E-Government from Vision to Implementation in Developing Countries (the North Africa) as a model Challenges and Reflections.

الحكومة الالكترونية من الرؤية إلى التنفيذ في الدول النامية(شمال إفريقيا) نموذجا: التحديات والانعكاسات

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Abstract:

This study aims to explore the potential for enhancing e-government indicators in developing countries (North Africa), in addition to evaluating the most important challenges facing these countries when adopting the e-government indicators adopted by developed countries, which will reveal the potential opportunities for their application. The objectives of the study were to propose possible solutions to avoid obstacles and to enhance the use of e-government. One of the results reached is that if the North African countries follow the projects that have been achieved by the developed countries, it is possible to overcome the difficulties and apply e-government. However, there is still a lack of detailed applications that would help developing countries implement e-government mechanisms and benefit from the plans and programs of leading countries and try to keep pace with them.

***Keywords**: E-government, developed countries, developing countries, sustainable development, challenges.*

ملخص:

تهدف هذه الدراسة في التركيز على إمكانات تعزيز مؤشرات الحكومة الإلكترونية في الدول النامية(شمال افريقيا)، وتسعى هذه الدراسة في تقييم أهم التحديات التي تواجه هذه الدول عند ادراج مؤشرات الحكومة الإلكترونية التي تبنتها الدول المتقدمة والتي من خلالها سيتم الكشف عن الفرص المحتملة لتطبيقها، كما تمثلت أهداف الدراسة في طرح الحلول الممكنة لتجنب العراقيل ومن إمكانية تعزيز استخدام الحكومة الإلكترونية، وحددت اشكالية الدراسة في الكيفية التي تمكن الدول النامية تجاوز هاته التحديات عند تطبيق الحكومة الإلكترونية، ومن بين النتائج المتوصل اليها أنه في حالة ما اذا اتبعت دول شمال إفرقيا، المشاريع التي أحرزتها الدول المتقدمة فإنه من الممكن تجاوز الصعاب وتطبيق الحكومة الالكترونية، إذ لا يزال هناك نقص في التطبيقات التفصيلية التي من شأنها تساعد الدول النامية من تنفيذ آليات الحكومة الإلكترونية والاستفادة من خطط وبرامج الدول الرائدة ومحاولة مواكبتها.

الكلمات المفتاحية: الحكومة الالكترونية، الدول المتقدمة، الدول النامية، التنمية المستدامة، التحديات.

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INTRODUCTION

Many countries have taken steps to transition from traditional government to e-government. E-government is a modern approach to managing the public sector and improving government performance to become more efficient and effective. This approach requires changing how the government operates in its implementation and relies heavily on digital technology, innovation, and data availability. The results achieved by e-governments have made most countries, regardless of their level of development or capabilities, strive to activate and support them.

In the early 2000s, Arab nations began recognizing the importance of strategic information technology (IT) plans for various public sector operations. Several countries actively collaborated with international organizations like the UN and OECD, aiming to improve administrative efficiency, strengthen social and economic foundations, and achieve development goals. However, implementing e-government strategies presented unique challenges compared to successful Western models.

As mentioned earlier, we use performance efficiency indicators, particularly to identify similarities and differences between countries. Variations in work environments, and political, economic, and social factors all contribute to the success of e-government practices, which ultimately strengthens the role of public policies.

This study aims to identify the gap between North African Arab countries and developed countries regarding electronic government applications. The objective is to explore the experience of developed countries and take advantage of it. That would help North African nations overcome obstacles and challenges hindering their progress in establishing effective e-government systems.

Problem Statement:

The information technology revolution has driven transformative economic and societal changes around the world. This rapid shift has seen traditional government institutions rapidly transitioning from traditional to electronic methods of performing work and delivering services, through the implementation of e-government strategies. As we look ahead, new technologies are expected to have an even greater impact on the world's political, economic, social, and cultural values. Given the significance of this topic, this study investigates the following question: Where do developing countries in North Africa stand in implementing e-government strategies compared to the global level?

Study Hypotheses:

Based on the study problem, the researcher formulated the study's hypotheses as follows:

Ho1: "The leading position of developed countries in the e-government development index indicates the growth of the digital sector and imposes the use of digital technologies to achieve efficiency and good performance in the technological infrastructure and the economic capacity of the state".

Ho2: "Arab countries in North Africa are considered to be lagging globally in the

implementation of e-government projects, based on the values of the United Nations e-Government Development Index (EGDI)".

The Importance of the Study:

The importance of this study stems from the fact that it presents the latest developments in e-government for the study countries (North Africa) as emerging countries in the field of applying e-government strategies and comparing them with leading countries. This is to identify the areas of strength and leadership and occupy the top positions. The attempt to benefit from the experiences of leading countries according to the reference comparison is likely to contribute to the disclosure of government weaknesses to strengthen and evaluate the path and steps of policymakers and decision-makers in an effective contribution to the development of technology infrastructure.

The Objectives importance of the study:

The objectives of the study comes from the fact that it can be applied E-government through

- Identify the concept of e-government, framework, dimensions, characteristics, and areas of application.

- Identifying the advantages and positive aspects of e-government, ways to benefit from its projects at the level of administrative systems and improving the quality of institutions.

- Identify the measuring of mechanism for e-governments at the global level and the position of North African countries.

- Determining the status of e-government in developing countries (North Africa), including Algeria, and knowing the latest developments in projects and strategies.

- Identify the impact, challenges, and weaknesses of e-government implementation in developing countries.

Methodology:

The study is considered a quantitative analytical study, and as a result, the descriptive analytical approach was adopted. This approach aims to identify the phenomenon and understand its current state. This paper is designed to explore the e-government experience in North African countries by comparison. The comparative approach was also used to compare the leading countries in implementing e-government strategies. The data were available through the United Nations database and the United Nations e-government reports were used for the years 2016, 2018, and 2020. This was done to enable a comparison of e-government indicators in different countries around the world, including leading countries in the field and developing and newly emerging countries. The comparison was made using the e-Government Development Index (EGDI), which relies on the following sub-indicators:

- Online Service Index (OSI)
- Telecommunications Infrastructure Index (TII)
- Human Capital Index (HCI)

The countries for comparison were selected based on the latest EGDI ranking for 2020 and the United Nations report.

Previous Studies:

While (Molnàr Péter, 2020) study aimed at identifying and clarified the correlation between the implementation of e-government projects and their impact on economic and social development and their ability to promote wealth creation and improve social policies. The results provide evidence of the significant positive impact of e-government implementation on GDP growth and several social indicators, such as rule of law, political stability, and health index, with a significant decrease in the mortality rate at the same time.

On the other hand, (Sahem Nawafleh & the others. 2012) aimed at identifying the key factors that contribute to the success of e-government programs. The study also investigates the potential for successful e-government implementation in developing countries with conditions similar to those of developed countries. The study compares various factors related to e-government success in both developed and developing countries. It examines the challenges faced by developing countries as they undergo political, cultural, and social transformations, while also striving to leverage scientific and technological advancements.

Moreover, the study "Advantages and Challenges of Transitioning from Traditional Government to E-Government: Experiences of Some Countries Including Algeria" by (Ghulam Al-Ham. 2014). Study addressed the reality and challenges of the Algerian e-government project. The study concluded that while e-government has many advantages, it also carries many disadvantages.

Finally, the study entitled "Requirements for the Success of E-Government in the Light of the Experiences of Some Developed and Arab Countries" by (Wahiba Abdel Rahim & Nadia Abdel Rahim. 2013) evaluates the leading international experiences in e-government, such as the British and Australian experiences. It also discusses the main challenges facing Arab countries, including Algeria, in an attempt to extract lessons from the successful experiences in e-government.

1. Analysis of literature: Definition and meaning of e-government:

The first subtitle opens with an introduction that presents the specific problem under study and outlines the research strategy. This section then examines available approaches that could be used to consider the electronic government of both developed and emerging countries.

Thus, it's essential to explain the nature of electronic government. However, the lack of genuine citizen participation remains a significant barrier to effectively addressing corruption.

1.1. The definition of electronic government (E-G):

According to the United Nations, e-government refers to: "Governments' use and application of information and communications technology in the public sector, as it aims to manage data and information effectively[1], Electronic Government (EG) delivers critical information, technologies to facilitate, develop public policy, and provides efficient and effective government services[2].

Governments progress various functions themselves by using ICT, therefore the policymakers needed service quality to be enhanced and service delivery costs to be reduced[3]. With the introduction of technology, it is possible to depend on new technologies to enable the transformation of governments to 21st-century-appropriate[4]. According to OECD, "e-government could play a supporting role in the maintenance of promoting public policy and government programs, as well as in studying information and technology"[5]. Sustainable Development Agenda Expect 2030: governments around the world will be more conscious of the ability of ICTs and emerging systems to develop and change the shape of public institutions[6]. The government uses technology to reform by encouraging openness and promoting transparency and accountability, participating the people in democratic processes[7]; however, the absence of actual civilian participation is another shape that reflects the inability to resolve the corruption[8]. E-Government is not limited to merely being eligible for electronic elections or to forging relationships with stakeholders in public policy through a variety of access points.

It should be obvious that it is more than just a simple connection between individuals, companies, and the operation of the Internet. The goal is to provide a holistic perspective of government connections, taking both external and internal interactions into account[9], the phrase "e-government" first appeared in the late 1990s[10]. There was additionally e-government terminology that did not appear in international English dictionaries ten years ago, when e-government was quickly evolving. Better public information and communication technology sometimes is referred to as EG[11].

We put the letter "e" before "government," which signifies that new information systems and communications technologies are changing how the government interacts with its citizens on the inside and outside[12] (united nation), E-government emerged from the Internet growth. However, they are not the only ones who can utilize the Internet or services that are made available to the public for consumers or people[13], Government website development was identified as a process by early e-government researchers. As a result, this started when organizations created websites and started to fill them with data, they are not the only ones who can utilize the Internet or services that are made available to the public for consumers or users[14]. Early Researchers of e-Government identified government website construction as a variety of phases, as such: this started as agencies created websites and started to populate websites with info[15]. Others believe that a variety of factors, including technology, human capital, infrastructure, political will, governmental interest, and culture, are necessary for the growth of e-government[16], According to the 2008 International Telecommunication Union report, there are many different definitions of e-government because governments themselves play a variety of roles. Using information and communication technology in government to provide public services, improve management effectiveness, and promote democratic principles and processes, as well as a system for regulation, smart policymaking, and the development of a knowledge-based culture[17].

We can also assume that when we talk about e-government, we're talking about moving away from the conventional model of having people access government services and transactions online. Several various factors overlap with it and contribute to its development, such as technology, human

resources, infrastructure, political will, community involvement, and cultural influences.

1.2. Goals of E- Government:

As the foundation for national policies to make excellence primarily focused on a technology-based assessment, Gronlund is analyzing three main priorities.

- More effective government,

- Improved programs for people and

- Enhanced democratic processes[18].

Beside that the e-government's key goals are:

- To provide information on the administrative process.

- Provision of access to information for citizens.

- To make the performance process transparent, accountable, fast, and effective.

- Productive activities of government; to ease the connection of people with different online services; to fulfill the wishes and desires of people at the front.

-Provide new ways and methods of enhancing civic awareness and. Ensuring and maintaining public faith in the government.

-To improve civic transparency and openness to elected representatives.

- To promote government engagement and networking by clarity and openness.

-To make the system more efficient and effective Provision of access to information for citizens[19].

1.3. Types of electronic government:

The e-government services offered are as follows types:

Government-to-government (G2G):

Facilities Service Incorporation is what it means[20]; Electronic information exchange is conducted between government organizations and spans national, provincial, and local levels as well as multiple government departments[21].

Government-citizen (G2C):

Is integrated channel for e-government simply the base data with the largest national archive and the offering of an official public sector online, it is pursuing boosting productivity and Productivity[22], E-Government encourages agencies to examine, observe, communicate with their people continuously, and thus facilitating the provision of transparency, democracy, and progress of public service[23].

(G2B) / Government-Commerce (G2C):

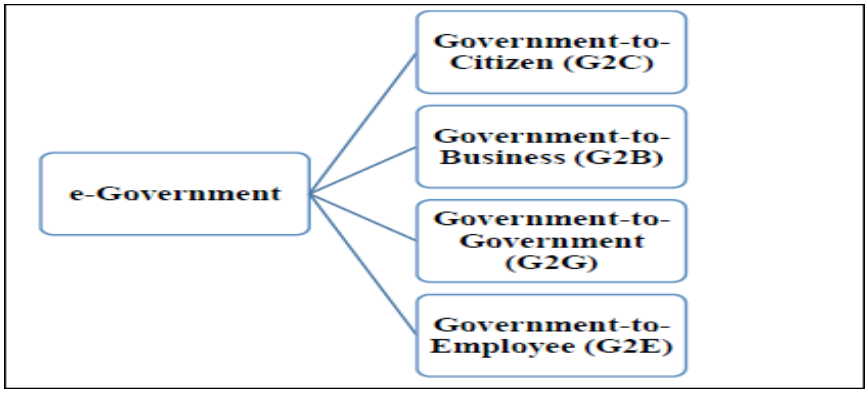
Government-to-business communication is the second-largest type of e-government, and it can

significantly increase efficiency for both states and corporations. It also contains numerous traded facilities[24]. Distribution of the automated, single-source public utilities offer organizations and policymakers an incentive to work and develop a quicker and cheaper online presence[25].

G2B transfers include numerous exchanges of resources, Encompassing distribution of laws, notices, rules and regulations between governments and the business communities[26].

Government to employer(G2E): that means considering despite interaction with opportunities for jobs, working instructions, legislation laws, compensation frameworks, and salary Processing workers, healthcare arrangements of personnel, labor and government housing[27].

Figure 1: models of electronic government.



Source: *Gustova Daria, The Impact of E-Government Strategy on Economic Growth and Social Development, 2017, p.4.*

1.4. Stages and Requirements for Establishing E-Government:

For such fulfillment, one must go through four consecutive stages of e-government that cannot be neglected or infiltrated the most reporters believe that the following stages are appropriate:

- Stage emerging: an official government defined by an online person.

Enhanced stage: purported information with skills is correctly more consistently.

- Reactivating stage: users can download forms, contact the authorities, and suggest ideas and appointments.
- Transactional stage: participants will directly pay electronically for utilities or access financial operations[28].

2. E-government Status by Indicators:

In this section, we shall try to attempt to identify the global development and rankings of the leading countries by measuring the e-gov indicator and determining its motivations for achievements.

2.1. The Measurement of electronic government:

Why does the government conduct electronic measurements?

International organizations have created both individual and composite indicators for e-government measurement. The incidence of e-government must be calculated and compared using a variety of realistic, appropriate, and comparable metrics. These indicators are important instruments for identifying effective public policy[29].

2.2. **Global E-Government Index in 2020:**

Global electronic government rankings Level of growth will be observable based on UN government surveys, which will evaluate indicators outlined in the first indicator, including online platforms and their symbol (OSI), the connectivity system symbolized by (TII) and human resources and its symbol (HCI). Reckoning e-government development.

Table.1: Top 10 Member country for Leading E-government from 2016-2020.

The Country	E-government Development			World E-government Rankings			Change between 2016/2020
	2016	2018	2020	Rank 2016	Rank 2018	Rank 2020	
Denmark	0.8510	0.9150	0.9758	8	1	1	Height+7 positions
The Korean Republic	0. 8915	0.9010	0.9560	3	3	2	Height+1position
Estonia	0. 8334	0.8486	0.9473	10	10	3	Height +7 positions
Finland	0. 8817	0.8815	0.9452	4	6	4	Fixed
Australia	0. 9143	0.9053	0.9432	2	2	5	Down-3 position.
Sweden	0. 8704	0.8882	0.9365	5	5	6	Down- 1 position.
United Kingdom	0. 9193	0.8999	0.9358	1	4	7	Down-6 positions
New Zealand	0.8653	0.8806	0.9339	7	7	8	Down-1 position.
USA	0.8420	0.8769	0.9297	9	8	9	Fixed
Netherlands	0. 8659	0.8757	0.9228	6	9	10	Down-4 position.

Source: *Based on an e-government survey of the UN (2016, 2018, and 2020).*

The specific value used for the experiment is summarized in the above table.

Deduct in 2020, the 1st place in the ranking is taken by Denmark the discovery which rising by (+7) in 4 years. (EGDI =0.9758(, While it retreated by UK it was the leader in 2016, which moved down from the 1st, lost 6 positions and went Down in the 7st. While Finland and USA, they

did not change their positions. The Republic of Korea was the second and Estonia the 3rd, (EGDI=0.9473, (which increased by (+7) in 4 years) displayed the highest stability while joining the top.

The decline in the UK's ranking may be due to the lack of public adoption of government e-services, despite the high adoption of e-commerce services in the country.

Conversely, one of the most distinctive features of the Australian experience is its approach to dealing with different cultures, religions, and languages in the country, in line with the principle of social inclusion. This principle emphasizes the need to provide convenient services to all segments of society, such as offering websites in various languages, including Arabic, Chinese, Malaysian, Indonesian, Greek,[30]

Indeed, each of these leading countries seems to have adopted a specific vision focused on promoting certain digital applications with the aim of enhancing the overall value of their e-government, which has allowed them to achieve a good level globally.

However, the reasons of States have repeatedly taken the lead, their e-government that has these elements:

•Technology and infrastructure measurements are given close attention.

•An important factor is the ability to interact.

•The high position played by states, regions and municipalities.

Preference is giving to open-source software over proprietary brands[31].

The results of the study in the second table show the levels of e-government development indicators in the years 2016, 2018, and 2020.

Table 2: The value of the participation e-government index (OSI- HCI -TII), for leading countries from 2020.

Countries	region	The participation E government index		
		OSI value	HCI value	TII value
Denmark	Europe	0.9706	0.9588	0.9979
The Korean Republic	Asia	1.0000	0.8997	0.9584
Estonia	Europe	0.9941	0.9266	0.9212
Finland	Europe	0.9706	0.9549	0.9101
Australia	Oceania	0.9471	1.0000	0.8825
Sweden	Europe	0.9000	0.9471	0.9625

United K	**Europe**	**0.9588**	**0.9292**	**0.9195**
New Zealand	**Oceania**	**0.9294**	**0.9516**	**0.9207**
USA	**Americas**	**0.9471**	**0.9239**	**0.9182**
Netherlands	**Europe**	**0. 9059**	**0. 9349**	**0. 9276**

Source: *Based on an e-government survey of the UN (2020)*

Through the table, we can observe that Denmark is leading in all three indicators, which indicates that Denmark's digitization strategy focuses on:

1. Establishing a central IT infrastructure that connects various national bodies, local government, and municipalities with various shared services.

2. Projects and solutions related to digital infrastructure, data reuse, data security, and even digital welfare.

3. Denmark has specialized portals for citizens and businesses, as well as a single national health portal.

In addition, the government has recently launched a series of more specific digital strategies, such as the national artificial intelligence strategy and a proposal for a new investment fund to accelerate the launch of digital healthcare solutions through the artificial intelligence project[32].

Denmark's online presence exemplifies a citizen-centered approach, with more intriguing and fantastic portals than can be described. Denmark's internet presence is bolstered by its gateway portal, http://www.danmark.dk, which directs visitors to relevant agencies and information. While it describes its growth as a "continuing process," it has already made significant progress toward its aim of providing an overview of the public sector and what it has to offer. In reality, it is an e-government pioneer[33]. Indeed, the United States has seen a decline in its ranking in the UN e-government survey. However, what distinguishes the American experience in the field of e-government is the leadership's support for the project. Historically, the first to introduce this term was former President Bill Clinton in 1997, who also introduced electronic services through websites affiliated with government agencies[34]

The following chart shows a comparison between Denmark and the United Kingdom in terms of the 2022 E-Government Development Index (EGDI).4

Figure 2: A comparison of changes in the sub-indices of the e-government index between Denmark and the United Kingdom.

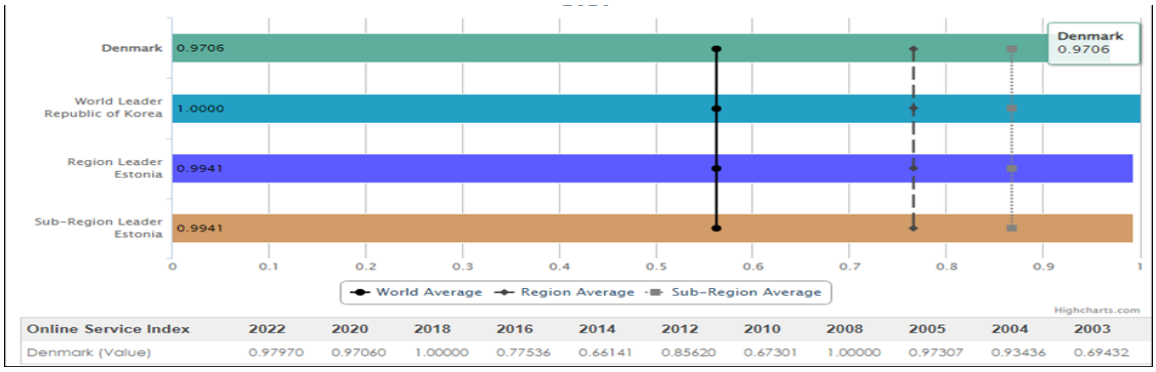
United Kingdom **Denmark**

Source: *United Nations E-Government Knowledgebase, 2022.*

The previous table's comparator countries are defined as developed countries with strong e-government development index rankings. This suggests that they have robust economies, a good standard of living, and a high per capita income. The per capita income of a country reflects its economic potential and has a significant impact on the growth of national e-government[35].

Countries with greater OSI levels compared to TII and HCI levels are better positioned to provide online services and accelerate e-government development with enough infrastructure and human capital. To improve internet services in this group of countries, improvements in telecommunications infrastructure and digital literacy are necessary.[36]

Fegure3. Online service index levels.



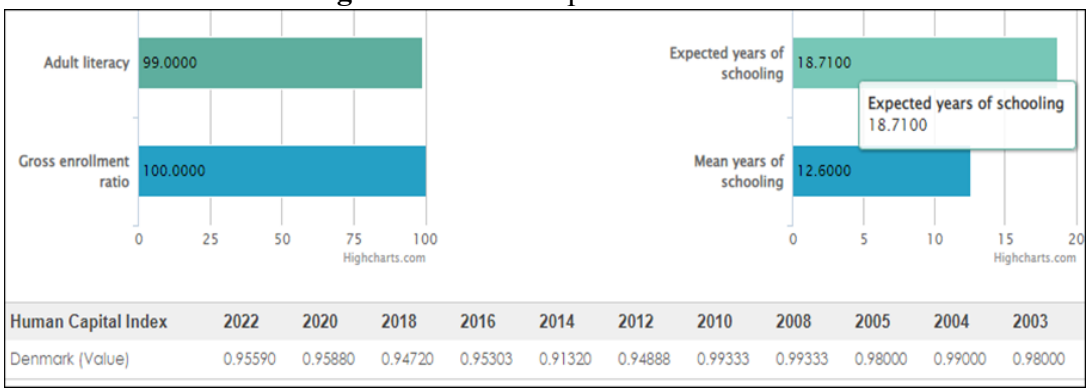
Online Service Index	2022	2020	2018	2016	2014	2012	2010	2008	2005	2004	2003
Denmark (Value)	0.97970	0.97060	1.00000	0.77536	0.66141	0.85620	0.67301	1.00000	0.97307	0.93436	0.69432

Source: *United Nations E-Government Knowledgebase, 2022.*

From Table 2 and Figure 3, we can observe that the e-service index in Denmark for 2020 fell to third grade in 2020 compared to its counterparts in all countries. Korea ranked first, followed by Estonia in second grade.

Despite its decline in 2022, Denmark remains a leading country in human capital in e-government. This is indicated in the following figure.

Fegure.4 Human Capital Index levels



Human Capital Index	2022	2020	2018	2016	2014	2012	2010	2008	2005	2004	2003
Denmark (Value)	0.95590	0.95880	0.94720	0.95303	0.91320	0.94888	0.99333	0.99333	0.98000	0.99000	0.98000

Source: *United Nations E-Government Knowledgebase, 2022.*

3. E-Government between our Status and the Future Challenges: in the North Africa countries.

In this section, we will try to be acquainted with the experiences of e-government in the Maghreb countries through e-government indicators and to know the most severe challenges facing the government of these countries to develop strategies by international standards.

3.1. In developing countries, e-government comprehension:

Africa and the Arab world are most impacted in the worst areas, and the biggest increase is anticipated, aside from immediate developmental issues, Africa's nations are suffering from environmental issues like food security and climate change Author side; it's still intense opposition from the public administration. Disagreement of this nature will slow technological advancement[37]. A nation's ICT capabilities and willingness to implement public sector reforms are of utmost importance. Government spending is increased in nations with modern ICT infrastructure due to the public's demand for government services that are both precise and affordable[38].

Even though over three decades of ICT growth, Africa is still lagging other regions in technology, connectivity, usage, and skills. Internet penetration in Africa (473 million online people) is estimated at 36%. This disparity is expecting to impact further development in Africa's e-government accelerates with technical progress, raising significant challenges to the digital transition process[39].

Table.2: E-Government Growth Index (EGDI) values in the North African countries (2016- 2020).

Country	E-Government Growth Index			World E-Gov. Development Rankings			position between 2016/2020
	2016	2018	2020	Rank 2016	Rank 2018	Rank 2020	
Mauritania	**0.1734**	**0.2314**	**0.282**	**184**	**183**	**176**	**Down +6positions**
Tunisia	**0.5682**	**0.6254**	**0.6526**	**72**	**80**	**91**	**Down -20position**
Morocco	**0.5186**	**0.5214**	**0.5729**	**85**	**110**	**106**	**Down -21position**
Egypt	**0.4594**	**0.4880**	**0.5527**	**108**	**114**	**111**	**Down -3 position**
Algeria	**0.2999**	**0.4227**	**0.5173**	**150**	**130**	**120**	**Height +30positions**
Libya	**0.4322**	**0.3833**	**0.3743**	**118**	**140**	**162**	**Down-12 positions**

Source: *The stem of the United Nations Survey on E-Government (2016, 2018, and 2020).*

According to findings below, we may clearly notice the Mauritania state is in the front position of the ranking. It is, thus, followed some other North African Arab Countries, namely Tunisia, Morocco, Egypt and Libya in the row.

Algeria state knew a significant leap in E- Gov. Development in the four precedent years (0, 29- 0, 51). Consequently, it moved forward from position no. 150 to 120, i.e. Abound of five ranks.

As of 2020, Algeria has made some progress, but this does not imply that it has achieved success in electronic government. Same would possibly be applied for Tunisia, which stepped further from position no 72 To no. 91.

However, Morocco, and Libya scored less progress, achieving humble results (position 85- 106, 108- 111, 120) respectively.

So, on EGDI Level, Algeria, Egypt, and Morocco, Classified High EGDI in the north Africa Countries, while Libya and Mauritania They are classified within Middle EGDI.

According to the report of the UN 2020, Algeria and Egypt moved from the from the middle to the high EGDI group, and Tunisia are among the top 100 countries in terms of overall EGDI ranking, while most of the countries in the region are still part of the middle EGDI group, eight countries.[40]

The results of the EGDI index in developing countries reveal the weakness of the OSI e-service sub-index, which indicates the weakness of the technical features of the e-government website and the lack of efficiency and effectiveness in the e-government strategies implemented in the public and private sectors in providing e-services to citizens.

This confirms that the e-government project in these countries faces many obstacles that have

prevented its progress. It also shows that these efforts are not enough to achieve the development of e-government in North African countries and need more direction and support, and the development of new strategies.

3.2. The experience of e-government for the North Africa countries: Overview for challenges.

Within the framework of implementing the e-government program, North African countries, especially the Maghreb countries, have initiated many different projects, but they have faced several obstacles.

For Algeria's, experience in the field of e-government applications, in social sector projects: Launched the first project, the electronic municipality project.

Then the electronic health project is represented by the healing card as well as the draft passport and biometric identification card.[41]

Nevertheless, until now, how can a biometric national identification card be completed to save paperwork and administrative services, and how can a paper copy be requested right now?

As for the Tunisian and Moroccan experience, the government of Tunisia launching the public consultation portal E-participation mechanisms through the Office of Citizen Relations Administrative pages on social sites, and Morocco government it has been fired making suggestions to citizens regarding the creation of new electronic services projects; Like texts displayed for comment.

In addition to fighting bribery in university hospitals.

Whilst Egypt experience, citizens interact with the government through the following channels:

Citizen relationship management CRM, Call centers, instant messaging, blogs;[42]

Therefore, we conclude through e-government applications, the projects were similar in these countries, simultaneously, starting in 2013.

Most governments today do not want their data to be open, so how to do it. Supports the statement in close analysis of all opportunities and challenges that are required.

Public data opens raises various problems, including regulatory structures, legislation, and standards, data and safety management, identity management, privacy,

Out of UN-DESA project 32, eight main factors were recognized as necessary for an effective open data planning process, including:

-Obligation of the government,

-Legal and political systems,

-Systems of the institution,

-Transparency and capacities of the government,

-Open data order,

Strategic framework for technologies and expertise.

There are several in the other mechanisms often provided, including certain excellently designed ethical codes, human resources growth, and effective superior audit institutions, to promote successful public transparency.[43]

For this cause, ICT technology remains the remains hurdle to e-government in developing nations, as the Internet has become a critical part of the use of e-government portals and application facilities[44], Very few government agencies have been covered. Expanding the scale of e-government to cover more agencies and a larger population is a relevant challenge.[45] Besides, Technical is manifested by the most factor Staff in Government Officers is particularly by low computer literacy and resource dedication[46], and the following table provides a clearer of the e-participation index in these countries.

Table.4 Electronic participation index for North African countries

Countries	2010	2012	2014	2016	2018	2020	2022	Rank 2022
Mauritania	**0.11428**	**0.00000**	**0.07843**	**0.05085**	**0.17980**	**0.09520**	**0.02270**	**190**
Tunisia	**0.30000**	**0.36840**	**0.647055**	**0.69492**	**0.79780**	**0.69050**	**0.54550**	**67**
Morocco	**0.12857**	**0.39470**	**0.80392**	**0.83051**	**0.77530**	**0.51190**	**0.27270**	**128**
Egypt	**0.28571**	**0.68420**	**0.54901**	**0.40678**	**0.53930**	**0.51190**	**0.35230**	**107**
Algeria	**0.01428**	**0.05260**	**0.07843**	**0.11864**	**0.20220**	**0.15480**	**0.22730**	**148**
Libya	**0.17142**	**0.00000**	**0.05882**	**0.10169**	**0.12360**	**0.03570**	**0.03410**	**189**

Source: *United Nations E-Government Knowledgebase, 2022.*

In the North Africa, for instance, there is a clear gap even within the rank, we conclude that the countries of North Africa are unstable according to the e-participation index, and this is due to the following reasons:

The inaccuracy of statistics provided by governments, in addition to the possibility of providing misleading statistics to international organizations such as the United Nations and the ESCWA. The closest example is Morocco, which ranked 17th in 2014 and fell to 107th in 2022. The same applies to Egypt, which fell from 15th in 2012 to 107th in 2022.

When comparing the statistics and rankings of North African countries, we notice that the gap between them is somewhat wide, especially according to the statistics of the years 2014, 2018, and 2020.

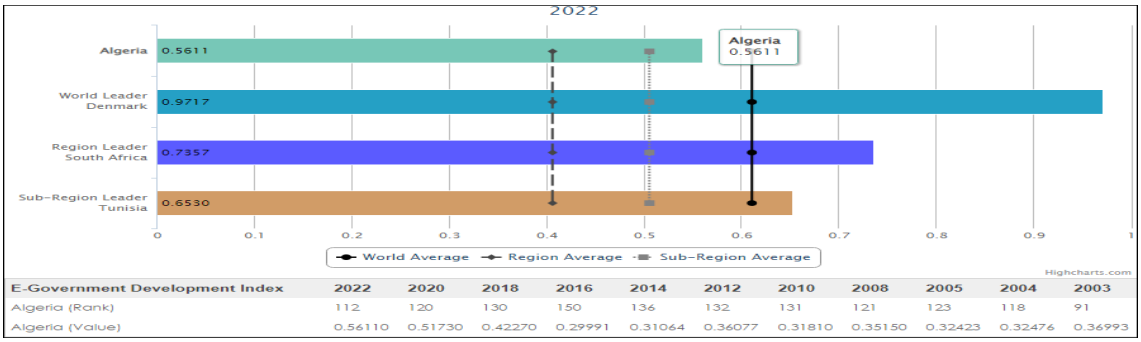
When comparing the performance of e-participation in North African countries to that of leading countries in this field, the overall performance of North African countries remains low. This indicates a lack of interaction between governments and citizens, which proves the validity of the first hypothesis that developing countries (North Africa) are lagging globally in the implementation of e-government projects.

We conclude that the North African countries have weak economies and lack the qualifications represented by wealth, human capital, and the availability of technological infrastructure that is available in the leading countries in the field of e-government.

The results of the EGDI index in developing countries reveal the weakness of the OSI e-service sub-index, which indicates the weakness of the technical features of the e-government website and the lack of efficiency and effectiveness in the e-government strategies implemented in the public and private sectors in providing e-services to citizens.

The table shows that Tunisia, Libya, and Morocco have made progress, while Algeria and Egypt are still lagging. This is evident in the chart below, which compares a leading country, Denmark, to a developing country, Algeria and Tunisia, according to E-Government Development Index.

Fegure.5. Electronic participation index between a leading country and North African countries (Tunisia-Algeria)



E-Government Development Index	2022	2020	2018	2016	2014	2012	2010	2008	2005	2004	2003
Algeria (Rank)	112	120	130	150	136	132	131	121	123	118	91
Algeria (Value)	0.56110	0.51730	0.42270	0.29991	0.31064	0.36077	0.31810	0.35150	0.32423	0.32476	0.36993

Source: *United Nations E-Government Knowledgebase, 2022.*

Besides these reasons, the UN survey suggested that it challenges faced by Africa's e-government relate to the other aspects that impede the growth of electronic government.

The digital transformation challenges facing Africa, however, go beyond infrastructure and funding to cover leadership, legal and regulatory frameworks, institutional frameworks, and human and institutional capacities. Incompatibility (including e-illiteracy), language barriers, and internet accessibility (particularly vulnerable communities) are some of the relevant socio-economic problems that were required urgently for the advancement of digitalization[47].

Significant corruption, political uncertainty, uncertain legal structures and complex social and cultural values are struggling that contributes to the greeting complexities of e-government systems in each particular most developing country[48].

The most substantial challenge facing developing countries is inadequate ICT facilities. To render the Digitalization of archived records instead of Most Manual processes in government agencies and methods is a mammoth challenge.

E-government can offer many benefits, but it is important to address the challenges mentioned above in order to ensure its successful implementation. Governments need to invest in infrastructure, develop clear legal frameworks, raise awareness among citizens, and build trust through transparency and accountability. By addressing these challenges, e-government can be a powerful tool for improving public service delivery and promoting economic development.[49]

Departments are not interconnected, as the networking infrastructure is weak outside the capital city. The penetration of Internet Access to broadband is evil and restricted[50].

Governments ought to back away and construct systems that will withstand the long cycles required to achieve the great dreams that are worth achieving and that do not expend too much time and wealth on others that are clear not so significant. The lessons to be learned are including:

-Thinking in terms of people, processes, and ecosystems.

-Think about constant change, rather than a big bang.

-mend infrastructure.

-knowledge, from experience and the best.

- Remediation technology as a manservant; not a master[51].

-Make better use of pilot projects to test proposals before they are tested at national level.

-Should be learning how to reduce risks early and know when something does not work.

If governments, on the other hand, come to consider the problems of reforming their own behavior, the future of e-government will be even better[52] .

Learning about the past and current experiences and extracting lessons is highly advantageous to developing countries' ICT leapfrog. The leapfrogging mechanism would make it easier for them to miss badly designed. Current ICT encounters will help them carefully detail their ICT integration plans, thereby creating a pattern known as "ICT urbanization"[53].

One of the reasons for the delay of Arab countries, especially in the North African region, in the world ranking is due to the aftermath of the Arab Spring, which affected various sectors (Tunisia, Egypt, and Libya).[54] Egypt has performed very well in 2005 advancing 37 points in the global ranking from 136th in 2004, however, its e-readiness suffers because most Egyptian ministry websites still do not link to the portal, highlighting the need for it to be fully integrated with and promoted on other Egyptian government websites[55].

The biggest problem is to have an automated infrastructure when citizen information was secure, interoperable, and extreme should be achieved by electronic government systems[56].

In between, the incentives guaranteed by government use and implementation in developing countries are close to those in developed countries. The variance between these two classes will emerge because developed countries do not harvest several future government benefits. therefore, they restricted the use of government[57].

In addition to the financial, administrative, and political corruption faced by the governments of these countries, which is always confirmed by the reports of Transparency International, these countries are often at the bottom of the international ranking in terms of the highest ranking in the spread of corruption and mismanagement[58].

Both difficulties can be resolved by encouraging each to create its own e-government Performance Measures and, at the same time, by offering some generic / overarching performance measurements that can be calculated at regional level for all developed countries. The following steps should be taken:

- Most regional countries must exchange their e-government evaluation and Measurement, and all metrics assessment processes

-To form a special group with participation from each participating of each participating government, which analyzes such programs in depth and to arrive at a shared collection of steps, considering all variables.

-If metrics have been finalized, the same special group will discuss to establish calculation frameworks[59].

- Using the comprehensive system and framework reviews and forwarded for evaluation and further actions to the leader's management partners for review and distant action, and related mechanisms for carrying.

- Maintain essential public policy priorities, such as the protection and storage of information conservation and public access.

- Expand a legislative framework for government procedures and electronically supplied facilities reference and regulations[60].

4. CONCLUSION

In this paper, I aim to include the e-government application process involves several steps. Industrialized nations have been particularly successful in adopting information and communication technologies (ICT) to streamline service delivery and operations within the government sector. According to the UN E-Government Survey 2020, three key indicative dimensions are used to assess progress: the Online Service Index (OSI), the Telecommunication Infrastructure Index (TII), and the Human Capital Index (HCI). These indicators are all built upon investigations into comparative e-government development.

Every indicator is a comparison of e-government development indicators between developed and emerging nations, particularly those in North Africa. While these nations share many

characteristics, they also differ in key ways, particularly regarding their political, social, cultural, economic, and technological leadership. This difference supports our hypothesis that the leading countries in e-government maturity possess qualifications represented by wealth, human capital, and access to technological infrastructure, as evidenced by Denmark's top ranking.

While developed nations have demonstrated the intersection at their points of convergence—namely, strong existing technology and a high level of internet connectivity for workers or people, high levels of political denominators among these top nations with a shared history and culture, geographical, political, and government leaders—less developed nations have not.

Additionally, developing nations face several additional political and logistical challenges due to their weak infrastructure and limited capacity to adopt e-government initiatives.

Even so, I think that there is still a lack of detailed instructions that would enable developing nations to implement e-government systems in extremely difficult circumstances while utilizing the plans and programs of the top-ranking nations to join their ranks.

National e-strategies will also present a significant hurdle in the overall procedures that will allow developed nations to supply the necessary technologies. In conformity with international norms, they would be included in the creation of national e-strategies.

We further confirm the second hypothesis, as the results of the EGDI index in developing countries reveal a weakness in the OSI e-service sub-index. This indicates shortcomings in the technical features of e-government websites and suggests inefficiencies and ineffectiveness in e-government strategies for providing e-services to citizens.

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