

E-government applications and their evaluation in some Arab and foreign countries.

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Received: 13/04/2024; **Accepted:** 21/05/2024; **Published:** 15/07/2024

Abstract:

The study aims to shed light on the reality of e-government implementation in the United States of America, the United Arab Emirates, and Algeria, and evaluate it by reading the indicators of its use and knowing its position within these indicators, so that the study concluded that evaluating these experiences according to the e-government development index shows that the United States of America Its development index in 2022 was estimated at 0.9151, ranked 10th internationally, and the United Arab Emirates was estimated at 0.9010, ranked 13th. As for Algeria, we note that its development index was estimated at 0.5611, ranked 112th.

Keywords: E-Government Development Index; online service index; telecom infrastructure index; human capital index; E-Participation Index.

Jel Classification Codes : O30 ; L96 ; L98 ; M15.

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Introduction:

The success of various e-government applications depends on their suitability to reality and the opportunities for their development in the administration to achieve a possible opportunity for effective investment in these applications. The e-government project, in its concept and management, represents a developmental administrative revolution for administrative work, as it links information technology with the tasks and responsibilities of the administrative apparatus by following clear strategies and policies. It takes into account the changes in the field of the information industry and its impact on administrative work, and those concerned with this field and in administrative institutions agree on the necessity of facing the challenge in dealing with applications related to e-government, by spreading awareness and electronic thought, and supporting the trend towards e-learning in a greater and broader way.

The problem: Based on what was discussed, the following problem can be solved:

“To what extent is the e-government project implemented in some countries?”

Objectives: This study seeks to shed light on the reality of implementing the use of e-government in some countries, and to know the extent to which progress has been made in its use according to indicators obtained from the United Nations report.

Methodology used: Due to the nature of the research topic and the objective we seek to achieve by answering the study problem, we have blended induction and conclusion through descriptive and analytical tools related to the experiences of the countries under study countries.

I. Read in previous studies and make hypotheses:

I.1. Previous studies: In order to identify the research gap based on the collection of research and reports related to the research topic, in this context we find a study (Rumaydi & Mozaoui, 2014), which touched upon the reality of e-government by presenting some of the Arab countries' experiences in promoting the use of computers and

information technology in many economic sectors, In addition to mainstreaming their use in citizens' public life by presenting the reality of the Internet in the Arab world's Internet is still in its rudimentary phase because of several obstacles to its spread, The researchers also found that Arab governments are making significant efforts to narrow the digital divide between them and their home countries. as well as creating the necessary environment for the creation of the information society, on the one hand, The spread and growth of e-commerce, on the other hand, as we find a study (Tamar & Othman, November 2018) which touched on the presentation of a series of international experiences in the field of e-government with reference to the situation of Algeria by focusing on trying to learn about Algeria's future by moving towards the realization of the e-government project and consolidating the principles of this system as a start for the modernization of administration and public facilities in order to keep pace with the dramatic developments in this area. This experience seeks to gain citizens' satisfaction by providing public services through electronic media and achieving the highest level of application of e-government in the light of the many obstacles that can prevent it from being fully embodied in the project, In this context, the researchers concluded that although Algeria has undertaken many projects to reach advanced levels of e-government, it has not achieved most of its objectives, requiring an accurate diagnosis of why this large project could not be reflected and the solutions needed to reflect the digitization of public administrations at the earliest time. We also found a study (M.H, H.K, & S.G, (Mar. - Apr. 2018) That shows through their study that almost all Arab countries seek to implement e-government in their public administration. There are different points of view for e-government approaches, such as reducing operating costs, saving time and effort, as well as increasing effectiveness and efficiency. Countries implementing e-government have faced different and somewhat similar challenges throughout their endeavors. Given the similar cultural and administrative foundations, it is expected that Arab countries will face some similar challenges. In this work, we collected and analyzed governmental challenges in sustainable Arab countries and compared them with other countries around the world. Then classify them into different areas such as technical, adoption approach, cultural, strategic, and organizational. The e-government

classifications for countries in the Arab world were also classified based on income level and a study of the relationship between e-government challenges and its indicators according to the United Nations report. This paper aims to identify the factors affecting the implementation of e-government and then study the relationship between these challenges and the ranking of e-government according to United Nations reports. And use the result as an input towards a proposed general framework for e-government.

The difference between the current study and previous studies and aspects of benefiting from them: After reviewing previous studies that were applied in Arab, Algerian, and foreign environments, we benefited from them in identifying issues related to e-government and indicators for measuring them and devising the study question and its tools. We also benefited from them by interpreting the results that will be achieved. The current study refers to it and compares it with the results reached by previous studies. However, this study differs from previous studies in that it focused on e-government indicators in the United States of America, the United Arab Emirates, and Algeria during the period from 2008 to 2022, in addition to the lack of studies that addressed The topic in the same countries and years and with the same method of analysis. Still, some studies have dealt with the study in different ways. This is what differs in the current study from previous studies.

1.2. Study hypotheses: After completing the presentation of previous studies and identifying the research gap, we put forward hypotheses that embody the dimensions of this study as follows:

- The e-government project in Algeria is still far from the set goals compared to the leading countries in this field;
- The success of the e-government project depends on several indicators, the most important of which is the e-government development index.

II- Evaluating countries’ experiences in the field of implementing e-government:

These experiences are assessed based on reports issued by the United Nations to rank countries by indicators measuring progress in States' implementation of e-government projects. This report is issued every two years in the only international report assessing e-government development out of 193 Member States of the United Nations. it includes several indicators (a main indicator and three sub-indicators, which are (Asia, E-government best practices and trends, 2014, p. 8)

II.1.E-Government Development Index (EGDI):

The E-Government Development Index presents the status of e-government development for UN member states, along with an assessment of website development patterns in a country (UN E-Government Knowledgebase). This indicator is used to measure the readiness and ability of national administrations to use Information and communication technologies to provide public services. This standard is useful for government employees, policymakers, researchers, representatives of civil society, and the private sector to gain a deeper understanding of comparative standards of the relative position of the country when utilizing e-government to provide comprehensive, responsible, and citizen-centered services.

Table 1: E-government development index in light of the United Nations report.

the years	Algeria		The United Arab Emirates		United States of America	
	Ranking	Indicator value	Ranking	Indicator value	Ranking	Indicator value
2008	121	0.3515	32	0.6301	04	0.8644
2010	131	0.3181	49	0.5349	02	0.8510
2012	132	0.3608	28	0.7344	05	0.8687

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2014	136	0.3106	32	0.7136	07	0.8748
2016	150	0.2999	29	0.7515	12	0.8420
2018	130	0.4227	21	0.8295	11	0.8769
2020	120	0.5173	21	0.8555	09	0.9297
2022	112	0.5611	13	0.9010	10	0.9151

Source : (United Nations, E-Gouvernement Survey , 2024)

From the table above we notice that the e-government development index for the three countries fluctuated from year to year, so we note that:

- In the United States of America, the development index was constantly rising and falling, but at a small rate, settling in 2018 at 0.8769, which is the largest value compared to previous years. As for its international ranking, it was declining noticeably, but in the year 2018 it advanced one step to occupy rank 11, as evidenced by in 2020, it rose significantly and advanced from rank 11 to 09, despite the circumstances the world is going through with the Coronavirus. As for the year 2022, it fell by one rank to rank 10 compared to the year before.

- In the United Arab Emirates, we notice that the development index, like the index in the United States of America, fluctuated from year to year, settling in 2018 at a value of 0.8295, which is the largest value compared to previous years as well. As for the international ranking, it also fluctuated, settling at 21st place. It is noted that The United Arab Emirates, after the decline it was suffering from, advanced eight places compared to the year 2014, to remain in the same rank in 2020. As for the year 2022, it has improved greatly in terms of the development index, to the point that it has become ranked 13th compared to the previous year.

- Finally, Algeria, as we note that its development index was also fluctuating, such that its value in the year 2018 reached 0.4227, ranked

130. We note that Algeria also improved its development index and advanced by 20 steps, which is a positive thing, and it continued this progress in 2020 to rank 120, In 2022, it ranked 112th compared to the previous year.

Finally, we note that the United States of America occupies the largest value, 0.9151, followed by the United Arab Emirates, 0.9010, and then Algeria, 0.5611, in terms of the rate of development. From this, it can be said that although Algeria is considered to lag behind the United States of America and the United Arab Emirates, it seeks to improve its situation, and this is what can be observed from the jump shown by the international ranking as well as the development index.

II.1.2 Online Services Index (OSI):

This sub-indicator is calculated by examining several national websites and electronic portals on the Internet in each of the member countries of the United Nations. These websites include the main e-government portal and the websites of several relevant ministries, such as the ministries of education, labor, social services, health, finance, and the environment. In addition to evaluating the quality and type of content and the development of government services provided via the Internet according to four stages of development (the framework). The ability of these sites to provide information to people with special needs and the disabled is being tested, according to what was stated in the World Wide Web Consortium's booklet on "Accessibility Guidelines." to web content for people with special needs" (Asia, 2014, p. 8), According to this indicator, there are four models on which it is based, depending on the degree of gradual progress in providing services to individuals. Hence, the more advanced countries are, the more advanced they are classified within this model. These four stages are as follows (Boulahia & Salmi, 2013, p. 120):

The first stage is offering services (emerging information services). This is the first stage in this model, where the information is basic and limited. The electronic presence of the e-government in this stage includes internet pages and official websites, various links with

ministries, some information about the state's presidency, and some documents such as the constitution. Most of this information is static and does not provide much choice for citizens.

The second stage: is developing services (improved information services). In this stage, the government provides a better government policy that allows access to various information, as a large number of government documents are available, so the user can search for the documents he needs with the availability of the help feature and a map of the site. However, the interaction remains primary, as the flow of information takes place only from the government to citizens.

The third stage (the communication stage): The complexity of the technology increases, but the value of the user audience increases to a great extent, as it becomes possible to conduct complete transactions and provide them to the public remotely without going to the designated office. Examples of this include providing services on the network, as in the case of an income tax form and a tax form. Property, renewal of vacations, and online voting. This stage is considered complex due to issues of security, confidentiality, and privacy.

The fourth stage (interconnected services): This stage represents the most advanced level in e-government initiatives on the Internet, as it is characterized by mutual interaction between the government and its various institutions, the government and citizens, and the government and the business sector, as the government encourages participation in making and making decisions, and the extent of its will and ability to involve society. In an open dialogue through interactive websites and electronic consultation mechanisms, this stage is reached when all information systems are integrated and the customer audience, including citizens and business institutions, is enabled to obtain

services through a virtual portal that represents one of the points of contact.

Table 2: Online services index in light of the United Nations report.

the years	Algeria		The United Arab Emirates		United States of America	
	Ranking	Indicator value	Ranking	Indicator value	Ranking	Indicator value
2008	121	0.2241	32	0.7157	04	0.9532
2010	131	0.0335	49	0.0853	02	0.3184
2012	132	0.2549	28	0.8627	05	1.0000
2014	136	0.0787	32	0.8819	07	0.9449
2016	150	0.0652	29	0.8913	12	0.9275
2018	130	0.2153	21	0.9444	11	0.9861
2020	120	0.2765	21	0.9000	09	0.9471
2022	112	0.3743	13	0.9014	10	0.9304

Source : (United Nations, E-Gouvernement Survey , 2024)

From the table above we notice that the online services index for the three countries fluctuated from year to year, so we note that:

- In the United States of America, the services index rose and fell continuously, but settled in the year 2022 at 0.9304, which is a large percentage compared to other years, but the year 2012 had the largest value at 1.0000.
- In the United Arab Emirates, we notice that the services index was constantly rising from year to year, reaching a value of 0.9444 in 2018, which is the largest value compared to previous years as well.

- Finally, Algeria, as we note that its services index was also fluctuating, such that its value in the year 2022 reached 0.3743, so this value is considered the highest value.

Finally, it can be said that the United States of America ranks first, followed by the United Arab Emirates and then Algeria in terms of the services index.

III. 1. Telecommunications Infrastructure Index (TII):

The telecommunications index is a composite arithmetic average of five indicators related to information and communications technology, collected and calculated by the International Telecommunication Union. These indicators include the number of Internet users per 100 individuals of the population, the number of fixed telephone lines per 100 individuals of the population, and the number of mobile phone subscribers per 100 individuals. One person of the population, the number of subscriptions to fixed Internet services per hundred individuals of the population, and the number of public facilities that provide fixed broadband Internet service per hundred individuals of the population.

Table 3: Communications infrastructure index according to the United Nations report.

The years	Algeria		The United Arab Emirates		United States of America	
	Ranking	Indicator value	Ranking	Indicator value	Ranking	Indicator value
2008	121	0.1230	32	0.3813	04	0.6663
2010	131	0.0412	49	0.1793	02	0.2128
2012	132	0.1812	28	0.5568	05	0.6860
2014	136	0.1979	32	0.5932	07	0.7406
2016	150	0.1934	29	0.6881	12	0.7170

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2018	130	0.3889	21	0.8564	11	0.7564
2020	120	0.5787	21	0.9344	09	0.9182
2022	112	0.6133	13	0.9306	10	0.8874

Source : (United Nations, E-Gouvernement Survey , 2024)

From the table above we notice that the communications infrastructure index for the three countries fluctuated from year to year, so we note that:

- In the United States of America, the infrastructure index rose and fell continuously, settling in the year 2022 at a value of 0.8874, which is a large percentage compared to other years, that is, after the year 2020, which reached 0.9182.
- In the United Arab Emirates, we notice that the infrastructure index was high in 2008, then it decreased in 2010, then it rose continuously from year to year, reaching a value of 0.9344 in 2020, which is the largest value compared to previous years as well. As for 2022, it reached 0.9306.
- Finally, in Algeria, we note that its infrastructure index was also fluctuating, such that its value in the year 2022 reached 0.6133. This value is considered high compared to other years.

It can be said that the United Arab Emirates ranks first, followed by the United States of America and then Algeria in terms of the telecommunications infrastructure index.

III.2 Human Capital Index (HCI):

The human capital index is a composite arithmetic average of two sub-indices: adult literacy rate and the gross enrollment ratios in the primary, secondary, and higher levels of education combined. The value of this indicator is calculated by assigning different weights to each of its sub-indices, such that two-thirds of the weights relate to the adult literacy rate, and the remaining third relates to the gross enrollment ratio in the stages of education. The United Nations Educational, Scientific and Cultural Organization (UNESCO) is

responsible for collecting and collecting these sub-indicators (Asia, 2014, p. 10).

Table 4: Human Capital Index in light of the United Nations report.

The years	Algeria		The United Arab Emirates		United States of America	
	Ranking	Indicator value	Ranking	Indicator value	Ranking	Indicator value
2008	121	0.7114	32	0.7908	04	0.9711
2010	131	0.2435	49	0.2703	02	0.3198
2012	132	0.6463	28	0.7837	05	0.9202
2014	136	0.6543	32	0.6657	07	0.9390
2016	150	0.6412	29	0.6752	12	0.8815
2018	130	0.6640	21	0.6877	11	0.8883
2020	120	0.6966	21	0.7320	09	0.9239
2022	112	0.6956	13	0.8711	10	0.9276

Source : (United Nations, E-Gouvernement Survey , 2024)

From the table above we notice that the human capital index for the three countries fluctuated from year to year, so we note that:

- In the United States of America, the human capital index rose and fell continuously, such that the largest value was in 2008, followed by 2014, then 2012, settling in 2018 at a value of 0.8883, 0.9239 in 2020, and 0.9276 in 2022.
- In the United Arab Emirates, we note that the human capital index fluctuated from year to year, settling in 2022 at a value of 0.8711, noting that the largest value was in 2022, followed by 2008.
- Finally, Algeria, as we note that its human capital index was also fluctuating, such that its value in the year 2022 reached 0.6956, but it

is not the largest value, as the year 2008 is considered the largest value, with 0.7114.

Finally, it can be said that the United States of America ranks first, followed by the United Arab Emirates and then Algeria in terms of the human capital index.

III.3. Electronic Participation Index (EPI):

It is a complementary indicator to the United Nations Survey on E-Government. It expands the scope of the study by focusing on the use of electronic services. This indicator can be measured by designing a model with three levels: electronic information (e-information), electronic consultation (e-consultation), and electronic decision-making (e-decision-making).

Table 5: Electronic participation index in light of the United Nations report.

The years	Algeria		The United Arab Emirates		United States of America	
	Ranking	Indicator value	Ranking	Indicator value	Ranking	Indicator value
2008	153	0.0227	44	0.2955	01	1.0000
2010	157	0.0143	86	0.1286	06	0.7571
2012	30	0.0526	06	0.7368	03	0.9211
2014	172	0.0784	13	0.8431	09	0.9216
2016	167	0.1186	32	0.7458	12	0.8983
2018	165	0.2022	17	0.9438	05	0.9831
2020	183	0.1548	16	0.9405	01	1.0000
2022	112	0.2273	13	0.7841	10	0.9091

Source : (United Nations, E-Gouvernement Survey , 2024)

From the table above we notice that the electronic participation index for the countries studied fluctuated from year to year, so we note that:

- In the United States of America, the electronic participation index rose and fell continuously, but by a small percentage, settling in the year 2020 at 1.0000, which is the largest value compared to previous years, after the year 2008, which also reached a value of 1.0000, and in the year 2022 it reached 0.9091, as for its international ranking. It fluctuated noticeably, and in 2022 it stabilized at number 10 after being number one the year before.
- In the United Arab Emirates, we notice that the electronic participation index decreased from 2008 to 2010, then increased again in 2012 by (17.45%) to stabilize in 2018 at a value of 0.9438, which is the largest value compared to previous years as well, and 0.9405 in 2020, and 0.7841 in 2022. As for the international ranking, it also fluctuated, settling at 13th place. It is noticeable that the United Arab Emirates, after the decline it suffered in 2016, advanced sixteen places compared to the previous year.
- Finally, Algeria, as we note that this indicator was also fluctuating, as its value reached 0.2022 in 2018 with a rank of 165, 0.1548 in 2020 with a rank of 183, and 0.2273 in 2022 with a rank of 112, so we note that Algeria also improved its development index and advanced in 71 steps compared to the previous year.

We note from the above that the United States of America occupies the largest value with 0.9091, followed by the United Arab Emirates with 0.7841, and finally Algeria with 0.2273 in terms of electronic participation rate, and from this, it can be said that Algeria lags behind the rest of the countries with a very noticeable difference.

IV. Conclusion:

The Administrative Network is primarily interested in providing its services via the global information network (the Internet) as a main means of exchanging information, communication, and communication, and provides its solutions and management consultations on the best mechanisms and methods for transforming traditional businesses into electronic businesses in a way that achieves customers' aspirations and goals and is compatible with their capabilities, as any project needs. From e-government projects to several skills to achieve success, it must be noted that these skills cannot be separated from each other from a realistic standpoint, to ensure the success of the e-government project in any place.

Testing the study hypotheses:

- The first hypothesis was confirmed, and this was observed through the study indicators. Despite the effort and diligent effort, we are still far behind the countries under study by a wide margin;
- The validity of the hypothesis was confirmed, as each study has indicators through which the degree of progress or delay in the subject under study is determined. In this study, we relied on global indicators for studying e-government, through which the extent of progress in government digitization and the extent of progress achieved in this field is determined. This is to achieve the set goals of the Electronic Algeria project.

Study results: Among the results reached through this study we mention:

- The e-government development index in the United States of America had the largest value, 0.9151, ranked 10th, followed by the United Arab Emirates, 0.9010, ranked 13th, then Algeria, 0.5611, in terms of the rate of development, ranked 112th.

The online services index in the United States of America for the year 2022 reached 0.9304, followed by the United Arab Emirates with a value of 0.9014, then Algeria with a value of 0.3743.

- The communications infrastructure index in the United Arab Emirates was 0.9306, then in the United States of America was 0.8874, and as for Algeria, its value in 2022 reached 0.6133.

The human capital index in the United States of America was 0.9276, in the United Arab Emirates we note that its value was 0.8711, and in Algeria, it was 0.6956.

The e-participation index in the United States of America was 0.9091, in the United Arab Emirates we note that its value was 0.7841, and in the end in Algeria it was 0.2273.

Suggestions:

- Educating community members about the importance of implementing the e-government project, developing specific guidance programs, and educating citizens in all interactions;
- Trying to benefit from the experiences of leading countries in this field and exchanging experiences with them;
- Providing the necessary infrastructure to implement the e-government project;
- Working to develop the departments' websites by developing training programs on the latest uses of information technology;
- Benefiting from modern applications produced by informatics in the field of management.

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