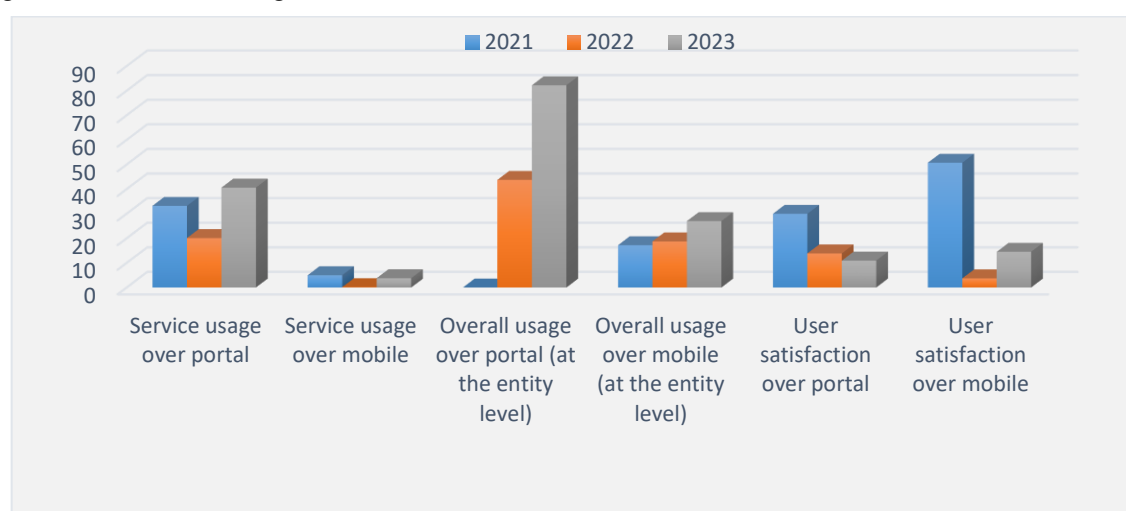
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By observing the main indicators of the service availability and sophistication pillar in Algeria. We can see that there is a poor performance for both the applications' availability on various mobile platforms, with an estimated score of 10.13 percent in 2023, and the persons with disability enablement through the portal, with a very poor performance of 3.23 percent, the same value for the persons with disability enablement through mobile in 2023. Also, the feedback enablement through mobile and the channels interoperability index are underperforming with 8.71 and 15.42 percent, respectively.

The indicators related to Channels security level and Open data provisioning improved significantly to 70.50 and 71.11 respectively, And the rest of the indicators remain within the average values.

3.2 Service usage and user satisfaction KPIs

Figure. 05. The Service usage and user satisfaction index

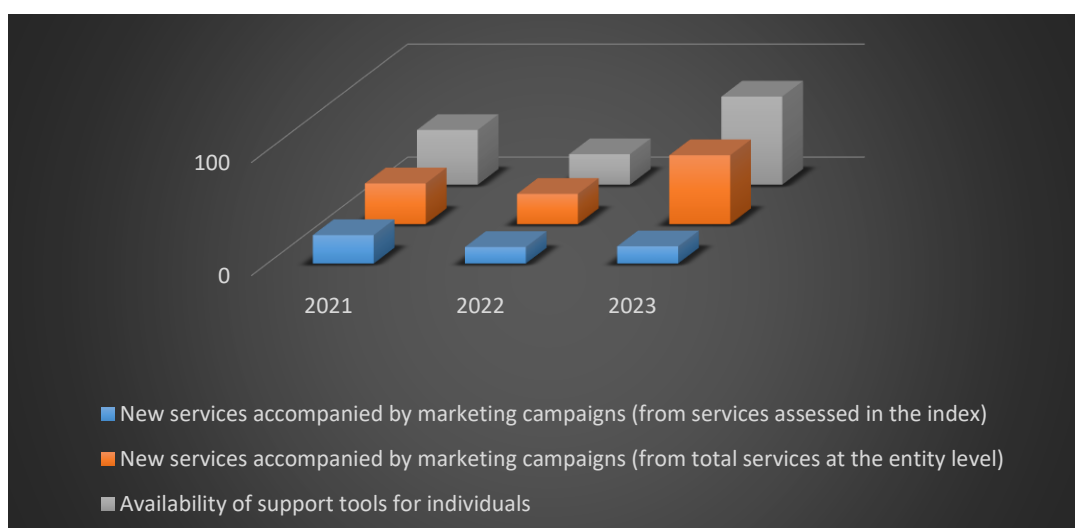


Source: UNESCWA, GEMS index report 2021, 2022 & 2023

Through the GEMS reports, the results show the progress of the key performance indicators of the Service usage and user satisfaction pillar, where we conclude that the Overall usage over portal (at the entity level) improved during 2023 with a value of 82,2%, while the User satisfaction over portal decreased from 29,97 in 2021 to 10,95 in 2023. Also, The user satisfaction over mobile Index declined to 14,52 in 2023 and 3,73 in 2022, While The Overall usage over mobile (at the entity level) index remains very low during the studied period.

3.3 Public outreach KPIs

Figure.06. The Public outreach index in Algeria



Source: UNESCWA, GEMS index report 2021, 2022 & 2023

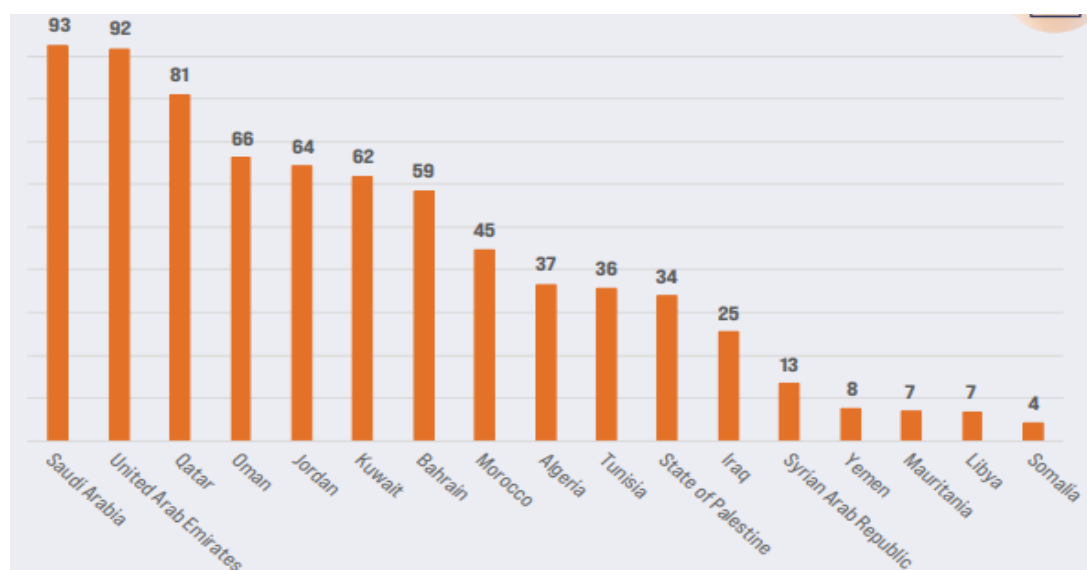
Through the results related to the public outreach pillar in Algeria, We find an improvement in the Availability of support tools for individuals, especially in 2023, where the score reached 78 per cent compared to the performance score of 27 per cent in 2022, We also note an improvement in the indicator of the Percentage of new services accompanied by marketing campaigns (from total services at the entity level), where the score reached 60,95 per cent in 2023, However, the indicator of the Percentage of new services accompanied by marketing campaigns (from services assessed in the index) remains underperforming at 15,22 per cent in 2023, after decreasing by 5,95 per cent compared to the result in 2021.

The figure below shows that the overall GEMS results in most Arab countries for the year 2023 compared to 2022, which indicates the serious efforts made to implement digital transformation in government, The 2023 GEMS assessment results show a widening gap in the maturity of digital government services compared to 2022, with maturity ranging from 4 to 93 per cent, Four different groups can be distinguished: Very Advanced Maturity, Advanced Maturity, Medium Maturity and Early Maturity, each with its own pace of digital transformation, Therefore, efforts to digitise more government services in different sectors should be supported.

Looking at Algeria's ranking among the Arab countries participating in the assessment, we find that its final score in the GEMS index reached 37 per cent to be classified in the second group below 50 per cent, along with Morocco, Tunisia, Palestine, Iraq and the Syrian Arab Republic,

Yemen, Mauritania, Libya, Somalia and Mauritania are in the group with a score of less than 10 per cent, II Saudi Arabia, UAE, Qatar, Oman, Jordan, Kuwait and Bahrain top the index with scores ranging from 59 to 93 per cent.

Figure.07. GEMS 2023 global scores (Percentage)



Source: UNESCWA, GEMS index report 2021, 2022 & 2023

4. Conclusion

The digital transformation of governments requires increased efforts from both government administrations and citizens. This requires retraining, reorganisation and the creation of new functions within organisations. In addition to the availability of many components: These include the availability of computers and more advanced applications, as well as the need for coordination and linking between government agencies and businesses. Although the creation of digital infrastructure is one of the first stages of digital government, the Algerian government, according to our study of the maturity index of electronic and mobile government services, Algeria is still at this stage. Therefore, the hypothesis of this study is correct. The study found the following results:

- The overall index score has increased significantly compared to 2022, driven by higher scores across the three main pillars of the index. A high number of entities and digital government services covering various sectors was assessed.
- Most KPIs registered a noticeable increase, including portal personalization, channels security levels, open data provisioning, overall usage over portal (at the entity level), percentage of new services accompanied by marketing campaigns (at the entity level) and availability of support tools for individuals.
- The overall index score indicates that digital government services have reached an intermediate level of maturity. It is therefore recommended to direct efforts towards improving service usage over mobile and applications availability on various mobile platforms, enhancing persons with disability access to digital government services, and supporting channels interoperability.

The Algerian government should also look at the successful experiences of different countries in order to bridge the digital divide and address the various obstacles that prevent the government from accelerating its digital transformation. The following recommendations can be proposed:

- Promoting digital literacy and awareness: similar to Rwanda's programs for digital skills training and citizen engagement in e-services.
- Requiring government websites and applications to comply with international accessibility standards (WCAG 2.1): Singapore's experience has adopted a comprehensive approach that combines organization, design, and monitoring. Governments should also adopt binding regulations to incorporate universal

design principles from the outset of website development, including features such as high-contrast designs, text alternatives for images, voice navigation, and simplified language options. This ensures that people with disabilities can easily access digital government services.

- Establishing a national digital platform and a unified digital identity: As Estonia's experience has adopted a digital identity system and the X-Road platform for data exchange between institutions.
- Launching pilot projects: Similar to India and Rwanda, services can first be tested in selected regions to evaluate their effectiveness before being scaled nationwide.
- Establishing centralized governance: Drawing on Singapore's experience, a unified national authority can be created to coordinate and oversee digital transformation across ministries.

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