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Digital Transformation in Light of the E-Government Development Index (EGDI)

Dr. Abdelkrim Taleb[1]
Contract Professor[1]
Faculty of Economic, Commercial and Management Sciences[1]
University of Tamanrasset[1]
Krimotam8@gmail.com[1]

Dr. Ayoub Hamdi[2]
Contract Professor[2]
Faculty of Economic, Commercial and Management Sciences[2]
University of Tamanrasset[2]
Phd.hayoub11@gmail.com[2]

Dr. Sebaa Ahmed Salah[3]
University of El Oued
Sebaa-ahmedsalah@univ-eloued.dz

Dr. Ouled Hacini Youcef [4]
University of Tamanrasset
Youcef.ouledhacini@univ-tam.dz

Pr- Zehouani Redha[5]
University of El Oued Algeria
Zehouani-ahmedredha@univ-eloued.dz

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Abstract:
This study aimed to identify the concept of e-government through the United Nations E-Government Development Index (EGDI), in addition to the most important sub-indicators specified for the latter, represented by the Online Services Index (OSI), the Telecommunications Infrastructure Index (TII), and the Human Capital Index (HCI). It was concluded through the figures provided by the United Nations for the main index and sub-indicators that there is a disparity in the results achieved and there is a slight improvement between 2022 and 2024 in the overall total, which puts the countries affiliated with the United Nations in great challenges in order to improve these indicators that reflect the extent of achieving real development of e-governments across these countries.

Keywords: e-government, E-Government Development Index (EGDI), Online Services Index (OSI), Telecommunications Infrastructure Index (TII), Human Capital Index (HCI).

Introduction:
Many developed and developing countries have adopted e-government applications and technologies in response to current conditions and as a means to keep pace with changes in the global governmental environment. This trend coincides with the scientific and technological progress the world has witnessed since the last decade of the 20th century, given the high dynamism of this field. Since then, digital transformation has emerged as an important topic that has captured a significant amount of research among academics, experts, and all those interested in the subject.

Most countries around the world have achieved a qualitative leap due to the increasing speed at which e-government applications are being adopted. These governments are gradually trying to abandon traditional, bureaucratic, and complex government models, replacing them with e-government models that emphasize increased interaction between the government and citizens, businesses, government institutions, and civil society organizations. In an attempt to achieve this, they are establishing their online presence and providing the same high-quality public services traditionally offered, using the internet and information and communication technologies, ensuring their delivery in the fastest time and at the lowest possible cost. Based on the above, the research problem that we will attempt to answer in this paper can be formulated as follows:

What is the concept of e-government, and what is the E-Government Development Index adopted by the United Nations to measure the extent of e-government implementation by its member states?

The Concept of E-Government:

The concept of E-Government is among the concepts that have sparked extensive debate among researchers due to its connection with information and communication technology (ICT), and its significant role in improving the performance of the public and business sectors and its contribution to providing electronic services to citizens.

The World Bank defined it as the government's use of information and communication technologies such as wide area networks, the internet, and mobile computing, which have the potential to transform the relationship with citizens, businesses, and other government entities. This technology can serve several objectives, such as: providing better services to citizens, better interaction with the business and industry sector, helping citizens access information, and more effective government management. [1]

E-government is also defined as "government agencies using the internet to provide public sector information and online services." [2]

It is also defined as "the use of technology, especially internet-based applications on websites, to support and enhance access to and delivery of government information, and to serve citizens, the business sector, employees, and other government departments with transparency, efficiency, and fairness." [3]

And it is known as "the use of information technology in government to transform access to public service delivery. The use of technology, especially the internet, to improve the delivery of government services to citizens is at the core of e-government initiatives." [4]

E-government is also defined as "the main tool for transforming traditional government service delivery systems to become more efficient, effective, and transparent for citizens and businesses." [5]

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[1] Abdelrahman Khoukhi, *Challenges of E-Government in Algeria: A Case Study of the Digital Services Index*, Journal of Development Research and Studies, Vol. 10, No. 02, December 2023, p. 219.

[2] Yuanyuan Chen, Zhipeng Chen, *Can e-government online services offer enhanced governance support? A national-level analysis based on fsQCA and NCA*, Journal of Innovation & Knowledge, 9 (2024), p. 02.

[3] Mohamed Ayoub, *E-Government: Plans and Strategies*, Al-Warraq Publishing and Distribution, Amman, Jordan, 2020, p. 33.

[4] Geraldine Robbins, Emer Mulligan, and Fiona Keenan, *E-Government in the Irish Revenue: The Revenue On-Line Service (ROS): A Success Story*, Financial Accountability & Management, Vol. 31, No. 4, 2015, p. 363.

[5] Mohamed Hairul Othman, Rozilawati Razali, Mohammad Faidzul Nasrudin, *Key Factors for E-Government towards Sustainable Development Goals*, International Journal of Advanced Science and Technology, Vol. 29, No. 6s, 2020, p. 2564.

From the above, e-government can be defined as the use of information and communication technologies, including internet networks and communication media, by the government to provide services to citizens, clients, and entrepreneurs alike, enabling them to interact with each other and achieve their goals.

Origin of E-Government:

The digital revolution heralded a transformative era for government operations. As early as the 1990s, terms like "e-government" and "digital government" began to appear in the literature, highlighting the innovative collaboration between Western governments and IT companies. In 1993, the United States officially recognized the concept of "e-government" in its "National Performance Review." This document emphasized the potential of advanced information technology to address administrative inefficiencies and enhance service delivery in government. It proposed principles that promote seamless service, paperless processes, comprehensive solutions, customer-centric operations, privacy protection, digital signatures, and cybersecurity. After 2012, Western governments shifted their terminology to "digitalization" or "digital government." For example, in 2012, the United States published a report titled "Digital Government: Building a 21st Century Platform to Better Serve the American People," and the United Kingdom launched its "Government Digital Strategy" in the same year. [1]

The emergence of e-government was not an integrated concept as it is today but rather an extension over successive periods. After the emergence of technical developments, especially in spreadsheet programs that were relatively affordable, they were used in state budgets and decision-making processes. In the 1970s, state budgets and decision-making were prepared only on the central government's mainframe computer systems. [2]

At the beginning of the technological revolution in the 1980s, state budgets began to be prepared on small computers and were generalized to all local state facilities. [3] The first e-government experiment began in the mid-1980s in the Scandinavian countries (Denmark, Norway, Sweden, Finland). The first to apply this experiment was Lars from the University of Odense in Denmark, who called it "tele-service centers," connecting remote villages to the center and naming it the "Electronic Village." Another pioneer of the project was Michael Dell, owner of "Dell Inc.," which played a major role in finding electronic solutions. In 1989, the first e-government experiment began in the United Kingdom with the establishment of the "Manchester Village" project, benefiting from the Danish experience, on which several sub-projects were based. The "Manchester Host" was established as a first stage to promote and monitor social, economic, educational, and skills developments, and the project was effectively implemented in 1991. [4]

In the 1990s, in 1992, the Telecottages Conference was held in the United Kingdom to follow up on these projects, where the London Council decided on the "UniteI Project" for technical telecommunications, which emphasizes the collection, dissemination, and development of information by electronic means such as e-mail and remote access to information databases. [5]

Objectives of E-Government:

The objectives of e-government are numerous and varied, depending on the strategy of each government and its interaction with the public. There are six main objectives of e-government, as follows: [6]

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[1] Cunyi Yang, Mingrui Gu, Khaldoon Albitar, *Government in the Digital Age: Exploring the Impact of Digital Transformation on Governmental Efficiency*, Technological Forecasting & Social Change, 208 (2024), p. 01.
[2] *Corruption: A Vision-Goal*, 1st ed., University Thought Publishing, Alexandria, Egypt, 2021, p. 12.
[3] Khaled Hassan Lotfi, Ibid., p. 12.
[4] Mohamed Ayoub, Ibid., pp. 32–33.
[5] Mohamed Ayoub, Op. cit., p. 33.
[6] Ahmed Youssef Ashour Al-Hadidi, *The Impact of Modern Technology on the Legal Means of the Administration*, 1st ed., University Thought Publishing, Alexandria, Egypt, 2017, pp. 43–44.

- Improving the business climate that facilitates the use of information and communication technology, which helps achieve seamlessness, interaction, and communication between e-government and its three dimensions (government-citizen-business).
- Enhancing government administration performance and increasing the effectiveness of human resources, as well as reducing traditional paper-based administrative work and offices, which contributes to reducing public expenditure and moving towards a virtual electronic space that relies on electronic archives for government administration.
- Providing electronic services to citizens, which facilitates quick and simple access to services without hassle, helping citizens practice democracy and participate in government issues, and saving time and effort in completing transactions between administrative units and citizens efficiently.
- Achieving effective communication between the public and administrative units, reducing administrative bureaucracy and providing the public with the opportunity to obtain information from a single, reliable source that is easy for the public to deal with.
- Ensuring the accuracy of information for decision-makers and the public.
- Investing in the field of information and communication technology, which contributes to the development of the government's infrastructure and technology.

E-Government Measurement Indicators:

There are several indicators through which the adoption of e-government can be measured, including:

1- E-Government Development Index (EGDI)

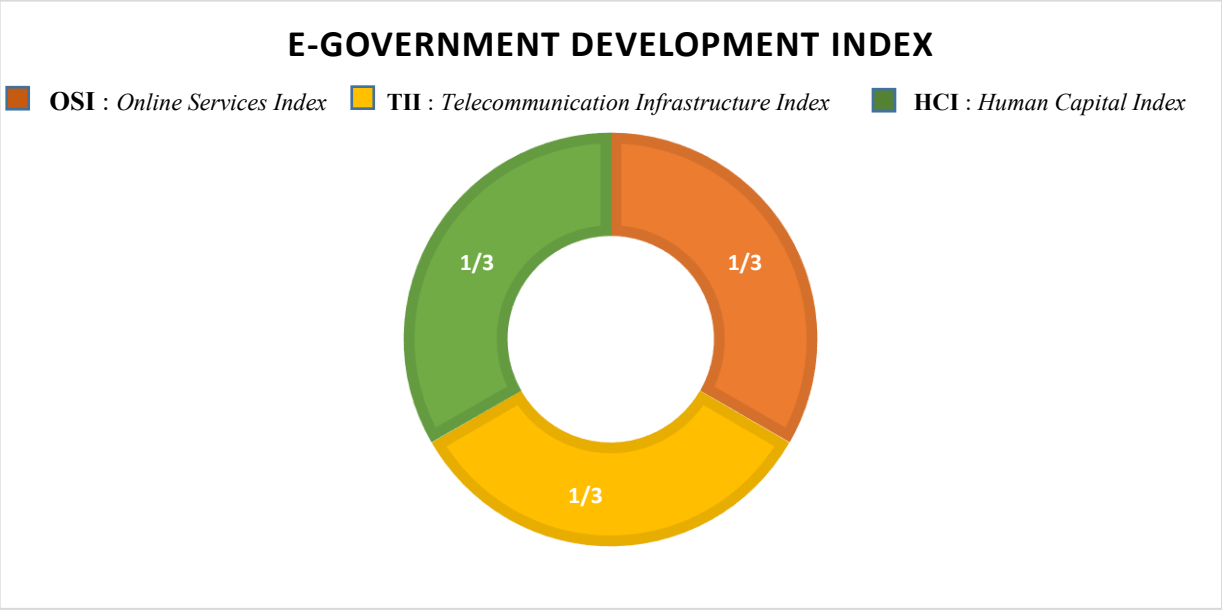
The E-Government Development Index (EGDI) is one of the most important indicators for measuring the electronic readiness of government administrations, adopted by the United Nations in 2003 as a quantitative index. [1] It is a "composite index based on the weighted average of three standard indices, whose branches are updated in each edition to ensure more accurate analysis". [2] This index measures the stages of e-government development (publication, interaction, transaction, integration). [3] This index consists of the following three indicators: [4]

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

EGDI is an acronym for the “E-Government Development Index,” which is an index used to measure and analyze the development and progress of governments in using digital technologies and providing electronic services to citizens, residents, and businesses. [5]
This index is prepared by the United Nations and includes a number of criteria related to information and communication

[1] Ben Zine Iman, Salhi Samira, *E-Government in Algeria and Its Comparison with Leading Global and Continental Models*, Al-Imtiaz Journal for Research in Economics and Management, Ammar Thliji University, Laghouat, Algeria, Vol. 4, No. 02, December 2020, p. 34.
[2] Mourad Arar, Samia Khalifi, *Indicators for Measuring E-Government: The Case of Algeria*, Journal of Intellectual Excellence for Social and Human Sciences, El Tarf University, Algeria, Vol. 3, No. 3, November 2021, p. 58.
[3] Naeem Ibrahim Al-Zahir, *The Road to E-Government: A Comprehensive Vision*, 1st ed., Modern Books World, Irbid, Jordan, 2014, p. 137.
[4] Nouwari Rachid, *Evaluative Study of the E-Government Project in Algeria: From the Perspective of Global Indicators and Standards*, Journal of Law and Human Sciences, Ziane Achour University, Djelfa, Algeria, Vol. 13, No. 01, April 2020, p. 197.
[5] https://publicadministration.un.org/egovkb/en-us/About/Overview/-E-Government-Development-Index

technologies, including the internet, cybersecurity, availability of electronic services, electronic interaction between the government and citizens, and e-governance.



Source: Prepared by the researchers based on the website: https://publicadministration.un.org/egovkb/en-us/About/Overview/-E-Government-Development-Index (Date accessed: 18/11/2024 at 21:28)

Robust metrics and key performance indicators are essential for tracking and evaluating digital government progress, as well as the agile application of cutting-edge technologies like artificial intelligence. With the ability to generate ranks and levels of digital development across 193 Member States and identify relevant trends, the EGDI has become a prominent global performance benchmark and a quantitative composite measure.

Table 1: EGDI and LOSI components, indicators and sub-indicators

Level	Index	Component	Sub-Indicators
National Level E-Government Development Index (EGDI)	**E-Government Development Index (EGDI)**	**Online Service Index (OSI)**	- Institutional Framework (IF) - Service Provision (SP) - Content Provision (CP) - Technology (TEC) - E-Participation (EPI): (a) E-Information (b) E-Consultation (c) E-Decision Making
		Telecommunication Infrastructure Index (TII)	- Internet Users - Mobile Phone Subscriptions - Wireless Broadband Subscriptions - Broadband Affordability*
		Human Capital Index (HCI)	- Adult Literacy Rate - Gross Enrollment Ratio - Expected Years of Schooling - Mean Years of Schooling - E-Government Literacy*
Local	**Local Online Service Index (LOSI)**		- Institutional Framework - Service Provision (SP) - Content Provision (CP) - Technology (TEC) - Participation and Engagement (EPI) - E-Government Literacy (EGL)*

Source: Adapted from the *E-Government Survey 2024: Accelerating Digital Transformation for Sustainable Development*, with the addendum on Artificial Intelligence.

The Survey presents national, regional and global trends in e-government development based on the assessment of the EGDI and its component indicators: OSI, TII and HCI. Each of these three component indicators is a composite measure that can be extracted and analysed independently.

Mathematically, the EGDI is a weighted average of three normalized scores on three important dimensions of e-government, which are: (1) the scope and quality of online services (Online Service Index - OSI), (2) the state of development of the telecommunications infrastructure (Telecommunication Infrastructure Index - TII), and (3) the inherent human capital (Human Capital Index - HCI). Each of these indices is a composite measure that can be extracted and analyzed independently.The results are tabulated and presented as a set of standardized index values on a scale of 0 to 1, where 1 represents the highest level of e-service delivery and 0 represents the lowest.

EGDI = 1/3 (OSI_normalized + TII_normalized + HCI_normalized)

1-1 Online Service Index (OSI)

To obtain the OSI values, researchers evaluated the country's national website, including the national central portal, the e-services portal, and the e-participation portal, in addition to the websites of relevant ministries such as Education, Labour, Social Services, Health, Finance, and Environment, as applicable. [1]

1-2 Telecommunication Infrastructure Index (TII)

The Telecommunication Infrastructure Index is a composite of the arithmetic mean of five indicators:

- Number of fixed-telephone lines per 100 inhabitants: This refers to telephone lines connecting the customer's terminal equipment (e.g., telephone, fax) to the public switched telephone network, which has a dedicated port on the telephone exchange.
- Number of mobile cellular subscribers per 100 inhabitants: This is the number of subscriptions to the mobile service for the last three months.
- Number of wireless broadband subscriptions per 100 inhabitants: This means the sum of fixed-wired broadband, fixed-terrestrial wireless broadband, and active mobile-broadband subscriptions to the public Internet.
- Number of fixed broadband subscriptions per 100 inhabitants: This refers to fixed subscriptions to high-speed access to the public Internet.
  It should be noted that information on these indicators is obtained from the "International Telecommunication Union" (ITU), which is the primary source of data in each case. [2]

1-3 Human Capital Index (HCI)

The Human Capital Index consists of four components: the adult literacy rate, the gross enrolment ratio in the three educational levels (primary, secondary, and post-secondary), expected years of schooling, and mean years of schooling. [3] The four components of the Human Capital Index are defined as follows.

[1] Qadah Dalila, Kanar Bahia, *Development of the E-Government Index in Algeria Amid COVID-19 According to the UN E-Government Survey 2020*, Journal of the Institution, Vol. 12, No. 01, 2023, p. 46.
[2] Ibid., pp. 46–47.
[3] Ibid., p. 47.

2- E-Participation Index (EPI)

The E-Participation Index (EPI) is defined as "the process of involving citizens through ICT in policy and decision-making to make public administration participatory, inclusive, collaborative, and purposeful for essential and effective goals, without this meaning the abandonment of traditional forms of participation. It is not only linked to voting in elections but extends to formulating public policies and determining ways to deliver public services." [1] The E-Participation Index consists of the following elements: [2]

- **E-information:** The citizen's ability to access and obtain necessary information without difficulty or effort.
- **E-consultation:** Requesting the participation and contribution of citizens in providing their suggestions on public policy and public services.
- **E-decision-making:** Assisting decision-makers by involving citizens in the decision-making process regarding public policies and public services that citizens need.

3- Overall Results of the E-Government Development Index

It is noteworthy that the Telecommunication Infrastructure Index (TII) is the component indicator that contributes most to the average EGDI values at both global and regional levels. This is a result of increased spending on digital infrastructure during the recovery phase following the COVID-19 pandemic. Globally, the average TII value increased by 19.9% in the last two years (Table 2). Oceania saw the largest geographical increase at 29.4%, followed by Africa (27.2%), Asia (25.5%), the Americas (19.6%), and Europe (9.9%). These increases illustrate the importance of building a strong telecommunications infrastructure globally as a cornerstone of digital growth. The results are tabulated and presented as a set of standardized index values on a scale of 0 to 1, where 1 represents the highest level of e-service delivery and 0 represents the lowest.

Table 2: Global and Regional Average Values of the EGDI and Its Component Indicators, 2022 and 2024

Avergge values for :		EGDI		Online Service Index (OSI)		Telecommunication Infrastructure Index (TII)		Human Capital Index (HCI)	
193 UN Member States	2024	0.6382	+4.59%	0.5754	+3.6%	0.6896	+19.9%	0.6494	–7.2%
	2022	0.6102	—	0.5554	—	0.5751	—	0.7001	—
Africa	2024	0.4247	+4.8%	0.3862	+5.2%	0.4534	+27.8%	0.4346	–12.1%
	2022	0.4054	—	0.3670	—	0.3548	—	0.4945	—
Americas	2024	0.6701	+4.1%	0.5797	+3.8%	0.7345	+19.6%	0.6962	–8.3%
	2022	0.6438	—	0.5585	—	0.6139	—	0.7590	—
Asia	2024	0.6990	+7.7%	0.6401	+4.3%	0.7740	+25.5%	0.6828	–4.8%
	2022	0.6493	—	0.6137	—	0.6166	—	0.7175	—
Europe	2024	0.8493	+2.3%	0.7836	+1.8%	0.9227	+9.9%	0.8418	–4.6%
	2022	0.8305	—	0.7699	—	0.8392	—	0.8825	—
Oceania	2024	0.5289	+4.1%	0.4378	+4.2%	0.4885	+29.4%	0.6603	–9.5%
	2022	0.5081	—	0.4201	—	0.3775	—	0.7298	—

[1] Mansouri Houari, Tounesadi Hanan, *Assessing the Development of E-Government in Algeria*, Journal of Intellectual Excellence for Social and Human Sciences, El Tarf University, Vol. 3, No. 3, November 2021, p. 164.

[2] Fatiha Hajaj, Lamine Allouti, *E-Government in Algeria: A Review of the 2018 Indicators*, Annals of the University of Algiers 1, University of Youssef Ben Khadda Algiers, Vol. 35, No. 02, June 2021, p. 996.

Source: Adapted from the *E-Government Survey 2024: Accelerating Digital Transformation for Sustainable Development*, with the addendum on Artificial Intelligence.

4- Leading Countries in the E-Government Development Index (EGDI)

Table 3 shows the composite and component values of the EGDI for the eighteen leading countries in e-government development globally. All of these countries belong to the Very High (VH) classification category within the Very High EGDI group.

Classification categories:

1. Very High (VH, V3, V2, V1)
2. High (HV, H3, H2, H1)
3. Middle (MH, M3, M2, M1)
4. Low (LM, L3, L2, L1)

Table 3: Leading Countries in E-Government Development, 2024 (Index Values)

Country	Classification Category	Region	Online Service Index (OSI)	Human Capital Index (HCI)	Telecommunication Infrastructure Index (TII)	EGDI 2024	EGDI 2022
Denmark	VH	Europe	0.9992	0.9584	0.9966	0.9847	0.9717
Estonia	VH	Europe	0.9954	0.9497	0.9731	0.9727	0.9393
Singapore	VH	Asia	0.9831	0.9362	0.9881	0.9691	0.9133
Republic of Korea	VH	Asia	1.0000	0.9120	0.9917	0.9679	0.9529
Iceland	VH	Europe	0.9076	0.9953	0.9983	0.9671	0.9410
Saudi Arabia	VH	Asia	0.9899	0.9067	0.9841	0.9602	0.8539
U.K.	VH	Europe	0.9535	0.9450	0.9747	0.9577	0.9138
Australia	VH	Oceania	0.9222	1.0000	0.9509	0.9577	0.9405
Finland	VH	Europe	0.9097	0.9836	0.9791	0.9575	0.9533
Netherlands (Kingdom of the)	VH	Europe	0.9212	0.9688	0.9715	0.9538	0.9384
United Arab Emirates	VH	Asia	0.9163	0.9436	1.0000	0.9533	0.9010
Germany	VH	Europe	0.9238	0.9672	0.9236	0.9382	0.8770
Japan	VH	Asia	0.9427	0.9117	0.9509	0.9351	0.9002
Sweden	VH	Europe	0.8836	0.9275	0.9868	0.9326	0.9410
Norway	VH	Europe	0.9117	0.9175	0.9654	0.9315	0.8879
New Zealand	VH	Oceania	0.9453	0.9615	0.8728	0.9265	0.9432
Spain	VH	Europe	0.9054	0.8961	0.9603	0.9206	0.8842
Bahrain	VH	Asia	0.9030	0.8680	0.9877	0.9196	0.7707

Sources: United Nations E-Government Surveys, 2022 and 2024.

Europe accounts for 56% of the countries in the highest classification category (Denmark, Estonia, Finland, Germany, Iceland, Netherlands, Norway, Spain, Sweden, and the United Kingdom), and Asia accounts for 33% (Bahrain, Japan, Republic of Korea, Singapore, United Arab Emirates, and Saudi Arabia). For the first time, Singapore is the top performer

in the EGDI in Asia, followed by the Republic of Korea and Saudi Arabia. In Oceania, Australia and New Zealand lead in e-government development, representing 11% of the countries in the highest classification category (VH).

5- Ranking of African Countries in the E-Government Development Index (EGDI)

Africa's leaders in e-government development are South Africa and Mauritius. These countries are now included in the Very High EGDI group for the first time, demonstrating the improvements made in digital government infrastructure, services, and expertise. The 17 countries in the High EGDI group that have made significant progress in strengthening their digital government capabilities are closely behind. The key survey results for these top performers in 2024 are shown in Table 4.

Table 4: Ranking of African Countries in the E-Government Development Index (EGDI)

Country	Classification Category	EGDI Rank	Subregion	Online Service Index (OSI)	Human Capital Index (HCI)	Telecom Infrastructure Index (TII)	EGDI (2024)	EGDI (2022)
South Africa*	V2	40	Southern Africa	0.8872	0.8026	0.8951	0.8616	0.7357
Mauritius*	V1	76	Eastern Africa	0.5903	0.7456	0.9159	0.7506	0.7201
Tunisia	HV	87	Northern Africa	0.5951	0.6497	0.8357	0.6935	0.6530
Morocco	HV	90	Northern Africa	0.5618	0.6078	0.8827	0.6841	0.5915
Seychelles	H3	92	Eastern Africa	0.4638	0.6769	0.8913	0.6773	0.6793
Egypt	H3	95	Northern Africa	0.7002	0.6150	0.6946	0.6699	0.5895
Ghana	H2	108	Western Africa	0.6084	0.5586	0.7281	0.6317	0.5824
Kenya	H2	109	Eastern Africa	0.7770	0.5271	0.5901	0.6314	0.5589
Cabo Verde	H2	111	Western Africa	0.6892	0.5694	0.6128	0.6238	0.5660
Botswana	H2	112	Southern Africa	0.3985	0.5719	0.8649	0.6118	0.5495
Eswatini	H2	113	Southern Africa	0.4557	0.5836	0.7851	0.6081	0.4498
Namibia	H2	114	Southern Africa	0.4996	0.5738	0.7288	0.6007	0.5322
Algeria	H2	116	Northern Africa	0.3320	0.6418	0.8129	0.5956	0.5611
Rwanda	H2	118	Eastern Africa	0.8207	0.5467	0.3724	0.5799	0.5489
Gabon	H2	121	Middle Africa	0.3187	0.5772	0.8263	0.5741	0.5521
Côte d'Ivoire	H1	124	Western Africa	0.5219	0.4848	0.6693	0.5587	0.5467

Libya	H1	125	Northern Africa	0.0808	0.5951	0.9639	0.5466	0.3375
Zambia	H1	130	Eastern Africa	0.4958	0.6225	0.5088	0.5424	0.5022
Senegal	H1	135	Western Africa	0.4779	0.3380	0.7328	0.5162	0.4479

Sources: United Nations E-Government Surveys 2022 and 2024.

6- Ranking of Countries in the Americas in the E-Government Development Index (EGDI)
Digital government has advanced significantly throughout the Americas, including the Caribbean, Latin America, and North America. Significant projects have improved service delivery, enhanced infrastructure, increased transparency, developed digital skills, and encouraged greater technological citizen participation.

Table 5: Ranking of American Countries in the E-Government Development Index (EGDI)

Country	Classification Category	EGDI Rank	Subregion	OSI Index	HCI Index	TII Index	EGDI Index (2024)	EGDI Index (2022)
United States of America	V3	19	Northern America	0.9136	0.8842	0.9605	0.9194	0.9151
Uruguay	V3	25	South America	0.8832	0.8749	0.9437	0.9006	0.8388
Chile	V3	31	South America	0.8612	0.8413	0.9455	0.8827	0.8377
Argentina	V2	42	South America	0.7965	0.9330	0.8425	0.8573	0.8198
Canada	V2	47	Northern America	0.8552	0.8725	0.8078	0.8452	0.8511
Brazil	V2	50	South America	0.9063	0.8077	0.8068	0.8403	0.7910
Peru	V1	58	South America	0.8377	0.7469	0.8364	0.8070	0.7524
Costa Rica	V1	61	Central America	0.7217	0.7877	0.8933	0.8009	0.7659
Mexico*	V1	65	Central America	0.7637	0.7603	0.8310	0.7850	0.7473
Ecuador*	V1	67	South America	0.8851	0.7715	0.6833	0.7800	0.6889
Colombia*	V1	68	South America	0.7521	0.7793	0.8065	0.7793	0.7261

Sources: United Nations E-Government Surveys, 2022 and 2024.

7- Ranking of Asian Countries in the E-Government Development Index (EGDI)

Asian countries have shown remarkable performance in e-government development, as reflected in the 2024 EGDI results. Among the five global regions evaluated, Asia achieved the fastest progress in digital development, driven by established and emerging digital leaders.
The rapid progress in these countries has had a ripple effect on their neighbors, driving regional growth in digital

transformation. Governments across Asia recognize the importance of digital government as a cornerstone of economic and social development. Similar to the leaders, these governments are implementing their own digital initiatives, which are increasingly tailored to the needs of their populations and local contexts. This collective push to enhance digital capabilities not only improves government services but also fosters a positive competitive environment that encourages continuous improvement and innovation. The success of digital transformation in Asia has served as a compelling model for other regions aiming to leverage technology to enhance governance and drive development.

Table 6: Ranking of Asian Countries in the E-Government Development Index (EGDI)

Country	Classification Category	EGDI Rank	Subregion	OSI Index	HCI Index	TII Index	EGDI (2024)	EGDI (2022)
Singapore	VH	3	South-eastern Asia	0.9831	0.9362	0.9881	0.9691	0.9133
Republic of Korea	VH	4	Eastern Asia	1.0000	0.9120	0.9917	0.9679	0.9529
Saudi Arabia	VH	6	Western Asia	0.9899	0.9067	0.9841	0.9602	0.8539
United Arab Emirates	VH	11	Western Asia	0.9163	0.9436	1.0000	0.9533	0.9010
Japan	VH	13	Eastern Asia	0.9427	0.9117	0.9509	0.9351	0.9002
Bahrain	VH	18	Western Asia	0.9030	0.8680	0.9877	0.9196	0.7707
Kazakhstan	V3	24	Central Asia	0.9390	0.8403	0.9235	0.9009	0.8628
Türkiye	V3	27	Western Asia	0.9225	0.9192	0.8322	0.8913	0.7983
China	V3	35	Eastern Asia	0.9258	0.7902	0.8995	0.8718	0.8119
Cyprus	V2	38	Western Asia	0.8217	0.8698	0.8941	0.8619	0.8660
Oman	V2	41	Western Asia	0.8077	0.7977	0.9674	0.8576	0.7834
Mongolia*	V2	46	Eastern Asia	0.8222	0.7775	0.9374	0.8457	0.7209
Armenia*	V2	48	Western Asia	0.7922	0.8561	0.8782	0.8422	0.7364
Thailand	V2	52	South-eastern Asia	0.7611	0.8032	0.9410	0.8351	0.7660
Qatar*	V2	53	Western Asia	0.7655	0.7114	0.9963	0.8244	0.7149
Malaysia	V1	57	South-eastern Asia	0.7280	0.7192	0.9862	0.8111	0.7740
Uzbekistan*	V1	63	Central Asia	0.7648	0.7580	0.8769	0.7999	0.7265
Indonesia*	V1	64	South-eastern Asia	0.8035	0.7293	0.8645	0.7991	0.7160
Kuwait*	V1	66	Western Asia	0.6365	0.7083	0.9988	0.7812	0.7484

Georgia	V1	69	Western Asia	0.5652	0.8654	0.9071	0.7792	0.7501
Viet Nam*	V1	71	South-eastern Asia	0.7081	0.7267	0.8780	0.7709	0.6787
Philippines*	V1	73	South-eastern Asia	0.8054	0.7256	0.7554	0.7621	0.6523
Azerbaijan*	V1	74	Western Asia	0.7386	0.7233	0.8203	0.7607	0.6937
Brunei Darussalam*	V1	75	South-eastern Asia	0.5802	0.6991	0.9868	0.7554	0.7270

Sources: United Nations E-Government Surveys, 2022 and 2024.

8- Ranking of European Countries in the E-Government Development Index (EGDI)

With most countries in the region falling into the Very High EGDI group, Europe has emerged as a global leader in digital government transformation (see Table 7). This achievement demonstrates how Europe is leading the world in e-government standards.

The continued success of Europe in its digital government transformation is a testament to its dedication to using technology to improve public service delivery. By showcasing the results of the sub-indicators, the region sets an example for other regions of the world.

Table 7: Ranking of European Countries in the E-Government Development Index (EGDI)

Country	Classification Category	EGDI Rank	Subregion	EU Membership	OSI Index	HCI Index	TII Index	EGDI (2024)	EGDI (2022)
Denmark	VH	1	Northern Europe	Yes	0.9992	0.9584	0.9966	0.9847	0.9717
Estonia	VH	2	Northern Europe	Yes	0.9954	0.9497	0.9731	0.9727	0.9393
Iceland	VH	5	Northern Europe	No	0.9076	0.9953	0.9983	0.9671	0.9410
U.K.	VH	7	Northern Europe	No	0.9535	0.9450	0.9747	0.9577	0.9138
Finland	VH	9	Northern Europe	Yes	0.9097	0.9836	0.9791	0.9575	0.9533
Netherlands	VH	10	Western Europe	Yes	0.9212	0.9688	0.9715	0.9538	0.9384
Germany	VH	12	Western Europe	Yes	0.9238	0.9672	0.9236	0.9382	0.8770
Sweden	VH	14	Northern Europe	Yes	0.8836	0.9275	0.9868	0.9326	0.9410
Norway	VH	15	Northern Europe	No	0.9117	0.9175	0.9654	0.9315	0.8879
Spain	VH	17	Southern Europe	Yes	0.9054	0.8961	0.9603	0.9206	0.8842
Ireland	V3	20	Northern Europe	Yes	0.8768	0.9046	0.9599	0.9138	0.8567
Lithuania	V3	21	Northern Europe	Yes	0.8839	0.8861	0.9631	0.9110	0.8745

Austria	V3	22	Western Europe	Yes	0.8383	0.9003	0.9810	0.9065	0.8801
Switzerland	V3	26	Western Europe	No	0.8408	0.9026	0.9576	0.9003	0.8752
Malta	V3	28	Southern Europe	Yes	0.8749	0.8162	0.9747	0.8886	0.8943
Latvia	V3	29	Northern Europe	Yes	0.8092	0.8805	0.9660	0.8852	0.8599
Ukraine	V3	30	Eastern Europe	No	0.9854	0.8240	0.8428	0.8841	0.8029
Croatia	V3	32	Southern Europe	Yes	0.8735	0.8538	0.9180	0.8818	0.8106
Slovenia	V3	33	Southern Europe	Yes	0.8640	0.8530	0.9107	0.8759	0.8781
France	V3	34	Western Europe	Yes	0.8440	0.8565	0.9228	0.8744	0.8832
Greece	V3	36	Southern Europe	Yes	0.8145	0.9219	0.8657	0.8674	0.8455
Poland	V3	37	Eastern Europe	Yes	0.8037	0.8304	0.9603	0.8648	0.8437
Serbia	V2	39	Southern Europe	No	0.8540	0.8094	0.9221	0.8618	0.8237
Russian Federation	V2	43	Eastern Europe	No	0.7766	0.8319	0.9512	0.8532	0.8162
Liechtenstein	V2	44	Western Europe	No	0.7416	0.8263	0.9906	0.8528	0.8685
Luxembourg	V2	45	Western Europe	Yes	0.7555	0.7955	0.9888	0.8466	0.8675
Portugal	V2	49	Southern Europe	Yes	0.7878	0.8389	0.8979	0.8415	0.8273
Italy	V2	51	Southern Europe	Yes	0.7624	0.8426	0.9017	0.8356	0.8375
Czechia	V2	54	Eastern Europe	Yes	0.7006	0.8508	0.9204	0.8239	0.8088
Bulgaria	V2	55	Eastern Europe	Yes	0.7727	0.7538	0.9171	0.8145	0.7766
Belgium	V2	56	Western Europe	Yes	0.7224	0.8442	0.8698	0.8121	0.8269
Hungary	V1	59	Eastern Europe	Yes	0.7144	0.8703	0.8282	0.8043	0.7827
Slovakia	V1	60	Eastern Europe	Yes	0.7097	0.7982	0.8985	0.8021	0.8008
Albania*	V1	62	Southern Europe	No	0.8144	0.8106	0.7750	0.8000	0.7413
Republic of Moldova*	V1	70	Eastern Europe	No	0.7264	0.7776	0.8118	0.7719	0.7251
Romania	V1	72	Eastern Europe	Yes	0.6548	0.7439	0.8922	0.7636	0.7619

Sources: United Nations E-Government Surveys (2022 and 2024)

9- Ranking of Oceania in the E-Government Development Index (EGDI)

Australia and New Zealand are leading the way in digital development in Oceania, ranked among the world's top countries and in the Very High EGDI group and VH classification category. Robust infrastructure, advanced digital capabilities, and innovative digital government services are responsible for this achievement.

Despite a number of obstacles, eight of the fourteen countries in the region are in the Middle EGDI category, indicating steady progress in digital integration.

Excluding Australia and New Zealand, the average EGDI for the region's countries is 0.4600, which is significantly lower than the global average of 0.6344 and less than half the average of the region's leading countries. Three of these twelve countries—Kiribati, Solomon Islands, and Tuvalu—are also Least Developed Countries, and all twelve are Small Island Developing States.

Table 8: Ranking of Oceania Countries in the E-Government Development Index (EGDI)

Country	Classification Category	EGDI Rank	Subregion	OSI Index	HCI Index	TII Index	EGDI (2024)	EGDI (2022)
Australia	VH	8	Australia and New Zealand	0.9222	1.0000	0.9509	0.9577	0.9405
New Zealand	VH	16	Australia and New Zealand	0.9453	0.9615	0.8728	0.9265	0.9432
Fiji	H3	93	Melanesia	0.5343	0.7413	0.7507	0.6754	0.6235
Vanuatu*	H1	129	Melanesia	0.4769	0.5347	0.6165	0.5427	0.4988
Tonga	H1	134	Polynesia	0.3220	0.7488	0.4784	0.5164	0.5155
Palau	H1	137	Micronesia	0.2787	0.7520	0.4910	0.5072	0.5018
Samoa	MH	140	Polynesia	0.3638	0.6453	0.4606	0.4899	0.4207
Marshall Islands	MH	143	Micronesia	0.3586	0.7836	0.3047	0.4823	0.3714
Kiribati	MH	147	Micronesia	0.3904	0.6269	0.3544	0.4572	0.4334
Nauru	M3	151	Micronesia	0.2439	0.5061	0.5863	0.4454	0.4548
Tuvalu	M3	158	Polynesia	0.1944	0.5463	0.4720	0.4042	0.3788
Solomon Islands	M2	164	Melanesia	0.4970	0.4262	0.1811	0.3681	0.3530
Micronesia (Federated States of)	M2	167	Micronesia	0.2621	0.5735	0.1350	0.3235	0.3550
Papua New Guinea	M1	171	Melanesia	0.3392	0.3984	0.1851	0.3076	0.3230

Sources: United Nations E-Government Surveys, 2022 and 2024.

10- Conclusion:

In conclusion, it can be said that developed countries dominate the top positions in the E-Government Development Index. This is a natural outcome, as most of these countries have pioneered this transition and possess most of the technologies and patents related to technology. As for wealthy countries, they use their funds to acquire the technology they want and implement it, thus we find them keeping pace with and trying to emulate the developed nations. Developing and emerging countries, on the other hand, try to keep up with the leading countries with their limited resources. This is what we can infer from the overall results: Europe is in the lead, followed by Asia, and to a slightly lesser extent the Americas, then Oceania, and finally Africa, which suffers from known historical impacts.

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