

E-Government Performance Based on Systematic Review

منهجية التوجه نحو حوكمة الكترونية فعالة في المؤسسة العمومية

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Abstract:

New public administrations and governance have recently been influenced by Information and Communications Technologies (ICT), leading to simplify government procedures, and improve interactions with citizens.

E-government (short for electronic government) guarantees the linking of citizens to the various agencies of government and get all government services in an automated and automatic way. However, there are many challenges that affect its implementation.

In this paper, we mention existing research works that deal with E-Government in developing countries. We also provide an overview presenting the main challenges faced by administrations and governance. Finally, we discuss opportunities for developing a successful E-government, and present the different factors for reaching the success for E-government projects.

Keywords: E-government; ICT; EGDI; developing countries.

ملخص:

إن الدور الكبير الذي باتت تلعبه تكنولوجيا الإعلام والاتصال في حياة الأفراد والمجتمعات والاقتصاديات، جعلها تدخل ضمن البنى التحتية للعديد من المؤسسات، التي تريد مواكبة التطورات الحديثة. لا سيما منها المؤسسات العمومية. حيث نتج عن هذا التطور التوجه نحو الحوكمة الإلكترونية، بهدف الاهتمام بالإدارة وبمسؤوليات المؤسسات العمومية، وعلاقتها مع مختلف الأطراف ذات العلاقة، للتمكن من ربط المواطن بالجهات الحكومية المختلفة، للحصول على جميع الخدمات الحكومية بطريقة آلية وتلقائية. نظرا لسعيها لتبسيط الإجراءات الحكومية وتحسين التفاعل بين المواطنين، رغم وجود بعض التحديات التي تؤثر على نجاح تنفيذها على أرض الواقع. ومن خلال هذه الورقة العلمية سنحاول تسليط الضوء على التوجهات نحو الحوكمة الإلكترونية في البلدان النامية، كما سنقدم لمحة حول أبرز التحديات التي تواجه المؤسسات العمومية، بالإضافة إلى مناقشة فرص التوجه نحو مشاريع حوكمة الكترونية ناجحة. كلمات مفتاحية: الحوكمة الإلكترونية؛ تكنولوجيا المعلومات والاتصالات؛ مؤشر تطوير الحكومة الإلكترونية؛ الدول النامية.

Introduction:

E-government aims to develop digital agencies in order to provide public services to their citizens electronically, quickly and accurately, with low costs and less effort over Internet¹.

Developing country defined as a nation with low Human Development Index (HDI) compared to other countries. It presents a low living standard with undeveloped industrial base².

According to authors³ the implementation of e-government can improve government's services, especially for developing countries. The main advantages of e-government are:

- simplicity and ease ;
- Accessibility and inclusivity ;
- Confidentiality and privacy.

On the one hand, the application of e-Government is not as easy as it seems, there is a set of weaknesses and failures represented by difficulties, and obstacles that must be overcome. But on the other hand, there is a set of strengths represented by opportunities and advantages that must be boosted and built upon.

This paper is organized as follows. Section 1 presents a literature review on e-government. Section 2 deals with advantages of e-government in developing countries. Section 3 describes challenges of e-government in developing countries. Section 4 defines, in a general way e-government development index giving as example the Algerian case. Section 5 forms the concluding part of this paper.

1- Literature Review:

In most literature, e-government is defined as the transformation of administrations into smart governments⁴. Recently, Information and Communications Technologies (ICT's) have influenced new public administrations and governance in developing countries.

1.1- Categories Of e-Government:

E-government involves the use of ICTs for 8 types of activity^{5 6}

- Government-to-Citizen (G2C)
- Citizen-to-Government (C2G)
- Government-to-Business (G2B)

¹ Rowley, J. (2011). e-Government stakeholders—Who are they and what do they want?. International journal of Information management, 31(1), 53-62.

² Odat, A. M. (2012, December). E-government in developing countries: Framework of challenges and opportunities. In 2012 International Conference for Internet Technology and Secured Transactions (pp. 578-582). IEEE.

³ Meiyanti, R., Utomo, B., Sensuse, D. I., & Wahyuni, R. (2018, August). E-Government Challenges in Developing Countries: A Literature Review. In 2018 6th International Conference on Cyber and IT Service Management (CITSM) (pp. 1-6). IEEE.

⁴ Apleni, A., & Smuts, H. (2020). An e-Government implementation framework: a developing country case study. Responsible Design, Implementation and Use of Information and Communication Technology, 12067, 15.

⁵ Hogeveen, B. (Ed.). (2020). ICT for Development in the Pacific Islands: An Assessment of E-government Capabilities in Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu. Australian Strategic Policy Institute.

⁶ Guo, Y. (2011, August). The potential opportunities and challenges of e-government. In 2011 International Conference on Management and Service Science (pp. 1-4). IEEE.

- Business-to-Government (B2G)
- Government-to-Employee (G2E)
- Government-to-Government (G2G)
- Government-to-Nonprofit (G2N)
- Nonprofit-to-Government (N2G)

Table 1 shows the transformation of traditional government into electronic government.

DIFFERENCES BETWEEN TRADITIONAL AND ELECTRONIC GOVERNMENT

Traditional government	Electronic government
Bureaucratic controls	Strengthening individuals and society services
Isolated administrative functions and data collection	Integrated resources services
Paper work and filing	Electronic service delivery
Time consuming processes	Quick series business processes
Distant customer contact	Immediate customer service

Reference: e-Government Challenges in Developing Countries: A Literature Review³

According to author⁷, e-government is influenced by a several factors:

- political conditions
- cultural dimensions,
- technological advances

All of these factors are designed to support and drive the transformation of government departments into electronic governments. However, challenges in e-government implementation in developing countries can cause failure of the whole project. The Bar chart below illustrates the failure rate of e-government implementation in developing countries^{8 7} showing that failure rate is high in developing countries because of several challenges faced by the government.

THE FAILURE RATE OF E-GOVERNMENT IMPLEMENTATION IN DEVELOPING COUNTRIES



⁷ Ziemba, E., Papaj, T., Żelazny, R., & Jadamus-Hacura, M. (2016). Factors influencing the success of e-government. *Journal of Computer Information Systems*, 56(2), 156-167.

⁸ Furuho, B., & Wahid, F. (2008, January). E-government Challenges and the Role of Political Leadership in Indonesia: the Case of Sragen. In *Proceedings of the 41st Annual Hawaii International Conference on System Sciences (HICSS 2008)* (pp. 411-411). IEEE.

References: E-Government Challenges in Developing Countries: A Literature Review⁷
E-government Challenges and the Role of Political Leadership in Indonesia: the Case of Sragen⁹

In developing countries, several models have been developed to make sure the transformation of e-government succeed. However, because of the differences in technological and social condition between the developed countries and developing countries, unfortunately, experiences of developed countries cannot be directly applicable in developing countries⁹.

1.2- Successful Implementation of e-government:

In order to get a successful implementation of e-government, several criteria should be taken into consideration¹⁰. E-government must be:

- Comprehensive
- Integrated
- Ubiquitous
- Transparent
- Easy to use
- Accessible
- Secure
- Private

2- Benefits of E-government in developing countries:

In developed countries, where the living standards are high, citizens are more productive, literate and highly appreciative of self-advancing than people in developing countries¹¹. Therefore, a successful adoption and management of e-Government in developing countries, as is in developed countries, can create a channel for citizens to participate in the process of policy making and being part of its implementation. Furthermore, it will simplify and improve the democratic, business, and governmental aspects of governance¹². If implemented properly, e-government can play an important role in developing countries:

A. Political benefits:

E-government plays a very important role in politics. It provides a direct connection between citizens and all the government's departments. It helps citizens connect to the government in order to get government services in a short and an easy way through internet (Government-to-Citizens). Thus, it will promote e-democracy and transparency¹²

B. Economic benefits:

⁹ Ahmed, A. M., Moreton, R., Mehdi, Q. H., & Elmaghraby, A. (2013, September). E-government services challenges and opportunities for developing countries: The case of Libya. In 2013 Second International Conference on Informatics & Applications (ICIA) (pp. 133-137). IEEE.

¹⁰ Inkinen, T., & Merisalo, M. (2014). Managing e-government: Stakeholder view from the administration service developers. In Measuring E-government Efficiency (pp. 171-189). Springer, New York, NY.

¹¹ Kamali, A. M. A. (2018). *An Investigation of e-Government Adoption in Bahrain and Evaluate the key Determining Factors for Strategic Advantage* (Doctoral dissertation, London South Bank University).

¹² Nations, U. (2016). The Sustainable Development Goals 2016. eSocialSciences.

E-Government plays a very important role in economic development, it is called G2B (Government to Business). According to United Nations¹², E-Government encourages e-transactions initiatives such as e-procurement, e-banking, e-commerce. Consequently, businesses will succeed and the small ones shall grow.

C. Administrative advantages:

The main advantage of such an action is to simplify and facilitate easy delivery of services without bureaucracy, and it will help reduce corruption within the society¹⁴.

E-government provides interdepartmental cooperation and communication online. The main advantage of this transformation (from traditional to electronic) is to increase efficiency and effectiveness. It aims to simplify and facilitate easy delivery of all services, and internal exchange of information. As a result, it will help reduce bureaucracy and corruption¹³.

D. Benefits for Employees:

The use of the internet in developing countries is increasing day by day, creating the possibilities of having the public service through e-Government for all citizens^{12 14}. G2E (short of Government to Employee) aims to make e-career applications and paperless system in E-office. According to Kamar. N¹⁴, employees can benefit from e-Government services to boost their knowledge through sharing resources with others regardless of differences in experience.

3- Challenges of e-government in developing countries:

In developing countries, the failure rate of e-government's implementation is higher, because of many challenges faced by the government.

Unfortunately, the strategies and experiences from developed countries may not be directly applicable to developing countries because of the differences in technological and social condition. However, several models have been developed to make sure the project of e-government succeed.

Many scholars illustrate risks identified with implementing e-government systems as below^{15 16}:

- Information can be accessible by any other agency, so it will reduce the full control over information and its security/privacy. Furthermore, e-government services can be misused or misinterpreted. Thus, it will increase criticisms by other agencies and citizens.
- E-government may increase the unemployment by reducing manpower.
- It has an unstable power supply and dependence on foreign technical.

With more than 1600000 employees in public services, as a developing country, Algerian government departments are suffering from poor administration management^{17 18}. In the past

¹³ Sheela, T., & Chandran, D. (2014). E-governance for efficient management to reduce corruption: An ICT driven paradigm. In Proceedings of the International Conference on e-Learning, e-Business, Enterprise Information Systems, and e-Government (EEE) (p. 1). The Steering Committee of The World Congress in Computer Science, Computer Engineering and Applied Computing (WorldComp).

¹⁴ Rubaii-Barrett, N., & Wise, L. R. (2008). Disability access and e-government: An empirical analysis of state practices. *Journal of Disability Policy Studies*, 19(1), 52-64.

¹⁵ Ashaye, O. R., & Irani, Z. (2014). E-government implementation benefits, risks, and barriers in developing countries: Evidence from Nigeria. *US-China Education Review*, 4(1), 13-25.

¹⁶ Ashaye, O. R., & Irani, Z. (2019). The role of stakeholders in the effective use of e-government resources in public services. *International Journal of Information Management*, 49, 253-270.

¹⁷ BOUHOUCHE, A. PUBLIC ADMINISTRATION IN AFRICA: THE CASE OF ALGERIA.

few years, the ITC sector has expanded rapidly. While, Algeria has relatively developed infrastructures^{4 19}. Thus, one of the causes of e-Government failure is the lack of stakeholders' involvement at the beginning of the project²⁰.

According to these researchers, the stakeholders' must be involved in e-Government project from the initial implementation. The research shows that the lack of committed leadership resulted in e-Government implementation failure²¹.

Research shows that the main challenge in implementing e-Government is not technical but rather social, because culture in developing countries is not fully exposed to new technologies. The reason is that e-Government projects in developing countries are frequently outsourced to the private sectors^{22 23}. According to researchers, the digital divide is another challenge faced by developing countries, and need to be solved in order to get a successful implementing of e-Government.

The following factors has been recognized as an important cause of failure in e-government adoption^{24 25}:

- Unequal access to information by citizens due to literacy issues;
- The price of equipment;
- Transportation or communications services.

Some Studies shows that lack of awareness causes failure of e-government programs. Researchers refer to the experience of Bangladesh and Botswana, which had poor awareness of programs before the implementation of e-Government projects. These researchers agree that a comprehensive awareness campaign is a must before implementing the e-government program to be successful^{26 27}. Moreover, the lack of ICT knowledge is the main obstacle in e-government implementation, especially in developing countries where the ICT literacy rate is very low²⁸.

¹⁸ Yahiaoui, N. (2016). The E-Government in Africa: Challenges and Implementation Barriers: The Case of Algeria. *Revue Algérienne des Politiques Publiques*, 18(5484), 1-24.

¹⁹ Chaabna, S., & Wang, H. (2015). Analysis of the State of E-commerce in Algeria. *International Journal of Marketing Studies*, 7(2), 44.

²⁰ Samsor, A. M. (2020). Challenges and Prospects of e-Government implementation in Afghanistan. *International Trade, Politics and Development*.

²¹ Dzhupova, Z., Janowski, T., Ojo, A., & Estevez, E. (2011, June). Sustaining electronic governance programs in developing countries. In *Proceedings of the 11th European Conference on eGovernment (ECEG 2011)* (pp. 203-212).

²² Drljača, D., & Latinović, B. (2012). E-governance in republic of SRPSKA-challenges and prospects. *Quality of Life*, 5.(2-1)

²³ Basu, S. (2004). E- government and developing countries: an overview. *International Review of Law, Computers & Technology*, 18(1), 109-132.

²⁴ Matavire, R., Chigona, W., Roode, D., Sewchurran, E., Davids, Z., Mukudu, A., & Abu, C. B. (2010). Challenges of eGovernment project implementation in a South African context. *Electronic Journal of Information Systems Evaluation*, 13(2), pp153-164.

²⁵ Dada, D. (2006). The failure of E- government in developing countries: A literature review. *The electronic journal of information systems in developing countries*, 26(1), 1-10.

²⁶ Qaisar, N., & Khan, H. G. A. (2010). E-Government challenges in public sector: A case study of Pakistan. *International Journal of Computer Science Issues (IJCSI)*, 7(5), 310.

²⁷ Arfeen, M. I., & Khan, N. (2009). Public sector innovation: Case study of e-government projects in Pakistan. *The Pakistan Development Review*, 439-457.

²⁸ Nkwe, N. (2012). E-government: challenges and opportunities in Botswana. *International journal of humanities and social science*, 2(17), 39-48.

Researchers agree that in order to get a successful implementation of e-government, a proper IT infrastructure should be available at the beginning of the project. In developing countries, where some people do not have access to Internet, and others live in regions with no electricity or computers, IT becomes one of the key challenges²⁴.

In fact, the implementation of e-government is costly and requires continued funding, that is why many developing countries consider the financial support as a critical challenge.

In developing countries, researchers agree that there is a lack of a proper policy for e-Government implementation, causing its failure. Hence, the availability of clear policy and legal framework for e-government implementation is critical²⁹.

In developing countries, the security of information plays a very important role in the choice of using e-government. People hesitate using e-government because of:

- Data insecurity;
- Privacy;
- Uncertain transaction stage;

People consider exposure of personal information, such as (name, picture, date of birth, ID number, credit card detail) to the government through Internet via websites or mobile applications is unsecure and suspect misuse³⁰.

Challenges and obstacles for designing a successful e-government system in developing countries can be sum up as follow³¹:

- Political & organizational leadership;
- Formulation of strategy and policy;
- Prioritization of initiatives;
- Availability of financial resources;
- Public-private partnership;
- ICT literacy of public sector employees;
- ICT literacy of end user;
- Formulation of legal framework;
- Formulation of security and privacy guidelines;
- Cultural factors;
- Infrastructure;
- Integration of backend processes;
- Awareness of opportunities.

4- E-Government Development Index (EGDI):

²⁹ Sarayrih, M. A., & Sriram, B. (2015). Major challenges in developing a successful e-government: A review on the Sultanate of Oman. *Journal of King Saud University-Computer and Information Sciences*, 27(2), 230-235.

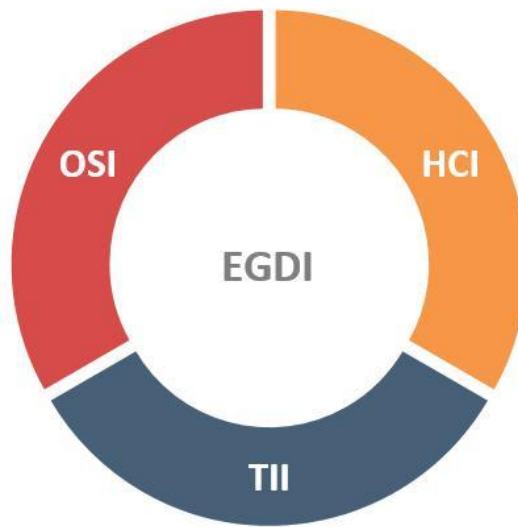
³⁰ Ubaldi, B. (2013, November). The Role of E-Government in the development of Economy and Societies. In *Primeira Conferência de CPLP eGOV-"A Smart Governance to Lead The Future"-OECD*.

³¹ Mkude, C. G., & Wimmer, M. A. (2013, September). Strategic framework for designing e-government in developing countries. In *International Conference on Electronic Government* (pp. 148-162). Springer, Berlin, Heidelberg.

The EGDI short for E-Government Development Index (EGDI) presents the state of e-government development of the United Nations member states. E-Government Development Index is designed to give a performance rating of national governments relative to one another.

EGDI incorporates the access characteristics, such as the infrastructure and educational levels, to reflect how a country is using information technologies to promote access and inclusion of its people³². The EGDI is a composite measure of three important dimensions of e-government, namely:

- Provision of online services;
- Telecommunication connectivity;
- Human capacity.



Reference: <https://publicadministration.un.org/egovkb/en-us/About/Overview/-E-Government-Development-Index>³³

- a- OSI: Short for Online Service Index. It describes the scope and quality of online services, total number of points scored by each country is normalized to a range of 0 to 1.
- b- TII: Short for Telecommunication Infrastructure Index. It shows the status of the development of telecommunication infrastructure.
- c- HCI: Short for Human Capital Index.

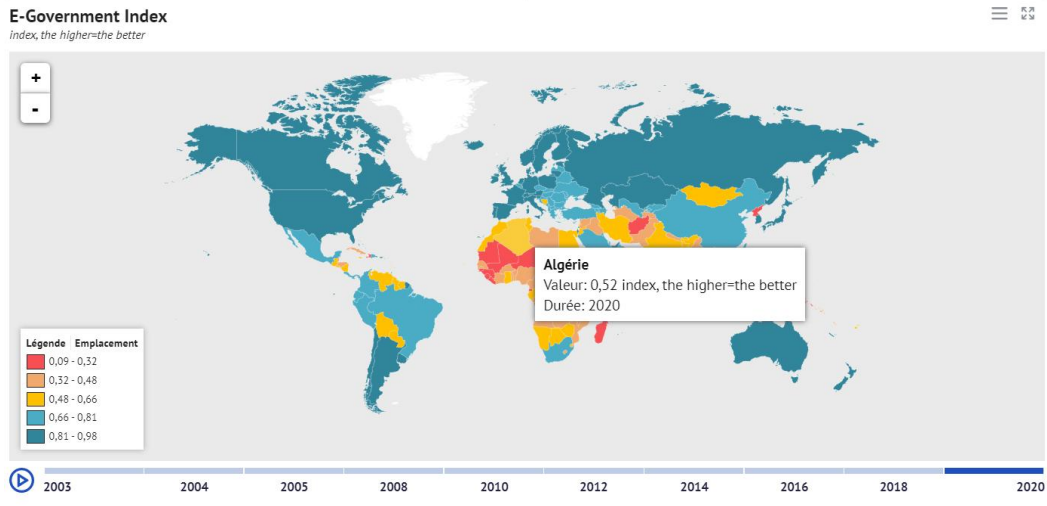
$$EGDI = 1/3 (OSI_{normalized} + TII_{normalized} + HCI_{normalized})^{34}$$

According to United Nations (2020), Algerian EGDI is 0.5173 with OSI 0.2765, TII 0.5787 and HCI 0.6966. During the past four years, Algeria has made significant progress in e-government development and moved from the middle to the high EGDI group.

³² <https://publicadministration.un.org/>

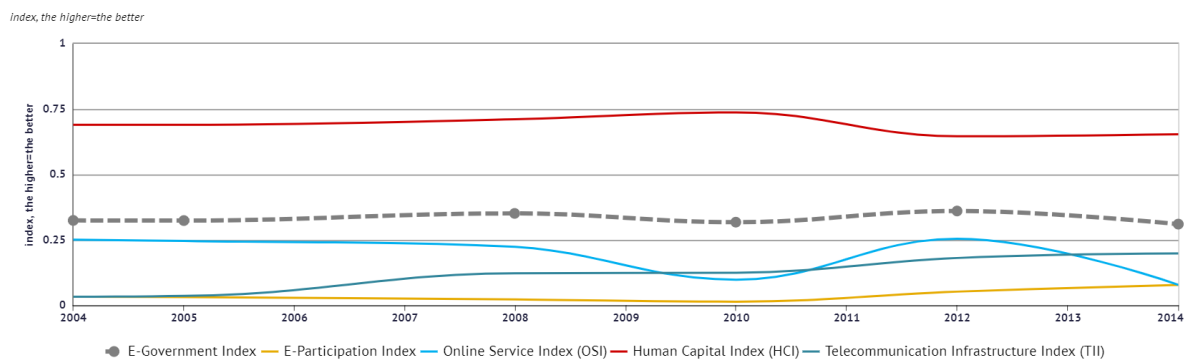
³³ <https://publicadministration.un.org/egovkb/en-us/About/Overview/-E-Government-Development-Index>

³⁴ https://publicadministration.un.org/Portals/1/UNEGOV_Methedology_Generic_24May2021.pdf



Reference: <https://knoema.fr/infographics/mctunlb/un-e-government-development-index>³⁵

Score - Algérie



Reference: <https://knoema.fr/infographics/mctunlb/un-e-government-development-index>³⁵

Conclusion:

E-government means the use of ICT in government operations as a tool to increase the outreach of the government services to the general public. E-government has attracted significant attention over the past few years. In this paper, an overview of the related research areas that deals with e-government in developing countries has been presented.

According to United Nations, during the past four years, developing countries in Africa have made significant progress in e-government development. In year 2020, Algeria moved from the middle to the high EGDI group.

In developing countries, the failure rate of e-government's implementation is higher, because of many challenges faced by the government. Admitting that these challenges can freeze the implementation of e-government, however, these challenges can be opportunities as well for governments to adopt a successful implementation of e-government.

³⁵ <https://publicadministration.un.org/egovkb/en-us/About/Overview/-E-Government-Development-Index>

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