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The E-governance Challenges of Public Health Service in Ethiopia

ABSTRACT

This paper investigates the complexities of e-governance implementation, emphasizing the importance of user awareness as a fundamental step. E-governance in the public sector, particularly in health services, is facing challenges in Ethiopia. The effectiveness of e-governance is debatable, but it leverages technology to improve citizens' lives and enhance interaction between governments and the public through initiatives like WoredaNet and HealthNet. The study identifies obstacles to e-health strategy success, including institutional gaps, digital disparities, privacy concerns, and cultural barriers. Discrepancies between data system implementation expectations and reality are the primary cause of e-government project failure in developing nations. To address these challenges, it is crucial to establish clear mandates, responsibilities, and coordination across government entities. It advocates for a robust institutional framework, enhanced ICT access, service continuity, and IT education to support effective e-governance and digital healthcare implementation.

KEYWORDS: *e-governance, public administration, public sector, health services, Ethiopia*

Introduction

In the era of globalisation, e-governance is a topic that both practitioners and researchers are interested. In terms of scope, e-governance is narrower than e-government. It involves using ICTs to provide government services through the combination of various stand-alone systems for G2C, G2B, and G2G services (from the federal government to each national and regional state and vice versa in the case of Ethiopia).[1] The trend incorporates elements of online public service delivery and digital democracy, including online citizen involvement and public discussion. Generally, it is a relatively new method that can link individuals to the political process on several levels.[2]

Ethiopia has been at the forefront of several electronic networks at various times. Leading examples are WoredaNet, SchoolNet, HealthNet, and AgriNet. With over 565 woredas connected to federal, regional, and local government offices, WoredaNet is a terrestrial and satellite-based network that offers ICT services to the government at the federal, regional, and woreda (district) levels.[3] It connects downstream to approximately 6000 kebeles, the smallest administrative unit of governance, with an overall goal of connecting 18,000 kebeles.[4] Currently, 668 secondary schools are connected to SchoolNet, a satellite-based network, through a gateway that offers instructional material delivered in audio and video over VSAT connections.[5] Through 62 locations nationwide, HealthNet provides access to essential healthcare information. AgriNet uses eight VSAT lines to connect fifty agricultural research institutes run by federal and regional governments. Among the e-services mentioned, the widespread use of SchoolNet in high school was completely disrupted by a lack of ICT infrastructure, particularly a lack of a network. Following the sale of some shares to a foreign business (Safaricom), the present leadership in Ethiopia reversed the trend of monopolisation in the telecommunications industry. After paying an $850 million license fee, Safaricom became the first international business to be granted permission to provide telecom services in Ethiopia. In the 2022 UN e-government survey, Ethiopia was ranked 179th out of 193 nations. Several issues cause this rate, so the primary goal of this article is to examine the issues surrounding e-governance in Ethiopian public sectors with a particular emphasis on the health sector. Desk review was the research methodology employed in this work. This study critically analyses secondary sources, including books, peer-reviewed journals, published papers, and Ethiopian health policies and plans.

The methodology of this article involves utilizing both published and unpublished secondary materials, including journals, articles, and government reports on healthcare reforms (mainly based on PubMed, Scopus, JSTOR, DOAJ, Microsoft Scientific Research Engine, Heinonlie, and Google Scholar). The authors conducted a narrative review and analysed the collected data from various sources using content and text analysis methods. Other internet databases were the primary sources of articles, like statistics from the United Nation, the Ethiopian Statistics Service (ESS), or the Central Statistical Agency.

[1] Grigalashvili, Vepkhvia: E-government and E-governance: Various or Multifarious Concepts. *International Journal of Scientific and Management Research* 5.01. 2022.: 183-196.

[2] Rossel, Pierre, and Matthias Finger: Conceptualizing e-governance. *Proceedings of the 1st international conference on Theory and practice of electronic governance*. 2007.
Finger, Matthias, and Gaëlle Pécoud: From e-Government to e-Governance? Towards a model of e-Governance. *Electronic Journal of E-government* 1.1. 2003: 52-62.

[3] Senshaw, Debas: Assessing the impact of WoredaNet usage on dynamic capabilities: a structural equation modeling of Woredas in Ethiopia. *Digital Policy, Regulation and Governance*. 2023.

[4] Chekol, Abebe: Ethiopian free and open source software network (EFOSSNET). *Global information society watch: Focus on access to online information and knowledge–advancing human rights and democracy*. 2009. 123-126.

[5] Yigezu, Moges: Digitalization in teaching and education in Ethiopia. *International Labour Organization*. 2021.

I. E-Governance in the Public Sector

The contemporary age, or Paradigm Five, is distinguished in the history of public administration as the transition from government to governance.[6] E-governance, or Simple, Moral, Accountable, Responsive, and Transparent (SMART) governance, uses information and communications technology in government activities.[7] Many administrations defined this phrase to fit their own goals and purposes. The phrases e-governance and e-government are sometimes used interchangeably; however, this is debatable. While e-government is defined as using information technology to support government operations, engage citizens, and provide government services, e-governance uses emerging information and communication technologies to facilitate government and public administration processes.[8] ICT is vital to the public sector because it may expedite and simplify administrative goals while promoting democracy, human rights, good governance, peace, and security[9]. In public organisations, e-governance enables a more effective and efficient interface. This encourages efficiency and effectiveness in leadership throughout government agencies, along with accountability and openness.

Could technology lead to the emergence of new kinds of government outside certain domains, such as transparency? There are two options: e-Government 2.0 and virtual government models[10]. A virtual government is a company where people interact online from any location rather than having a physical office or structure. Since many of the routine operations performed by the government can be automated, this kind of organisation is not virtual in the true sense of the word. On the other hand, the second one goes beyond new, bottom-up forms of governance and is e-government 2.0.

A thorough explanation of this idea may be found in Millard's (2010) description of the use of tools like social networking, blogs, wikis, mashups, and so on to produce new services that are produced by communities themselves as opposed to the state, as well as new forms of governance. One such instance is Eixmystreet.com. With this, residents can notify their local government about issues with the urban environment. They can snap a photo of a cracked pavement or a broken traffic light, send it to the council, and post it online with information about when it was reported and how long it will take for the authorities to fix it. Even though its effectiveness is debatable, this is a proper kind of e-governance because it leverages technology to alter the way activities are carried out in ways that would be impracticable if the information and communication technologies were not used.[11]

[6] Wasistiono, Sadu, and Wike Anggraini: Three paradigms in government (good governance, dynamic governance, and agile governance). *International Journal of Kybernology* 4.2. 2019: 79-91.

[7] Heeks, Richard: Understanding e-governance for development, i-government working paper series. Institute for Development Policy and Management, University of Manchester, No 11. 2001
Mooij, Jos. Smart governance. *Politics in the policy process in Andhra Pradesh, India*. 2003: 22-3.

[8] Umbach, Gaby, and Igor Tkalec: Evaluating e-governance through e-government: Practices and challenges of assessing the digitalisation of public governmental services. *Evaluation and program planning* 93. 2022: 102118.

[9] Palma, John Paul B., et al. "E-governance: A critical review of e-government systems features and frameworks for success." *International Journal of Computing Sciences Research* 7.2023: 2004-2017. Fonou Dombeu, Jean Vincent, and Nelson Rannyai: African e-government research landscape. *The African Journal of Information Systems* 6.3 (2014): 2. Aloyce, Menda: E-governance in Africa-Successes and Challenges: E-governance in Tanzania, 2005. pp.36-37

[10] Bekkers, Victor. E-government and the emergence of virtual organizations in the public sector. *Information Polity: an international journal on the development, adoption, use and effects of information technology* (2003).

[11] Bannister, Frank, and Regina Connolly. Defining e-governance. *e-Service Journal: A Journal of Electronic Services in the Public and Private Sectors* 8.2. 2012: 3-25.

I.1. Stakeholders in the Implementation of E-governance

Any nation that adopts e-governance must have the active involvement and input of several essential parties and stakeholders throughout the process: (i) political leaders, (ii) government ministries, departments, and agencies; (iii) legislative body; (iv) citizens; (v) private sector; and (vi) international organisations and NGOs.[12]

In the public sector, *political leaders* play a pivotal role in the success of e-government projects, as their support is essential for their implementation. No matter how well-planned, an e-government project cannot succeed unless the nation's political elite is willing to support it. This is true for practically every country, and the national leadership needs to be sufficiently aware of the importance of electronic governance. At the same time, *government ministries, departments, and agencies* must ensure seamless integration of systems and procedures to facilitate the transition to a digital state. This involves fostering e-awareness among government personnel and a culture of openness to change. Integration across public sector ministries and agencies is essential to their ability to provide services in a readily coordinated fashion and may also lessen the inconvenience and weariness that service consumers experience while juggling services from many agencies and organisations. The involvement of the *legislative body* is crucial. The successful implementation of e-government initiatives may depend on developing and adopting well-crafted e-strategy, IT laws, and regulations; therefore, the participation of law-making authorities is crucial in this regard.

The *citizens* play a crucial role in the success of e-government initiatives as the primary beneficiaries of improved access to government services and information online. Their expectations for quick and easy access drive the demand for effective e-government solutions. Furthermore, citizens can actively participate in policymaking by expressing their opinions electronically, thereby contributing to governance reforms. Collaboration between the government and the *private sector* is essential for achieving e-government goals. Both parties stand to gain from the endeavours, making e-government goals readily achieved. Apart from financing e-government initiatives, the private sector can augment its worth by applying state-of-the-art technology and global expertise. Aside from the commercial side, they would benefit from the government's increased responsibility, efficiency, and transparency. Private companies bring expertise and resources that complement government efforts, enabling the implementation of advanced technologies and fostering innovation.

Finally, *international organisations* and *non-governmental organisations* (NGOs) play a vital role in facilitating and promoting e-government initiatives. They act as project facilitators and motivators, increasing public awareness and facilitating knowledge exchange among nations. Through research and sharing best practices, these organisations contribute to the success of e-governance platforms and promote global collaboration in digital governance endeavours.[13]

I.2. Taxonomy of E-governance Interactions

Within the concept of E-governance, the government and the stockholders form different interactions, which encompass four connections, delineating unique channels through which governmental bodies engage with one another, citizens, businesses, and employees correspondingly, like Government to Government (G2G), Government to Citizen (G2C), Government to Business (G2B), and Government to Employee (G2E).

The *Government to Government* (G2G) relation means cooperation between various government offices and elements, including information sharing and electronic data trading leadership. This transaction can occur between the country's similar and lower levels and external and internal

[12] The United Nations Educational, S.a.: E-Government toolkit for developing countries. 2005; Ntulo, Getrude, and Japhet Otike. E–government: Its role, importance and challenges. *School of Information Sciences. MoiUniversity*. 2013.: 1-16. United Nations, Division for Public Administration, & Development Management: *United Nations e-government survey 2008: From e-government to connected governance.* 2008 (Vol. 2). UN.

[13] Fikadu Wamicho: Challenges in Implementing E-Governance in Addis Ababa City Land Administration: The Case of Nefas Silk Lafto Sub-city. Addis Ababa University, Ethiopia. 2012.

offices. This is the super-government database-supported web/online communications between government departments, agencies, and organisations. To put it simply, it is known as the interaction between the government and its employees. The following provide concrete evidence of this: enhances organisational and intergovernmental processes, simplifies government activity coordination and cooperation, and automates and simplifies business operations between governments, including service delivery, regulatory compliance, and upgrades.

Within the *Government to Citizen* (G2C), a collaboration involving the organised delivery of administrative services and information occurs, fulfilling the primary objective of e-government. This kind of cooperation aims to reduce the time and cost of transactions such as obtaining authorisations, renewing licenses, paying taxes and fees, and submitting applications for government programs. A section on citizen participation in the administration's planned procedures and approaches included. Most government services fall under this category, which aims to give residents and others access to extensive electronic resources for handling everyday issues and government business [14]. When e-government is implemented, the government and citizens constantly communicate, promoting accountability, democracy, and improvements to public services. By making public information more accessible through websites and cutting down on transaction time and expense, the main objective of e-government is to serve the people and facilitate their connection with the government.[15]

Government Interaction in E-governance Services

Interaction	Description	Examples
G2G (Government to Government)	Interactions between different government entities at various levels for collaboration and coordination. - Processing information and decision-making activities within the government system - Contribute towards enhancement of internal government work structure	- Inter-agency communication - Data sharing between government departments - Collaborative efforts on public projects
G2C (Government to Citizen)	Communication and services provided by the government to individual citizens. - Promotes efficient delivery of government services among citizens - Freedom to share views/grievances about government policies	- Issuing passports - Providing public service information - Driver's license renewal
G2B (Government to Business)	Interactions between government agencies and businesses, focusing on regulatory compliance and support. - Enable the business community to seamlessly interact with the government - Build up relationships among stakeholders	- Business registration - Tax filings - Procurement processes
G2E (Government to Employee)	Communication and services provided by the government to its employees for HR management and support. - Frequent interactions with employees to ensure satisfactory - Helps in providing perquisites and additional benefits	- Payroll processing - Training programs - Employee benefits administration

Source: own compilation of the authors based on Vértesy, László: Public Administration and Good Governance, Nemzeti Közszolgálati Egyetem, 2017. 33.

[14] Obodo, Nick A., Davidson Oliver Anigbata: Challenges of implementing electronic governance in public sector organizations in Nigeria. *International Journal of Applied Economics, Finance and Accounting* 2.1. 2018: 30-35. https://doi.org/10.33094/8.2017.2018.21.30.35

[15] Mustaf, Anas, Othman Ibrahim, and Fathey Mohammed: E-government adoption: A systematic review in the context of developing nations. *International Journal of Innovation: IJI Journal* 8.1. 2020: 59-76.
Ndou, Valentina: E-government for developing countries: Opportunities and challenges. *Electron. J. Inf. Syst. Dev. Ctries.* 18.1. 2004: 1-24.

The *Government to Business* (G2B) represents the second primary category of e-governance. It has the potential to increase corporate and government efficiency significantly. It also covers the interchange of different services between the public and private sectors, such as policies, memos, rules, and laws. The relationship includes improved and efficient procurement of goods and assistance from management for the business components. It also includes permission to administer items to the general public and has the potential to reduce costs through improved acquisition practices and increased challenge. Such a relationship also involves administration and organisation-to-administration exchanges and trades concerning licenses, tax assessments, and approaches provided for various locations.

The *Government to Employee* (G2E) partnership is intended to benefit the employees by providing them with online services, including evaluating salary payment records, checking leave balances, and submitting applications for annual leave online. This is also evident in the assortment of data and services that government agencies provide to their staff so that they can communicate with management and one another. It is also essential for delivering e-learning, fostering employee collaboration, and promoting information sharing. Employees now have equitable access to pertinent information on pay, policies and benefits, wage and salary administration, training and development, and online benefits access through simple and quick communication models and modems.[16] This partnership encompasses commercial opportunities, job regulations, guidelines, instructions, benefits and payment arrangements to administrative representatives, employee benefit programs and controls, government housing, etc.[17]

I.3. E-governance and Urban Public Service Delivery

Other names for e-government include electronic government, digital government, and e-governance. The government is a quickly expanding phenomenon that overpromises to solve many issues facing the public sector and has a rising influence on how it works[18].

With the introduction of e-governance in recent years, there has been a noticeable increase in the quality of services the government provides its residents. E-governance refers to the government's provision of public services and information using electronic methods. It represents a paradigm change from traditional practices in public administration. The quality of services provided to the public has revolutionised under this new paradigm. Transparency in the governance process has been brought about, along with time savings from the single-window service provision, process simplification, improved sector and record management, decreased corruption, and enhanced behaviour, attitude, and job-handling abilities of the dealing staff[19]. E-governance will make it easier for the general public to get government services by streamlining, expediting, and simplifying the process. E-governance is also viewed as a multifaceted idea that lowers government operating costs, increases administrative efficiency, and promotes openness[20]. E-governance is a transparent, intelligent government offering citizens unbiased, fair services while allowing information to flow securely and without interruption across departmental boundaries.[21]

Technological advancements are helpful since improving citizens' lives is a primary objective of good governance. Governments can take advantage of this rare opportunity to effectively interact with the public if people can receive timely, adequate, and prompt services through information technology.

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[16] Obodo, 2018.

[17] Bakon, Kinn Abass, Nur Fazidah Elias, and Ghassan AO Abusamhadana: Culture and digital divide influence on e-government success of developing countries: A literature review. *Bakon, Kinn Abass, Culture and digital divide influence on e-government success of developing countries: A literature review 15* .2020: 1362-1378.
The United Nations Educational, S. a.: E-Government toolkit for developing countries. 2005.

[18] Heeks, 2001.

[19] Fikadu Wamicho: Challenges in Implementing E-Governance in Addis Ababa City Land Administration: The Case of Nefas Silk Lafto Sub-city. Addis Ababa University, Ethiopia, 2012

[20] Prasannakumar R.B E-Governance and Service Delivery-Scope and Implementation Issues (online) Available: www.napsipag.org/PDF/BR PRASANNAKUMAR.pdf.

[21] Fikadu. 2012.

Ethiopia has not yet fully grasped the advantages of using ICT to combat public sector corruption. Most official websites created to demonstrate the government's dedication to e-governance are now broken or outdated. The bureaucracy is still unclear. Nevertheless, civil service reforms are being implemented to combat corruption and other issues. These consist of creating a commission on ethics and anti-corruption, a public service delivery improvement policy (PSDIP), and a public servant code of conduct.[22]

II. The practices of E-governance in Ethiopia

Ethiopia invests a tenth of its GDP in IT annually. Over the next five years, the government intends to spend over 100 million Birr on computers for the public sector. Its goal is to provide broadband internet access to hundreds of government buildings and educational institutions. By boosting civil service productivity, drastically reducing the amount of time spent on information processing and regulatory implementation, and widely implementing e-procurement, for instance, effective implementation of e-governance could significantly lower government costs.[23] Ethio Telecom reports that the overall number of customers hit 56.2 million, a 22% growth from the June 2020 landing and 108% of the goal subscriber base. There were 54.3 million mobile voice subscribers, 25 million data and internet users, 912K fixed services members, and 374K fixed broadband subscribers. 95% of the population and 85.4% of the area are covered. 54.8% of the population is covered by telecom.[24]

E-Government Indices in Ethiopia

	E-Government Development Index		**E-Participation Index**		**Online Service Index**	**Telecommunication Infrastructure Index value**	**Human Capital Index**
	(Rank)	(Value)	(Rank)	(Value)	(Value)	(Value)	(Value)
2003	166	0.12773	102	0.03450	0.37300	0.00264	0.35000
2004	170	0.13647	151	0.00000	0.36470	0.00238	0.38000
2005	171	0.13602	151	0.00000	0.63190	0.00268	0.39000
2008	172	0.18570	170	0.00000	0.52899	0.00402	0.37959
2010	172	0.20331	135	0.04285	0.45669	0.00731	0.40273
2012	172	0.23058	45	0.34210	0.47058	0.00930	0.21185
2014	157	0.25888	122	0.25490	0.20000	0.02659	0.29340
2016	157	0.26655	91	0.49153	0.17391	0.04950	0.22117
2018	151	0.34630	101	0.57300	0.01538	0.09760	0.30940
2020	178	0.27400	148	0.33330	0.02702	0.11940	0.33780
2022	179	0.28650	163	0.19320	0.03056	0.15010	0.33640

Source: UN E-government Knowledgebase, 2003-2022, available at https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/58-Ethiopia. (Accessed on 05/03/2024)

As we can observe from the above table from the UN E-government Knowledgebase,[25] the rank of Ethiopia is very low even among the low-income countries; however, it has been showing improvement since 2012. Ethiopia's E-Government Development Index score has increased over time. The score has increased from 0.12 in 2003 to 0.28 in 2022. This indicates that Ethiopia's government services have become more efficient in delivering services online over time. However, 2018

[22] MoFED, Ethiopia: Ethiopia: Building on progress a plan for accelerated and sustained development to end poverty (pasdep). *Addis Ababa: The Federal Democratic Republic of Ethiopia Ministry of Finance* (2006).
[23] Singh, Gurmeet, Raghuvar Dutt Pathak, and Rafia Naz: Service delivery through e-governance: perception and expectation of customers in Fiji and PNG. *Public Organization Review* 11. 2011. 371-384.
[24] Ethio Telecom 2021. Available at https://developingtelecoms.com/telecom-technology/consumer-ecosystems/11518-ethio-telecom-reports-a-22-jump-in-subscribers-to-56-2m.html
[25] Akpan-Obong, Patience I., et al. E-Governance as good governance? evidence from 15 West African countries. *Information Technology for Development* 29.2-3. 2023: 256-275.

was the peak point, and at the current time, it is decreasing. This is related to the ranking because, from the highest 151 in 2014, the lowest figure can be found in 2022 at 179. The result suggests that while Ethiopia's E-Government Index score has increased, other countries have improved their scores faster. Similar changes are reflected in the E-Participation Index;[26] in 2012, the ranking was 45, while in 2022, only 163. The Telecommunication Infrastructure Index score has increased the most. The Telecommunication Infrastructure Index score has increased from 0.03 in 2003 to 0.57 in 2018. This indicates that Ethiopia has significantly improved its telecommunication infrastructure, essential for e-government services.[27] The Online Service Index and Human Capital Index scores show a slight decrease in the past two decades, which suggests that Ethiopia has made the least progress in developing online services for citizens. The table shows that the country made some progress in developing its e-government services, but there is still room for improvement. The government needs to improve the Online Service Index score to make it easier for citizens to access government services online.

III. E-health Strategy in Ethiopia

Ethiopia has recognised the potential of e-health to improve its healthcare system and has developed a national e-health strategy to guide its implementation. The strategy, launched in 2014, outlines a ten-year plan for using information and communication technologies (ICT) to improve the delivery of health services, strengthen health information systems, and build capacity in the health sector.[28] The Ethiopian e-health strategy focuses on five main priority areas. The Health Information Systems (HIS) include developing and implementing electronic health records (EHRs), health management information systems (HMIS), and other systems to improve the collection, storage, and use of health data.[29] Telemedicine uses telecommunications technologies to provide healthcare services remotely, such as consultations, diagnosis, and treatment.[30] The mHealth refers to the use of mobile devices, such as smartphones and tablets, to deliver health information and services. E-learning involves using online and mobile technologies to train health workers and improve their knowledge and skills. The community information systems develop and implement systems to provide health information and education to communities.

III.1. E-health Strategy Implementation in Ethiopia

Digital technologies present a significant opportunity to change healthcare delivery, producing high-quality healthcare that will enhance community wellness. The achievement of universal health coverage (UHC) is being aided by digital health, particularly in Africa, where numerous nations have implemented varying degrees of automation in their healthcare and health insurance systems[31]. Ethiopia has shown robust progress in building and digitizing the health information system, including the electronic community health information system, telemedicine and teleradiology, supply chain management (logistics), and Health-Net infrastructure development.[32]

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[26] The EPI specifically focuses on how well a country uses online tools to promote citizen engagement and interaction with the government. It doesn't appear in the table you provided, so I cannot analyze it based on the information you gave.

[27] Yimer, Ali Hussien: Challenging the Challenges of E-Government: The Ethiopian Context. *International Journal of Digital Strategy, Governance, and Business Transformation (IJDSGBT)* 11.1. 2021. 1-12.

[28] Walle, Agmasie Damtew, et al.: Exploring facilitators and barriers of the sustainable acceptance of E-health system solutions in Ethiopia: a systematic review. *PLoS One* 18.8. 2023: e0287991.

[29] Manyazewal, Tsegahun, et al.: The potential of digital health technologies in African context, Ethiopia. *medRxiv*. 2021.: 2021-03.

[30] Sagaro, Getu Gamo, Gopi Battineni, and Francesco Amenta: Barriers to sustainable telemedicine implementation in Ethiopia: a systematic review. *Telemedicine Reports* 1.1. 2020: 8-15.

[31] Ibid

[32] Ayele, Wondimu, et al.: Implementation of human development model impact on data quality and information use in Addis Ababa, Ethiopia." *Ethiopian Journal of Health Development* 35.1. 2021.

One of the top ten initiatives in Ethiopia's digital transformation that will be completed by 2025 is community-based health insurance, a notable health sector service that is practically digitalizing. Even though the government now receives less money from the healthcare sector than from other industries, the healthcare sector can potentially produce enormous profits for both public and private businesses in the future. Therefore, one of the emerging health sectors where the government may have a chance to convert the CBHI to a digital system is the digitalisation of the payment system.

III.1. Major Challenges of E-governance in E-health Strategy

The implementation of the e-health strategy is facing several challenges: (i) lack of institutional framework supporting e-governance; (ii) digital divide; (iii) privacy and security concerns; (iv) limited IT skills and training; and (v) culture and attitudes.

There is a *lack of institutional framework supporting e-governance*; establishing interoperability (seamless data exchange) between different e-health systems becomes difficult without clear guidelines and regulations.[33] This can hinder initiatives like telemedicine consultations, where patient data must be securely shared between healthcare facilities. Another example is a doctor in a rural clinic who needs to access a patient's medical history from a hospital in the city. Without a standardised system and data exchange protocols, retrieving the information might be challenging and time-consuming, delaying treatment. Therefore, establishing an institutional structure is necessary to back these initiatives.[34] Establishing a high-level committee, keeping an eye on implementation efforts, ensuring e-government investment evaluations happen, and clearly defining roles and responsibilities are all part of this. To effectively support the development of e-governance and guarantee appropriate coordination across government entities, it is crucial to establish clear mandates and responsibilities.[35]

The gap in the number of phones, internet users, or computers per person in developed and emerging nations is commonly used to characterize the *digital divide*. Two of the biggest obstacles to establishing e-government today are differences in internet access and private computer ownership. A country's economic background significantly impacts the digital gap in emerging nations, particularly in Africa and other developing regions. The limited access to technology, particularly in rural areas, hinders the reach of mHealth interventions like SMS-based medication reminders or mobile health education platforms.[36] A program promoting child immunisation reminders via SMS might not reach a significant portion of the target population if mobile phone penetration and literacy rates are low in certain regions. Greater access to ICTs is significantly associated with economies that are doing well compared to those that are not.[37]

Data privacy and security is yet another significant technical challenge. Participants believe sharing personal information with public organisations online or electronically or using websites to transfer their personal information (such as uploading important documents, entering name, date of birth, photo, and credit card information) is unsafe. They worry that e-service websites are unsafe enough to prevent hackers from misusing or distorting their personal data. Public concerns about data privacy and security can discourage people from using e-health services, especially those involving sensitive health information. This can hinder initiatives like electronic health records (EHRs) or telehealth consultations, where patient data is stored and transmitted electronically. Patients might hesitate to use an online appointment booking system if they are unsure how their personal information will be

[33] Uyar, Kaan, Gezahegn Mulusew Delele, and Erkut Inan Iseri: Web accessibility of the Federal Democratic Republic of Ethiopia governmental websites. *IJCSNS* 20.6. 2020. 144.
[34] Nkwe, Nugi. E-government: challenges and opportunities in Botswana. *International journal of humanities and social science* 2.17, 2012: 39-48.
[35] Cohen, Steven, and W. William: The future of e-government: A projection of potential trends and issues." *Columbia University*, 2002.
[36] Nigussie, Zeleke Yimechew, et al.: Using mHealth to improve timeliness and quality of maternal and newborn health in the primary health care system in Ethiopia." *Global Health: Science and Practice* 9.3. 2021.: 668-681.
[37] NUA Internet Trends and Statistics, 2002. http://www.nua.ie/surveys/ how_many_online/index.html, accessed 03/04/2024.

protected. Service continuity is essential for e-government operations because it fosters citizen confidence and trust and ensures service supply and delivery.[38]

One aspect of *limited IT skills and training is a low level of computer literacy* among the general public, businesses, and government agencies.[39] The number of persons with ICT skills in underdeveloped nations is relatively low. Most people with them are young people, so when it comes to implementing e-government, the elderly will be forgotten. The other significant issue is that not even government personnel, or those supposed to ensure the seamless e-government operation, have the necessary skills. There is also a shortage of health workers with the skills and knowledge to use e-health technologies effectively.[40] This can limit the adoption and utilisation of solutions like online learning platforms or patient portals for healthcare workers to access health information. While a hospital might implement an EHR system, if healthcare staff have not received proper training, data entry errors and inefficiencies in the system could occur. Primary and vocational IT education is necessary.

One of the biggest obstacles to adopting e-government in developing nations is overcoming *cultural inertia*. According to, the primary cause of e-government project failure in most developing nations, if not all of them, is the discrepancy between data system implementation expectations and reality.[41] Existing cultural beliefs and attitudes regarding healthcare might affect the acceptance of e-health solutions. For instance, some communities might prefer traditional healing practices over technology-based interventions. In a community with strong cultural beliefs in traditional birthing practices, promoting a digital platform for prenatal care advice might require addressing those beliefs while demonstrating the complementary nature of the e-health solution.

These challenges are interrelated and need to be addressed comprehensively to ensure the successful development and implementation of an e-health strategy within the e-governance framework in Ethiopia. Overcoming these challenges requires a multifaceted approach. Developing a robust legal framework for data privacy and security in e-health is essential. A reform includes investing in infrastructure to bridge the digital divide by expanding internet access and promoting digital literacy. Building public trust is crucial and can be achieved through transparent data management practices and robust cybersecurity measures. Additionally, it is imperative to enhance IT skills through targeted training programs for healthcare professionals and the public. Engaging with communities to understand their perspectives and concerns and tailoring e-health interventions accordingly will further strengthen the effectiveness and acceptance of digital healthcare initiatives.

Conclusion

E-governance is not a simple system in and of it; rather, it is a complicated process that requires careful consideration to be implemented successfully. Without meeting the prerequisites, the system's successful implementation was exceedingly challenging. Good user awareness is the first step towards e-governance.

A lack of user awareness was one major obstacle to the successful launch and deployment of e-governance systems in several public sectors, including land administration. Users' knowledge of the advantages of the e-governance system was inadequate. The paper primarily aims to evaluate Ethiopia's e-governance practices and issues. To achieve this goal, mainly secondary data were utilised with some statistics. The Ethiopian government is developing an e-governance implementation strategy to provide effective and efficient public services to the nation's citizens. Ethiopia has been at the forefront of several electronic networks at various times. Leading examples are WoredaNet, SchoolNet, HealthNet, and AgriNet.

[38] Nkwe, 2012.
[39] Balaraman, Premkumar: ICT and IT initiatives in public governance− benchmarking and insights from Ethiopia. Business Ethics and Leadership, Volume 2, Issue 1, 2018.
[40] Mengestie, Nebyu Demeke, et al.: E-Health literacy of medical and health science students and factors affecting eHealth literacy in an Ethiopian university: a cross-sectional study. *Applied Clinical Informatics* 12.02. 2021: 301-309.
[41] Heeks, 2001.

The successful implementation of the e-health strategy is impeded by several obstacles, including the absence of an institutional framework conducive to e-governance, disparities in digital access, apprehensions regarding privacy and security, insufficient IT skills and training, and entrenched cultural attitudes. Establishing a robust institutional structure is vital to support e-governance initiatives effectively. This entails creating a high-level committee to oversee implementation efforts, conducting evaluations of e-government investments, and defining clear roles and responsibilities. Additionally, ensuring greater access to information and communication technologies (ICTs) is correlated with the economic prosperity of nations. Service continuity is crucial for e-government operations to maintain citizen confidence and trust and ensure the uninterrupted delivery of services. Primary and vocational IT education is essential to enhance these skills across various sectors. Moreover, promoting digital platforms for healthcare services may require addressing cultural beliefs while showcasing the complementary nature of e-health solutions.

Bibliography

1. Akpan-Obong, Patience I., et al. E-Governance as good governance? evidence from 15 West African countries. *Information Technology for Development* 29.2-3. 2023.: 256-275.
2. Aloyce, Menda: E-governance in Africa-Successes and Challenges: E-governance in Tanzania, 2005. pp.36-37
3. Ayele, Wondimu, et al.: Implementation of human development model impact on data quality and information use in Addis Ababa, Ethiopia." *Ethiopian Journal of Health Development* 35.1. 2021.
4. Bakon, Kinn Abass, Nur Fazidah Elias, and Ghassan AO Abusamhadana: Culture and digital divide influence on e-government success of developing countries: A literature review. *Bakon, Kinn Abass, Culture and digital divide influence on e-government success of developing countries: A literature review 15* .2020.: 1362-1378.
5. Balaraman, Premkumar: ICT and IT initiatives in public governance− benchmarking and insights from Ethiopia. Business Ethics and Leadership, Volume 2, Issue 1, 2018.
6. Bannister, Frank, and Regina Connolly. Defining e-governance. *e-Service Journal: A Journal of Electronic Services in the Public and Private Sectors* 8.2. 2012.: 3-25.
7. Bekkers, Victor. E-government and the emergence of virtual organizations in the public sector. *Information Polity: an international journal on the development, adoption, use and effects of information technology* (2003).
8. Chekol, Abebe: Ethiopian free and open source software network (EFOSSNET). *Global information society watch: Focus on access to online information and knowledge–advancing human rights and democracy*. 2009. 123-126.
9. Cohen, Steven, and W. William: The future of e-government: A projection of potential trends and issues." *Columbia University*, 2002.
10. Ethio Telecom 2021. Available at https://developingtelecoms.com/telecom-technology/consumer-ecosystems/11518-ethio-telecom-reports-a-22-jump-in-subscribers-to-56-2m.html
11. Fikadu Wamicho: Challenges in Implementing E-Governance in Addis Ababa City Land Administration: The Case of Nefas Silk Lafto Sub-city. Addis Ababa University, Ethiopia. 2012.
12. Finger, Matthias, and Gaëlle Pécoud: From e-Government to e-Governance? Towards a model of e-Governance. *Electronic Journal of E-government* 1.1. 2003.: 52-62.
13. Fonou Dombeu, Jean Vincent, and Nelson Rannyai: African e-government research landscape. *The African Journal of Information Systems* 6.3 (2014): 2.
14. Grigalashvili, Vepkhvia: E-government and E-governance: Various or Multifarious Concepts. *International Journal of Scientific and Management Research* 5.01. 2022.: 183-196.
15. Heeks, Richard. Understanding e-governance for development. E-government working paper series. Institute for Development Policy and Management, University of Manchester, No 11. 2001.
16. Manyazewal, Tsegahun, et al.: The potential of digital health technologies in African context, Ethiopia. *medRxiv*. 2021.: 2021-03.
17. Mengestie, Nebyu Demeke, et al.: E-Health literacy of medical and health science students and factors affecting eHealth literacy in an Ethiopian university: a cross-sectional study. *Applied Clinical Informatics* 12.02. 2021.: 301-309.
18. MoFED, Ethiopia: Ethiopia: Building on progress a plan for accelerated and sustained development to end poverty (pasdep). *Addis Ababa: The Federal Democratic Republic of Ethiopia Ministry of Finance* (2006).
19. Mooij, Jos. Smart governance. *Politics in the policy process in Andhra Pradesh, India*. 2003.: 22-3.
20. Mustaf, Anas, Othman Ibrahim, and Fathey Mohammed: E-government adoption: A systematic review in the context of developing nations. *International Journal of Innovation: IJI Journal* 8.1. 2020.: 59-76.
21. Ndou, Valentina: E-government for developing countries: Opportunities and challenges. *Electron. J. Inf. Syst. Dev. Ctries.* 18.1. 2004.: 1-24.
22. Nigussie, Zeleke Yimechew, et al.: Using mHealth to improve timeliness and quality of maternal and newborn health in the primary health care system in Ethiopia." *Global Health: Science and Practice* 9.3. 2021.: 668-681.

23. Nkwe, Nugi. E-government: challenges and opportunities in Botswana. *International journal of humanities and social science* 2.17, 2012.: 39-48.
24. Ntulo, Getrude, and Japhet Otike. E–government: Its role, importance and challenges. *School of Information Sciences. MoiUniversity*. 2013.: 1-16.
25. NUA Internet Trends and Statistics, 2002. http://www.nua.ie/surveys/ how_many_online/index.html, accessed 03/04/2024.
26. Obodo, Nick A., Davidson Oliver Anigbata: Challenges of implementing electronic governance in public sector organizations in Nigeria. *International Journal of Applied Economics, Finance and Accounting* 2.1. 2018.: 30-35. https://doi.org/10.33094/8.2017.2018.21.30.35
27. Palma, John Paul B., et al. "E-governance: A critical review of e-government systems features and frameworks for success." *International Journal of Computing Sciences Research* 7.2023.: 2004-2017.
28. Prasannakumar R.B E-Governance and Service Delivery-Scope and Implementation Issues (online) Available: www.napsipag.org/PDF/BR PRASANNAKUMAR.pdf.
29. Rossel, Pierre, and Matthias Finger: Conceptualizing e-governance. *Proceedings of the 1st international conference on Theory and practice of electronic governance*. 2007.
30. Sagaro, Getu Gamo, Gopi Battineni, and Francesco Amenta: Barriers to sustainable telemedicine implementation in Ethiopia: a systematic review. *Telemedicine Reports* 1.1. 2020.: 8-15.
31. Senshaw, Debas: Assessing the impact of WoredaNet usage on dynamic capabilities: a structural equation modeling of Woredas in Ethiopia. *Digital Policy, Regulation and Governance*. 2023.
32. Singh, Gurmeet, Raghuvar Dutt Pathak, and Rafia Naz: Service delivery through e-governance: perception and expectation of customers in Fiji and PNG. *Public Organization Review* 11. 2011. 371-384.
33. The United Nations Educational, S. a.: E-Government toolkit for developing countries. 2005.
34. The United Nations Educational, S.a.: E-Government toolkit for developing countries. 2005;
35. Umbach, Gaby, and Igor Tkalec: Evaluating e-governance through e-government: Practices and challenges of assessing the digitalisation of public governmental services. *Evaluation and program planning* 93. 2022.: 102118.
36. United Nations, Division for Public Administration, & Development Management: *United Nations e-government survey 2008: From e-government to connected governance.* 2008 (Vol. 2). UN.
37. Uyar, Kaan, Gezahegn Mulusew Delele, and Erkut Inan Iseri: Web accessibility of the Federal Democratic Republic of Ethiopia governmental websites. *IJCSNS* 20.6. 2020. 144.
38. Walle, Agmasie Damtew, et al.: Exploring facilitators and barriers of the sustainable acceptance of E-health system solutions in Ethiopia: a systematic review. *PLoS One* 18.8. 2023.: e0287991.
39. Wasistiono, Sadu, and Wike Anggraini: Three paradigms in government (good governance, dynamic governance, and agile governance). *International Journal of Kybernology* 4.2. 2019.: 79-91.
40. Yigezu, Moges: Digitalization in teaching and education in Ethiopia. *International Labour Organization* (2021).
41. Yimer, Ali Hussien: Challenging the Challenges of E-Government: The Ethiopian Context. *International Journal of Digital Strategy, Governance, and Business Transformation (IJDSGBT)* 11.1. 2021. 1-12.