Digital Transformation in Morocco: Challenges and Perspectives

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In the public administration, the adoption of digital transformation of processes and services is becoming more widespread, and its implementation requires significant resources to address the strategic, financial, and human challenges. The slow and dependent digital transformation is mostly reliant on organizational culture and the acceptance of the many actors for the adoption of digital procedures. Since the 1990s, the Moroccan government has launched several strategies and initiatives related to the digital transformation of public administration. In contrast to the expectations of the administration, the nation has experienced a gap in the effectiveness of the reforms. International e-government indicators showed that Morocco rose from 82 in 2014 to 110 in 2018, and then it gained four places in 2020. With the COVID-19 health crisis, it turned out that the digital transformation of public administration is becoming more than ever a necessity of the first order, with the aim of improving user access to public services. This article introduces the various efforts made by the Kingdom of Morocco in terms of digital transformation, then presents various weaknesses associated with the results of this project, and finally gives some indications through new references. The new perspective of digital transformation mainly focused on new management of digitizing policy, training of professional human resources, and generalization of access to digital infrastructure.

Keywords: digital transformation, digitizing, Morocco, public administration, users

Introduction

The digital transformation of public administration is currently a national priority in Morocco and a key

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lever for implementing the components of the new development model. Additionally, this transformation serves as a steppingstone toward the desired administrative modernization. As a result, the mastery and dissemination of information and communication technologies and of all modern channels of digital communication by public administrations has become a major concern for public policies working to implement the development priorities, in a global context that seeks to accelerate and strengthen strategies for the digital transformation of public administration. Thus, we are currently witnessing a movement of reforms focused on the adoption of the digitization of public services, with the aim of developing administrative services, raising the level of their performance, and strengthening their efficiency, to meet the aspirations and requirements of different users.

The adaptation to this technological transformation is a translation of the early interest of the Moroccan public authorities for the digital sector through public policies, national strategies, and programs. Among these key projects, the Kingdom of Morocco proceeded to the elaboration and implementation of a master plan devoted to the digital transformation of the public administration. This tool aims to set up a highly developed digital infrastructure and qualified and efficient human resources, mastering the use of digital means of communication and contributing, thus, to guarantee the success of the digital transformation of public services and to accelerate the pace of their implementation. Also, this strategy will permit the establishment of communication and interaction interfaces between public administrations and users. Also, it will enable the setting up of a common information system for the management of human resources in public administrations. Finally, it will permit the monitoring and assessing the state of readiness of public services for digital transformation through a system of inventory and evaluation of the level of digital performance.

As a part of the administrative modernization process, the adoption of digital transformation as a strategic approach has helped to improve Morocco's position in the digital world. To this end, we are witnessing the development of digital infrastructures and new information and communication technologies with wide dissemination. Moreover, this digital transformation movement has had other positive impacts in the context of supporting the project to simplify procedures and generalize electronic portals. These reforms have greatly contributed to achieving certain efficiency at the level of the public administration and vis- à-vis the components of society. Thus, we have noticed an increase in efficiency in terms of savings in expenditure and speed of processing administrative files within reasonable and precise deadlines, with a gain of time, which has enabled economic actors to exchange digital data and benefit from digital administrative services too.

As a result, Morocco's efforts in digital transformation have given it a distinguished position in terms of attractiveness for businesses, since it has become a leader in digital development in Africa and a carrier of the digital economic model. In this context, the report (*Digital Risers 2021*) published by the European Center for Digital Competitiveness revealed that Morocco occupies the 8th place in the ranking of countries in terms of digital competitiveness in North Africa and the Middle East.

Hence, Morocco has invested all its digital capacities and digital solutions, as a resilience approach, in the management of the health crisis relating to the COVID-19 pandemic, which, despite its negative repercussions, has demonstrated the importance of digital technology in various social, economic, and administrative fields and sectors. This crisis has imposed an acceleration of the pace of the digital transformation of public management, by reducing the circulation of documents in paper format, as well as the institutionalization of teleworking in administrations to ensure the continuity of services offered to public administration users. Consequently, the digital transformation project constitutes, currently, a priority within the reform of public administration.

However, despite the efforts initiated for the implementation of digital development strategies and the mastery of opportunities for the digitization of several public service processes, Morocco still faces several major challenges. These challenges impede Morocco from achieving the objectives of the transition and digital transformation, which requires more efforts in terms of digital capacity building and improved governance, in order to achieve the desired Digital Morocco objectives.

As a result, a major question may arise: To what extent have the reform efforts of the Moroccan State contributed to the establishment of highly digitized public services in line with the challenges of the new development model and the new rules for modernizing the management of public services? From this main problem, several secondary interrogations can arise, namely: what are the major transformations that have affected the process of digitizing public services on the legislative, regulatory, and technical levels? What are the limits of the various digital transformation strategies and programs in terms of improving the performance of public administrations? What are the major factors preventing the generalization of the digital transformation of public services? And what are the prospects for the implementation of a digital revolution adaptable to the requirements of the new development model?

The Process of Digital Transformation in Moroccan Public Administration Reform Efforts

Like other countries, Morocco has taken the digital transformation process as a main lever for administrative reform, through numerous projects aimed at reorganizing and upgrading the areas of information and communication technology. To this end, the State has adopted several digital strategies with the aim of accelerating the integration of information and communication technologies into public administration processes. Thus, these reforms focused essentially on the qualification and improvement of the legal framework for digitization, the development of digital infrastructures, and the execution of a set of projects emanating from the implementation of the digital strategy, constituting thus, the beginnings of a digital transformation of the Moroccan public administration.

The Beginnings of Digital Transformation in Moroccan Public Administration (1998-2010)

Morocco has started a series of public administration reforms in a gradual manner according to the different evolutions of the institutional construction of the State and in interaction with national and international transformations. Thus, many programs and projects have emerged from these policies, with the priority objective of modernizing public administration and the digital transformation of its services offered to users. These modernization efforts reflect the existence of a will on the part of the public authorities to focus the reform on the development of the digitization of public services in perfect harmony with the international perspective, which encourages the adoption of electronic service systems in the administration.

The challenge of modernizing and developing public services offered to users has remained a fundamental basis for public policies and overall development and an urgent concern in the development of Moroccan public administration. To this end and since the beginning of the 1990s, the digital transformation has always been part of the administrative reform process in Morocco, because in an era where digital technology accompanies reforms in all sectors, the digitalization of public administration is a logical consequence of all the public administration reform and modernization projects. It is a question of rethinking the functioning of the administration and making it more efficient through its digital transformation (Guo, 2010).

In this context, the Moroccan administration has experienced in recent years a significant expansion of its field of intervention. However, parallel to this development, multiple imbalances and fundamental insufficiencies characterized the reality of the administration system, at different levels (Ministry of Civil Services and the Reform of Administration, 2002). Subsequently, the reform was not an easy task, but rather required technical and human capacities and other conditions related to the reform process.

The Moroccan government has taken the initiative to adopt e-government project since the 1990s. This strategy aims to adapt to global developments, modernizing the public sector and increasing its performance.

In order to meet these challenges, Morocco embarked on a plan to restructure the information technology sector by promulgating in 1996 Law No. 24-96 relating to the post and telecommunications, which was considered a prelude to the first liberalization of the telecommunications industry. Similarly, administrative reform will be one of the most important priorities for change in the government of 1997 and to this end, various digital strategies have been adopted by Morocco, in particular the five-year plan 1999-2003, the e-Morocco 2010 strategy that spanned the period 2005-2010.

Through the 1999-2003 five-year plan, the Kingdom of Morocco resorted to the development of legislative mechanisms to strengthen digital confidence in Morocco. At this stage, several laws have been enacted, including Law No. 24.96 on Posts and Telecommunications[1], where the National Telecommunications Regulatory Agency has set up the telecommunications infrastructure, Law No. 2.00 on the copyright and related rights[2], and in 2003 Law No. 07.03 supplementing the Penal Code relating to offenses related to automatic data processing[3].

Morocco has also benefited from the support of the United Nations Development Program for Arab States (UNDP 2005) to strengthen the use of information and communication technologies in development. This support gained momentum at the Global Information Sharing Summit held under the theme "Building Knowledge Societies in Arab Countries". In addition, this program responded to the request for the development of a partnership with Morocco through the signing of a memorandum of understanding between the United Nations Development Program and Microsoft Corporation, with the aim of implementing the support program through the under king of many initiatives and projects.

With these projects and the support of international bodies, Morocco organized the first national forum on administrative reform in 2003, which adopted many recommendations on the need to integrate information technologies and communication in public administration. In this context, Morocco implemented the e-Morocco 2010 strategy which aimed to develop the knowledge economy in Morocco and was based on a dynamic and coordinated public/private partnership which revolves around two essential strategic objectives and closely linked, reducing the digital divide and positioning Morocco internationally given its economic, cultural, and geostrategic characteristics.

During this strategy, two important laws were enacted in the digital field:

• Law No. 53.05 on the electronic exchange of legal data[4], which contributed to the birth of a group of actors, led by the Central Bank and the Judicial Police;

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[1] Law No. 24-96 relating to the post and telecommunications promulgated by Dahir No. 1-97-162 of August 7, 1997.
[2] Law No. 2-00 relating to copyright and neighboring rights promulgated by Dahir No. 1-00-20 dated February 15, 2000.
[3] Law No. 07-03 supplementing the Penal Code regarding offenses relating to automated data processing systems promulgated by Dahir No. 1-03-197 dated November 11, 2003.
[4] Law No. 53-05 relating to the electronic exchange of legal data promulgated by Dahir No. 1-07-129 dated November 30, 2007.

• Law No. 09.08 on the Protection of Personal Data[5], which gave the National Authority for the Protection of Personal Data.

The Maturation Phase of Digital Transformation in Morocco (2009-2020)

In 2011, the strategic committee for information systems security was established[6]. The council will define Morocco's strategic direction, digital sovereignty and ensure the flexibility of information systems in government, public institutions, and critical infrastructure. In the same year, the General Directorate for Security of Information Systems[7] was established with the aim of developing a national cybersecurity strategy and licensed providers of electronic signature services, encryption tools and electronic certification with the help of the Center for Monitoring, Detection and Response to computer attack.

At the same time, Morocco has adopted a new strategy as part of the digital transformation of public administration. This is the Digital Morocco 2013 Strategy covering the period 2009-2013, which includes social transformation, the implementation of user-oriented public service programs, the improvement of the productivity of small and medium companies, and the development of ICT sector (Court of Auditors, 2014).

The Moroccan Numerical Strategy of 2013 represented a shift from its forerunners by gaining Morocco's participation in several international agreements like the following:

• Arab Convention on Combating Information Technology Offences[8];

• European Convention on Cybercrime and its Supplementary Protocol on resolution No. 3/14 on the application of general trends for information systems security[9];

• Law No. 46.13[10] approving European Convention No. 108 for the protection of individuals with regard to automatic processing of personal data;

• Law No. 132.13[11] approving Additional Protocol to the Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data regarding supervisory authorities and transborder data flows and were also outlined in the decree No. 2.15.712[12].

The Moroccan government has also worked to implement several significant steps in awareness raising and training, including incorporating information system security courses into the curriculum for engineering and upper-level management training at various institutions and universities, as well as training experts and specialists in the fields of monitoring, analysis, and cybersecurity. Additionally, programs of qualified lawyer training in information security and system security have been organized, in addition to the incorporation of courses to train lawyers with specialized knowledge in information security and system security in collaboration with

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[5] Law No. 09-08 on the protection of individuals regarding the processing of personal data promulgated by Dahir No. 1-09-15 dated February 18, 2009.

[6] Decree No. 2-11-508 dated September 21, 2011 establishing the strategic committee for information systems security.

[7] Decree No. 2-11-509 dated September 21, 2011 supplementing Decree No. 2-82-673 dated January 13, 1983 relating to the organization of the administration of national defense and establishing the general management of the security of information systems.

[8] Law No. 75.12 approving the Arab Convention on Combating Information Technology Offences, done in Cairo on December 21, 2010, promulgated by Dahir No. 1.13.46 dated March 13, 2013.

[9] Law No. 136.12 approving the Cybercrime Convention, signed in Budapest on November 23, 2001, and the Additional Protocol to this Convention signed in Strasbourg on January 28, 2003.

[10] Law No. 46.13 approving European Convention No. 108 for the protection of individuals with regard to automatic processing of personal data, done in Strasbourg on January 28, 1981, promulgated by Dahir No. 1.14.174 dated March 16, 2020.

[11] Law No. 132.13 approving the Additional Protocol to the European Convention for the Protection of Individuals with regard to Automatic Processing of Personal Data, concerning supervisory authorities and transborder data flows, done in Strasbourg on November 8, 2001, promulgated by Dahir No. 1.14.136 dated July 13, 2014.

[12] Decree No. 2-15-712 of March 22, 2016 setting the protection system for sensitive information systems in infrastructures of vital importance.

international organizations. Additionally, as part of a partnership with the ESCWA for Sustainable Development, the Moroccan government has put in place initiatives to enhance the capabilities of public sector employees. Finally, in order to protect itself from manipulations and to carry out awareness-raising campaigns in favor of professionals, government agencies, and private industry, the Kingdom of Morocco went through with the labeling of online commerce sites in collaboration with the parties involved.

Furthermore, the leadership of the "Digital Morocco 2013" strategy was characterized by a significant reliance on specialized human resources outside of the public sector, which was realized with the signing of several agreements with total budget of 42 million dirhams. However, during the first two years of implementation, this strategy's piloting tasks were delegated to a company and five service providers, demonstrating the importance placed on the strategy's activation tasks and the adoption of support measures to ensure governance (Court of Auditors, 2014).

The Moroccan government will continue its strategic efforts in the area of digitizing public administration, as stated by the head of state, His majesty the king Mohammed VI, in a speech delivered on October 14, 2016:

> the stage we are approaching is much more important than the previous ones. It induces the need to address seriously the questions and real concerns of citizens, to boost the public service action of the Administration and to improve the quality of its services.... Moreover, the electronic administration must be generalized according to an integrated approach allowing the various departments and the various services a common access to information.[13]

This speech culminated in the announcement of the creation of a new digital strategy called "Morocco Digital 2020" strategy to support technological innovation and renewal that is based on human capital and online consumer confidence (United Nations Commission on Science and Technology for Development, 2017). The goals listed in the "Maroc Digital 2020" strategy were very specific. One requirement is to lessen the digital divide, digitize at least 50% of administrative processes, and connect at least 20% of Moroccan small and medium-sized businesses to the internet.

Moreover, the government has made the delocalization of ICT services a battleground issue. Morocco is also expected to develop into the most significant digital hub in francophone Africa and the second largest digital hub overall, following South Africa. This goal is also served by the planned increase in the number of information technology graduates from the current 30,000 each year. This was highlighted by the Arab's Monetary Fund report for the year 2020 (Arab Monetary Fund, 2020), which noted that the Moroccan telecom sector had experienced significant growth.

The establishment of the public Agency of Digital Development (ADD)[14] in 2017 was one of the first initiatives implemented under this strategy. The chief executive of the government gave this public institution the task of creating a note to present to the government recommendations for the development of the digital economy through 2025 in January 2019.

The 2020-developed orientations' target vision aims to implement the following in Morocco within the next five years in order to speed up the digital revolution and address these socioeconomic issues:

(1) A digital government at the service of both citizens and businesses, with a goal of achieving a citizen satisfaction rate of over 85%;

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[13] Speech delivered by His Majesty the King Mohammed VI at the opening of the 1st session of the 1st legislative year of the 10th legislature.
[14] Law No. 61-16 establishing the Digital Development Agency promulgated by Dahir No. 1-17-27 dated August 30, 2017.

(2) A competitive economy based on performance gains brought about by technology and the growth of related industries, in order to establish Morocco as a technological and digital hub of note in Africa;

(3) An inclusive society based on the use of technology to improve citizens' quality of life.

The general orientations are articulated around three key axes and four transversal pillars in order to ensure the accomplishment of the target vision and its objectives.

The first axis, "Digital Administration", combines the several projects aimed at assuring the Moroccan administration's digital transformation. The "Digital Ecosystem and Innovation" axis' second goal is to ensure Morocco's digital economy develops quickly. The third axis, "Social Inclusion and Human Development", intends to use digital technology to raise residents' quality of life.

This vision will require the establishment of a supportive environment for the growth of the digital, which is based on the development of four interconnected pillars: the creation of a program specifically designed for training in the new digital professions, the establishment of the necessary infrastructure, improved regulatory framework adaptation, and the establishment of a national digital culture.

Evaluation of Moroccan Digital Transformation Efforts and Difficulties

Since the alternatives of electronic administration have demonstrated their viability in meeting user needs, which necessitates continuous observation of the evolution of the digital transformation site on a national and international scale, the digitization of public services has become a crucial channel for achieving administrative development and conquering the challenges of the new development model. In order to create an effective digital administrative model, the State will also need to have the courage to recognize the key problems that will result from the execution of the various projects and programs for the digitization of administrative services in light of future expectations regarding the needs of public administration.

Assessment of the Project's Progress in Morocco's Digital Transformation

In recent years, Morocco has worked to create efficient public policies related to the digitization of government and services. The improvement of the legislative framework pertaining to information and communication technology in public administrations is one of the outcomes of these state initiatives. However, several legal reforms have been made to create a foundation for the anchoring of the function of digital in the administrative system in order to establish digital trust. This slow-motion evolution of the judicial system shows how the administration's role is expanding digitally.

By enhancing the electronic management and exchange of legal data[15], establishing a digital development agency (ADD), and incorporating new digital requirements into the decree on public procurement[16], particularly those relating to reverse electronic auctions, electronic transmission, electronic databases, and other areas that tend to adopt digital procedures[17], as well as the production of legal provisions aimed to simplify administrative procedures[18], the state's legal arsenal has made significant strides in the direction of digital transformation.

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[15] Law No. 53-05 dated November 30, 2007 relating to the electronic exchange of legal data promulgated by Dahir No. 1.07.129.
[16] Decree No. 2-12-349 of March 20, 2013 relating to public procurement.
[17] Order of the Minister of Economy and Finance No. 20-14 of September 4, 2014 relating to the dematerialization of public procurement procedures.
[18] Law No. 55-19 of March 6, 2020 relating to the simplification of procedures and administrative formalities promulgated by Dahir No. 1-20-06.

Consequently, it must be said that the consolidation of the legal framework for the digital transformation demonstrates the will towards a transition to the acceleration of the use of technologies and digital data, the improvement of the performance of administrative processes, and an increased level of transparency. Hence, the legislative reform of digital transformation forms the basis for a competitive and resilient regulatory environment, thus ensuring easy access to digital services across the country (Arab Monetary Fund, 2020). Also, it was found that appropriate regulation and effective governance facilitate the adoption of technology and its transfer to public administration (UN/ESCWA, 2018).

Also, the report of the Court of Auditors relating to the evaluation of the strategy of "Digital Morocco 2013" indicated that Morocco recorded, during the period extending from 2008 and 2012, an improvement in the general indicator of the development of information and communication technology. This indicator rose from 2.68 to 3.79, which allowed it to register a slight improvement in its ranking thanks to the progress of the indicators of access to technology and its use. Although this indicator has shown a decline and stagnation in rankings during the period of the strategy, with Morocco ranking 123 with an index not exceeding 4.18 in 2011, the development of the information and communication technology sub-indicator relating to skills related to the education system continues to be a source of concern. However, in 2012, this sub-indicator saw a tiny improvement, rising to 5.03 (Court of Auditors, 2014).

These indicators were chosen by the Court of Accounts as part of the 2013 evaluation of the Moroccan government's digital strategy. They include, among other things, the global economic connectivity index, the e-government index included in the report, the ICT index of development and price indicators, and the information society measurement report from the International Telecommunication Union.

This assessment of the court of Accounts found that public services aimed at Moroccan users had undergone a slight improvement in the electronic administration index, which measures how much public administrations use information and communication technologies to improve the quality of their services.

However, this index rose from 0.29 in 2008 to 0.5060 in 2014, which enabled Morocco to improve its world ranking and gain 38 points, but the merit of this development is mainly attributed to the sub-indicators measuring services provided through the Internet, which fell from 0.2 in 2008 to 0.6929 in 2014. However, the report noted a decline in the sub-indicator related to human capital development, which fell from 0.54 in 2008 to 0.4901 in 2014 (Court of Auditors, 2014).

Thus, the thematic reports issued by national institutions, including the Court of Auditors, have constituted a national reference base for monitoring indicators of the evolution of digital transformation in the public sector. To this end, the Court of Auditors published in 2019 another report relating to the assessment of the level of digital services provided, by examining the maturity of the main services via the Internet and their level of maturity.

This second report presented a set of observations concerning the international classification of Morocco and the impact of human capital factors and information technology infrastructure, according to which Morocco achieved in 2014 its best ranking established by the United Nations in terms of digital services, during the period 2008-2018. Among the 193 countries included in the ranking, Morocco rose from rank 115 in 2008 to rank 30 in 2014, and the e-government index rose from rank 140 in 2008 to rank 82 in 2014 (Court of Auditors, 2019).

Nevertheless, the report will reveal that this positive development did not continue its positive development in the following years, as Morocco's ranking dropped significantly in 2018, and it ranked 78th in the online services indicator and 110th on the e-government indicator. The ranking of Morocco has not seen any noticeable

improvements in the factors relating to human capital and information technology infrastructure, which make up the two other components of the UN's electronic government indicator, and it has remained poorly ranked globally, ranking 148th in terms of human capital and 104th in terms of the development of technological infrastructures (Court of Auditors, 2019).

In the same frame, the Ministry of Civil Service and Reform of the Administration released a report in 2019 on the inventory of electronic services and an assessment of their maturity. To this end, the survey inventoried 453 electronic services concerning 87 public bodies, including 33 ministerial departments, two high commissions, and 52 public establishments and enterprises. According to the survey's findings, the level of electronic service maturity of the services inventoried is insufficient because only 23% of them have been fully digitized, which reflects the low level of electronic service maturity, which is less than 48% (relative to the total number of services)[19].

Also, this study showed, by comparing the electronic maturity index by category of administrations, that the services provided by public establishments and companies, are experiencing a relative increase of 54% compared to ministerial departments (43%). Regarding the dematerialization of services provided to the user, 60% of them rank first, which translates into a low electronic readiness index for these services not exceeding 37%, while services intended to professionals have a better electronic maturity index, which reaches 53%[20].

In the same context, it is noted that Morocco ranked 9th in the maturity indicator of electronic and mobile government services in 2020 out of 15 Arab countries included in the index published by the Economic and Social Commission for Western Asia (ESCWA). This indicator measures the scope of services offered through electronic portals and intelligent applications in Arab countries (ESCWA, 2021), and according to these indicators, the Moroccan economy ranks 6th in terms of service availability and development, with nine Arab countries having acceptable values across 15 countries for public access to services as well as user promotion, utilization, and satisfaction. However, Morocco did not reach the 50% threshold and ranked ninth out of 15 countries (ESCWA, 2021).

The Challenges of the Digital Transformation of the Moroccan Public Administration

Despite the progress made and the importance of the strategies and projects of digital transformation for setting up an intelligent administration, questions still arise as to the challenges associated with the evolution of the digitization process and the level of maturity of the digital services provided to users.

It should be noted that the COVID-19 crisis has highlighted the existence of a real digital divide, and which has had, in particular, the effect of excluding around one out of six Moroccans from digital transformation (NTRA, 2020)[21]. Morocco also ranked 106th out of 193 countries in the E-Government Development Index (EGDI) established in 2020 by the United Nations. In relation to the tools, equipment, and infrastructure that are essential for digital transformation, Morocco ranked 100th out of 176 countries in the ICT (Information and Communication Technology Development Index), drawn up by the International Telecommunications Union (ITU)[22].

As a result, the ambition to accelerate the digital transformation of administrative services comes up against several challenges that will have to be taken into consideration and overcome in order to be able to succeed in

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[19] https://ereadiness.service-public.ma/.
[20] Ibid.
[21] https://www.anrt.ma/sites/default/files/publications/memo-t4_2020.pdf?csrt=6257076372577868060.
[22] https://www.itu.int/net4/ITU-D/idi/2017/index.html.

the process of digitizing the administration and to meet the requirements of the new development model in Morocco.

Overall, the implementation of strategies relating to the digital transformation of public administration in Morocco raises five main challenges that constitute an obstacle to the implementation of the Digital Morocco project and to the acceleration of the process of digital transformation of services.

Inaccuracy with regard to a true digital fracture. It is worth noting that 6 million Moroccans are disconnected from the digital world. This is due to:

- the lack of digital interface tools (smartphone, tablet, or computer);
- the lack of fixed internet access, particularly in rural areas. It is worth noting that 4G mobile internet is better in terms of coverage: 93% of the total population has access to this technology (ESEC, 2021)[23];
- The difficulty of mastering digital tools.

In addition, the high cost of fixed Internet is accompanied by a low fixed broadband penetration rate compared to countries in the region (ITU and UNESCO, 2018)[24]: 3.9% in 2018; while this rate is 7% for Tunisia, 7.7% for Algeria, and 5.4% for Egypt. These findings are confirmed by international indices. Indeed, Morocco ranked 93rd out of 134 countries in the Network Readiness Index 2020, with strengths in access (71st) and regulation (67th). Regarding inclusion, Morocco ranks 121st. In another ranking established by the International Telecommunications Union, Morocco was in 100th place out of 176 countries in 2017; its strong point nevertheless lies in mobile phone subscriptions, while its weak point concerns fixed broadband internet.

A lack of human capital specialized in digital industries. The inefficiency of human resources prevents the digital transformation of public services from progressing. This was pointed out in the report of the Special Commission on the Development Model (SCDM, 2021)[25], which stated that the Moroccan economy suffers from a significant lack of competitiveness due to a significant delay in the implementation of the digital transformation, which also serves as a major barrier to its progress. The primary cause of this lack is the significant delay in the development of human resources in the digital sector. Given the values of the human capital indicator, which is one of the components of the e-government development index created by the United Nations, of 0.6152, this weakness explains Morocco's weak performance, which explains why it is ranked 106th in the international ranking of the e-government development indicator in 2020. This ranking also shows those four African nations—Mauritius, Seychelles, South Africa, and Tunisia—are among the top 100 in terms of the overall ranking of e-government (UNDESA, 2020)[26].

In the same context, the challenges related to human capital were taken up by the report of the Arab Monetary Fund on the study of the inventory and challenges of the digital economy in the Arab countries, which confirmed that the acceleration of digital transformation in the Arab world faces the challenge of human capital (Arab Monetary Fund, 2020). Also, the Royal Institute for Strategic Studies (2020) indicated in its report in 2021, that the difficulties encountered by the digital transition despite the achievements obtained are linked to human capital and other factors, and therefore to the shortage of human skills and of digital skills capable of leading the transformation programs.

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[23] http://www.cese.ma/media/2022/06/Transformation-digital.pdf.
[24] https://www.itu.int/dms_pub/itu-s/opb/pol/S-POL-BROADBAND.19-2018-PDF-E.pdf.
[25] https://csmd.ma/documents/CSMD_Report_EN.pdf.
[26] https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2020-Survey/2020%20UN%20E-Government%20 Survey%20(Full%20Report).pdf.

Limited national digital content production. Regarding institutional content, the existence of public administrations in the digital landscape is insufficient. As a result, most of them do not have a digital communication strategy, their information sites often offer basic information and, in most cases are not updated. In addition, the contents and their updating very often depend on the good will of the top management (Court of Auditors, 2019).

In addition, national legislation in terms of personal data protection will have to be adapted to the new European Union General Data Protection Regulation (GDPR), which came into force in May 2018, and the electronic signature will have to be implemented in order to contribute to digital trust and thus enable the administration to gain in efficiency (Economic, Social and Environmental Council, 2021)[27].

The lack of a clear policy relating to data governance and a strategy for artificial intelligence. As early as 2011, Morocco had made progress in terms of opening up data by creating the portal www.data.gov.ma[28]. However, this portal is very weak in terms of the volume of data provided (273 data sets), the number of public information, and data producers involved (26 sources). The portal also registers low user interaction (only 6,875 documents were downloaded), given the lack of regularly updated data and the limited areas covered. In addition, Morocco's ranking on the Open Data Barometer index fell from 40th place in 2013 to 79th place in 2016, to disappear in the 2018 edition of this ranking.

According to the report *Artificial Intelligence Index Report 2021*, Morocco is not one of the countries that have published an artificial intelligence strategy. At the level of the African continent, Tunisia and Kenya are among the countries that are resolutely committed to the development of an Artificial Intelligence strategy. Admittedly, the Digital Development Agency is planning a "National Artificial Intelligence Roadmap" project. It remains that this priority project of the agency is still in the study phase.

Prospects for a New Digital Transformation Acceleration Strategy in Morocco

Despite the constraints facing strategies and programs for the digital transformation of public administration in Morocco, there has recently been a redoubled acceleration of efforts to achieve sustainable digital growth, especially under the impact of the health crisis of COVID-19. In addition, Morocco has real opportunities in terms of digital transformation, which requires giving the digital a particular interest at the highest level of the State as a catalyst for structuring and high-impact transformations. Thus, digital technology is an effective way to increase trust between citizens, companies, and the State, by helping to ensure that the State-Citizen and State-company relationship is more fluid and transparent, through simplified and clarified procedures, and better-quality services.

New Reference Points for Accelerating Digital Transformation in Morocco

The digital transformation is of particular interest at the highest levels of government because it is regarded as a true driver of change and development. Alternatively, electronic administration in Morocco is currently based on a collection of references, the most important of which are, the Head of State instructions, the New Development Model Recommendations, and the new Governmental Plan 2021-2026.

Indeed, the Head of State instructions have repeatedly insisted on the need to make the digital transition a catalyst for structuring and high-impact transformation in order to give new impetus to the country's development.

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[27] https://www.cese.ma/media/2022/01/Avis-Transformation-digitale-VF-.pdf.
[28] http://www.data.gov.ma/fr.

His Majesty the King had repeatedly called for the use of digital technologies to increase efficiency, promote the quality of services rendered, and boost the economy. In this regard, he specified in his speeches that the use of new technologies contributes to improving the accessibility and quality of services provided to citizens. In addition, he insisted on the need to generalize electronic administration according to an integrated approach allowing the various departments and various services common access to information.

Morocco's orientation towards digital technology as a pillar for modernizing public administration and improving its services, has translated the principles specified in Chapter 12[29] of the Moroccan Constitution of 2011 relating to good governance "Organizing public services on the basis of equal access for citizens, equitable coverage of the national territory and continuity of service provision". E-government also draws its reference from Chapter 27 of the Constitution on access to information, since it stipulates, "Citizens have the right of access to information held by the public administration, the elected institutions and the organs invested with a mission of public services".

In the same frame, the new development model (SCDM, 2021)[30] has identified five major challenges, in order to mobilize the potential offered by digital technology with regard to the country's development projects, as follows:

• Adopt a high-level digital transformation strategy.

• Upgrade fixed and mobile high-speed and very high-speed digital infrastructures and their extension to the entire territory, ensuring a right of access for all citizens.

• Develop digital platforms for all services to citizens and businesses, as well as participation platforms at central and territorial level. It is urgent to accelerate the digitization of the administration through a single digital platform, allowing everyone to access all the administrative services necessary for his daily life.

• Train a sufficient number of skills, able to support and implement this digital transformation in the field.

• Complete the legal framework aimed at ensuring the digital trust of users and the digital sovereignty of the Kingdom.

Most of these projections correspond to the priorities of the government's 2021-2026 plan. Indeed, the acceleration of digital transformation has been identified as the program's primary goal. It is regarded as a powerful transverse transformation vector. In this vein, the Ministry of Digital Transition and Administrative Reform was established as a department dedicated to the management of this structural project.

Several reforms have been implemented to confirm the choice of digitizing as a catalyst for structural advancements, both in terms of user convenience and service quality, as well as administrative performance.

As a result, the law No. 54.19[31], enacting the "Public Services Charter" and establishing the general governance framework of the Public Services, has relied on digitizing a pillar to ensure a high-quality, accessible, and transparent public service. It calls for the creation of a unique user identifier in order to receive administrative services. She also implements electronic data exchange among administrations.

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[29] Moroccan Constitution promulgated by Dahir No. 1.11.91 dated July 29, 2011. https://morocco-emba.jp/wp-content/uploads/2021/02/Morocco_2011.pdf.

[30] https://csmd.ma/documents/CSMD_Report_EN.pdf.

[31] Law No. 54-19 on the charter of public services, promulgated by Dahir No. 1-21-58 of July 14, 2021.

In the same line, the Law No. 55.19[32], relating to the simplification of administrative procedures and formalities, was conceived, and implemented. Based on the principles of good governance and modern management, as well as the use of digital technologies, its goal is to foster trust between the administration and its users.

In this regard, the Ministry of Digital Transition and Administration Reform is currently working to complete a short, medium, and long-term road map that connects and completes the various sectorial plans for digitizing user paths, citizens, and businesses, while supporting a unified user-centered approach based on digital administration pillars such as governance and numeric skills.

At the same time, the Ministry is preparing, in consultation with all the concerned stakeholders, an integrated digital transition strategy aimed in particular at establishing an integrated and inclusive digital society and economy that improves the quality of life of citizens.

Towards a New Vision of Digital Transformation in Morocco

Based on the previously identified challenges and new repositories for accelerating digital transformation, Morocco has identified digital transformation of government, economy, and society as high priorities for the country's new development model and strengthening the social contract between the State and the citizens. The king's speeches during the COVID-19 crisis emphasized the importance of ensuring an efficient and accountable public sector to support reform efforts. The COVID-19 crisis has heightened the urgency for countries like Morocco to adapt to a post-pandemic world and to make a rapid transition to digital infrastructure and data-driven services.

This urgency has also been recognized in the finance law for 2021, in which the government has allocated resources to support the digital transformation of Moroccan government administration. To ensure that digital transformation efforts yield results, it is necessary to prioritize digital transformation in the public administration reform project and to ensure the implementation of digital governance for public administration.

Prioritizing digital transformation in the public administration reform project. Prioritizing digitization in achieving development requires putting in place effective solutions and approaches that can accelerate the digital transformation of administrative services and reinforce the efforts made over the years. Digitization offers many opportunities and possibilities in line with the results of the general report of the new development model, which emphasizes the exploitation of digitization in order to facilitate public management and improve the transparency of administrative activities in the efforts that have been launched to digitize the business process (SCDM, 2021)[33].

As a result, it is critical to proceed with the widespread digital transformation of administrative services and procedures, especially since the need for digital transformation has become more pressing than ever before. This consequence was due to the rapid development of the use of means and tools in transactions with the public sector, the private sector, or individuals, which explains the manifest pressure from all layers of society and economic actors on institutions and administrative secrecy.

Therefore, digital transformation is no longer an option, but rather a requirement in the process of developing, implementing, and evaluating public policies and various development projects, which necessitates the

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[32] Law No. 55.19 relating to the simplification of administrative procedures and formalities, promulgated by Dahir No. 1-20-06 of March 06, 2020.
[33] https://csmd.ma/documents/CSMD_Report_EN.pdf.

development and effective implementation of a robust digital strategy, as well as working toward the integration of major online service projects launched by various government administrations and institutions (Court of Auditors, 2019).

Furthermore, Morocco must quickly adapt to the changes of a rapidly changing world marked by rapid technological transformations, requiring the country to develop its digital ecosystem and legal system in accordance with the new development model's objectives. The prioritization of this project on the technical plan allows the government to strengthen its mission of providing a high quality, citizen-centered public service, which necessitates modern administration with simplified and fully automated procedures (SCDM, 2021).

Attempt to implement digital governance for public administration. The digitization of administrative services affects various aspects of life, and this has been confirmed by the intensive use of digitized services during the COVID-19 health crisis. This demonstrated the urgency of moving to a widespread national digital transformation comparable to international experiences. However, this fact requires great efforts to learn from the various failures and to enhance the value of digital achievements based on a new digital governance, thus opening up broad prospects for the digitization of administrative services. In this context, it is necessary to put in place a new governance of digital transformation with new bases, by accelerating the updating, adoption, and effective implementation of legal texts relating to digital transformation and the simplification of administrative procedures and paperwork.

The success of the digital transition of public services necessitates the effective and timely resolution of a number of issues that are preventing Moroccan administration from exceeding the average rate of development of electronic administration, while aiming for a general reform of online public governance.

The position of the Ministry of Digital Transition and the Reform of the Administration, as well as the public institutions under its supervision, is critical in this digital governance by reinforcing its relationship with the various administrations.

On the other hand, the Ministry must now focus its new strategy on putting the user at the center of public service concerns, focusing on the most critical online services, and encouraging local governments to participate in online service development projects using appropriate financial and technical support mechanisms, as is the case with the Public Administration Modernization Fund.

Simultaneously, it is necessary to strengthen the digital skills of employees, citizens, businesses, and governments in order to accompany the changes of the fourth industrial revolution.

Conclusion

Morocco's digital transformation has been a long and winding road filled with ups and downs. According to an examination of the various strategies implemented in this area, as well as the various indicators of national and international institutions, the success of the major project of digital transformation of public administration necessitates a broadening of the opportunities and gains realized. This success is not solely due to technological advances but rather to a fundamental shift in the modes of governance and interactions between the state and society on the one hand and approaches to decision-making and service delivery on the other hand.

The national digital legal system must be adapted to the rapid changes in new digital infrastructures. This will allow the private sector to invest in digital ecosystems and reap the benefits of digital transformation. As a result, the public administration will be able to provide users with high-quality digital services of the next

generation. Additionally, efforts to reduce the number of administrations involved in service delivery must aim to simplify procedures and user journeys by reducing the number of steps required to obtain the service as well as the number of administrations involved in its delivery.

The state will also have to focus mainly on human capital by qualifying it and ensuring that young people are guided towards digital professions. This will necessarily involve the strengthening and development of training institutions for engineering and digital technology professions, especially since digital technology has become the future of the economy. Finally, the digital transformation strategy should be based on the establishment of advanced and appropriate infrastructure, investment in human capital, and the creation of specialized digital laboratories throughout the country to ensure the continuous connection between the students and the companies and administrations.

Digital government is not an objective in itself but rather a tool for modernizing and improving the delivery of public services, strengthening transparency, and integrating and involving citizens.

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