Research Article

The Role of E-government in Improving Efficiency and Transparency in Public Services in Indonesia

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Abstract.

The role of e-government has great potential in improving administrative efficiency and government transparency. The implementation of e-government in sectors such as population administration, taxation, and healthcare has proven to reduce public service costs, accelerate administrative processes, and enhance service quality. For example, the e-KTP system simplifies the management of identity documents, while e-filing and e-billing in the taxation sector increase taxpayer compliance and reduce administrative costs. However, the implementation of e-government in Indonesia still faces significant challenges. Inadequate technological infrastructure in some areas, especially in rural and remote regions, and cultural and institutional resistance to the shift from manual to digital systems are major obstacles. Additionally, the limited availability of skilled human resources in information and communication technology hampers effective implementation. Nevertheless, with appropriate policy support, investment in infrastructure development, and capacity building of human resources, e-government has great potential to improve governance and enhance public welfare. Effective and sustainable implementation of e-government will help Indonesia face global challenges and achieve more efficient, transparent, and accountable governance.

Keywords: e-government, administrative efficiency, government transparency, public service costs, technological infrastructure

1. INTRODUCTION

The modernization of public services through the internet has been driven by advancements in information and communication technology (ICT). In the bureaucratic system, leveraging the internet is essential as a form of innovation and flexibility, allowing governments to implement technological and information systems that serve the public and businesses more effectively and efficiently (Meftah et al., 2015). This adoption of ICT in public services is widely known as electronic government or E-government. Essentially, E-government involves the use of technological tools such as computers and the internet in public services to facilitate citizen access. Its popularity has risen due to its ability to provide direct and more convenient access to public services.

Before 2005, traditional public services were still widely used across most regions in Indonesia (Aritonang, 2017). Prior to the introduction of E-government, Indonesia's government faced significant challenges, including a complex bureaucracy, slow service delivery, and a lack of transparency that fostered widespread corruption, collusion, and nepotism (KKN). Communication and coordination between agencies were further hindered by non-integrated systems and reliance on physical documents, which were susceptible to manipulation and loss. E-government addresses these issues by digitizing administrative processes, enhancing transparency and accountability, and facilitating better data integration (Minardi, 2018; Shevchenko & Sidorenko, 2020).

As of June 2014, Indonesia has 542 local governments, which include 34 provinces, 415 districts, and 93 cities utilizing E-government as a public service platform (Direktorat Jenderal Otonomi Daerah, 2015). However, nearly all local governments in the country are at the lowest stage of E-government development (Sofia & Hussein, 2013; Suhardi et al., 2015). According to Wantiknas (2022), every region in Indonesia has created a draft architecture for an "Electronic-Based Government System" (EGMS). An evaluation of the development and implementation of the SPBE has been conducted since 2019, encompassing 637 government agencies. The findings indicate that 60 percent of ministries and agencies, 50 percent of provincial governments, and 23 percent of district and city governments received a good rating. This evaluation aims to encourage agencies that received lower ratings in the previous year to improve their SPBE index (Kominfo, 2020). E-government challenges in developing countries like Indonesia can be attributed to several factors, including the standards and management of maturity levels as well as a lack of readiness in human resources for E-government implementation (Choi et al., 2016). Furthermore, approximately 60%-80% of E-government initiatives in developing countries experience failure, whether partial or total (Mates et al., 2013).

E-government implemented in the right way and by prepared human resources contributes greatly to the government and society. In line with that, although Indonesia still continues to improve several things in the implementation, Indonesia has been successful in terms of E-Government development in various regions. The 2020 E-Government Survey conducted by the United Nations (UN) ranked Indonesia 88th in the development of e-government or electronic-based government systems (SPBE). The results released in July 2020 show a significant improvement, up 19 ranks from 107th in 2018, and much better than 116th in 2016 (Kominfo, 2020). This shows the seriousness of the Indonesian government to realize an integrated, efficient, and transparent public service system.

Public services integrated with SPBE will make the bureaucratic process more transparent and more efficient than the conventional way. E-government is believed to reduce the cost of public services and improve the quality of public services. According to Kant (2022), E-government, by using information and communication technology, can make the government more efficient, effective, transparent, and accountable, thus becoming more SMART. E-government and smart city concepts are linked by themes such as data, governance, and participation, which require a case-based research approach to address issues in public services and disaster prevention. In the paper by Gong et al. (2020), E-government in smart cities leads to greater transparency, lower operational costs, and increased speed of cross-border transactions. Despite its many advantages, it is important to evaluate previous studies on E-government implementation to gain a better understanding before implementing it in Indonesia. This is because successful implementation methods in one country may not necessarily give the same results, and may even lead to failure. Based on the above, this study was conducted to analyze the implementation and challenges and opportunities of E-government in the context of public services in Indonesia, and understand the impact of E-government on efficiency and transparency in public services.

2. METHODS

This research uses the literature review method by sourcing all potentially relevant keywords related to E-government. The literature review was chosen to ensure comprehensive and in-depth data collection and analysis from published academic research. This approach focuses the search on research that is relevant to the scope of the issues raised in this article.

The literature review method in this study consists of several main stages according to (Wee & Banister, 2016): planning, identification (search), database screening, and eligibility determination. The literature review steps used are as follows.

1. Planning, namely determining the research questions on the implementation of E-government in the context of public services in Indonesia; the impact of E-government on efficiency and transparency in public services; challenges and opportunities faced in the implementation of E-government in Indonesia. Furthermore, keywords and databases to be used were determined. The keywords used include: E-government, public service efficiency, public service transparency,

public service information system, electronic public administration, e-government challenges. Bibliographic databases that are widely used in Public Administration such as Public Administration Abstracts, ABI/INFORM Collection, SCOPUS, SINTA, Emerald, Research Gate and Springer Link..

2. Identification (Search) i.e. accessing various sources to gather as much information as possible. In addition to electronic databases, we also made use of professional networks and organizations that have literature collections or libraries. From this search, we found a total of 90 articles.

3. Database Screening is to select articles that are relevant to the inclusion criteria, namely all research articles on the application, impact, challenges and opportunities of E-government in the context of public services in Indonesia. From the initial screening results, 28 articles were considered to meet the inclusion criteria. Only articles published from 2013 to 2023 were retrieved for further screening.

4. Determination of eligibility i.e. the screened articles were further evaluated based on strict selection criteria. After evaluation, 28 articles were selected and analyzed in depth. Key data from these articles were extracted to answer the research questions.

5. Data analysis: articles that met the criteria were analyzed to analyze the application, impact, challenges and opportunities of E-government in the context of public services in Indonesia.

3. RESULTS AND DISCUSSION

3.1. Implementation of E-Government in the Context of Public Services in Indonesia

State efforts to organize public service affairs aim to meet the basic needs and civil rights of every citizen concerning goods, services, and administrative functions (Setiawan & Melinda, 2020). However, an objective assessment reveals that these public services are still lacking in effectiveness, efficiency, and economy. Additionally, they often overlook aspects of social justice, which negatively impacts the bureaucracy and leads to deviant practices in public service (Setiawan, 2017).

Globalization is driving rapid changes that require modern organizations to remain responsive to technological advancements and the swift dissemination of information

accessible to the broader community (Sanjaya, 2016). Embracing change is essential for organizations, particularly in the public sector, to enhance transparency, accountability, and public participation. A crucial step in this direction is the integration of government administration systems through a unified online information network. This integration must be improved, especially within public services, to enhance accessibility, ensuring that data and information within agencies can be analyzed and utilized quickly, accurately, and securely (Sedarmayani, 2017).

E-Government is an internet-based application developed to meet the needs in today's digital era. E-Government is managed by the government to provide online services that connect between "government to government" (G2G), "government to business" (G2B), and "government to people" (G2C). In Indonesia, a common and regulated implementation of E-Government includes the creation of a government website. This website is part of the strategy to systematically develop the E-Government roadmap through realistic and measurable stages. In general, the objectives of E-Government implementation in Indonesia are as follows (Setiawan & Melinda, 2020; Wibawa, 2018):

1. Create a better business environment;

2. Creating online consumers with effective and efficient services;

3. Strengthening good governance and expanding community participation;

4. Increase government productivity;

5. Improving quality of life and prioritizing the public interest.

The effective implementation of public services is heavily influenced by the state of a country's bureaucracy. These bureaucratic conditions shape an environment that impacts the optimization of public services. Rahmi & Wijaya (2020) explain that streamlining bureaucracy can enhance the quality of public services, as demonstrated by an increase in the national public service index and higher compliance levels among ministries, institutions, and local governments. This finding aligns with research by Nureny et al. (2021), which indicates a strong relationship between bureaucratic ethics and employee performance, positively affecting service quality by 17%. Efforts to foster a more effective bureaucracy, emphasizing values of efficiency, can be achieved through the concept of E-Government. This innovation aims to transform the rigid and complex bureaucratic mindset.

In Indonesia, E-Government implementation is not merely a transition from manual to computerized or online-based systems. Philosophically, as noted by (Aritonang, 2017), it represents an effort to dynamically adapt bureaucracy to the changing external environment. Implementing E-Government requires careful planning and model design, taking into account several essential factors: a) alignment between the vision, mission, and goals of E-Government and those of the government; b) synchronization of data information systems with bureaucratic processes; c) the adoption of appropriate strategies; d) a structured and gradual approach; and e) sufficient support in terms of human and financial resources (Asmuni, 2019).

The progress of the E-government program in Jordan significantly impacts the achievement of electronic services in the public sector, increasing efficiency, flexibility, privacy, reliability, responsibility and trust (Nawafleh, 2018). This also applies as the role of E-government in Indonesia, services provided by government institutions can streamline bureaucratic work and ultimately make services better, effective, economical and equitable for the wider community (Sulistya et al., 2019).

In Indonesia, the concept of E-government has been regulated by the government through "Presidential Instruction of the Republic of Indonesia No. 3 of 2003 concerning National Policy and Strategy". Based on the Presidential Instruction, the development of E-government aims to improve electronic-based governance in order to improve the quality of public services effectively and efficiently (Farida et al., 2020). In preparing the E-government development roadmap, the government of the Republic of Indonesia acts as a policy maker that provides direction regarding E-government development strategies that are implemented in all government agencies, in accordance with the direction of the agency (Sabani et al, 2019).

Electronic-based government has an increasingly important role for office holders and decision makers (Farida et al., 2020). E-government implementation shifts traditional sources of accountability, making officials responsible for handling digital interfaces and citizens become producers of digital information. Thus, every government agency both at the central and regional levels will serve without the intervention of public agency employees and a tiresome queuing system so that it is more efficient and transparent (Petrakaki, 2016).

DKI Jakarta's Digital Administration "Investment and One-Stop Integrated Services" (PTSP) has implemented E-government to minimize maladministration in public services by utilizing the "Information and Communication Technology" (ICT) framework to provide

government services electronically (Viendyasari, 2020). In addition, the application of e-government in villages has also been running. The results of research by Istikomah et al. (2019) showed that e-government improved the quality of public services, provided information, and increased community empowerment in Waringinsari Timur Village, Indonesia.

The e-government system in Indonesia has increased in quantity but is still inadequate in quality, with uneven implementation and still functions as a static information provider (Chandra & Firdausy, 2023). Di beberapa pemerintahan daerah dan desa, pengembangan dan penerapan E-government masih terdapat kendala. Research by Putri & Reviandani (2023) show that the implementation of e-government in Indonesia, including Digital KTP, is still not running optimally due to the lack of information from village officials regarding new policies. The E-Government approach still faces obstacles because it is developed bottom-up. This bottom-up approach makes integration of results to the top level more difficult. This situation requires commitment from the leaders (political will) to determine the policy direction in implementing E-Government.

The right solution to the problem of improving the quality of E-government is to find a leader who has the right leadership pattern for implementing the E-government concept, so that it can be realized in a sustainable manner (Malodia et al., 2021). Research by Defitri (2022) show that political will has a direct positive effect on e-government implementation, with a path coefficient of 0.457 and significant at 5% alpha. Without the political will of the leadership, it is impossible for E-government to be successfully implemented nationally, so that the political will is in the form of (Widodo, 2019):

1. Support for political leadership that has a sustainable commitment,

2. The availability of funding allocations that have been prepared to be disbursed,

3. Agreement to coordinate across sectors,

4. Readiness of government resources to learn and change ways of working in accordance with the desired transformation, and

5. Efforts to make system improvements so that E-Government can take place sustainably and consistently.

The implementation of effective e-government in the regions requires significant attention from the central government. It is crucial for e-government to be a top priority for the country as it seeks to address global challenges. Successful e-government

implementation cannot rely solely on grassroots efforts; it must be supported by leadership, given the substantial investment and long-term commitment involved. Visionary leadership that is dedicated to using e-government to enhance public services and improve community welfare is essential for success. According to Meiyanti et al. (2018), key challenges in implementing e-government include cultural factors, as evidenced by community and government resistance to the system, which hinders innovation in Indonesia.

3.2. The Impact of E-Government on Efficiency and Transparency in Public Services

The implementation of e-government in various public service sectors has brought significant impacts in improving efficiency and transparency. Some of the sectors most affected by the implementation of e-government include the civil registration sector, taxation sector, and health sector.

3.2.1. Population Administration

The implementation of e-government in population administration, such as the online population administration system (e-KTP), has reduced the time and cost required to process identity documents. Previously, the process of making ID cards, birth certificates and family cards could take weeks or even months. With a digital system, people can now take care of these documents in a matter of days or even hours (Miranti & Perkasa, 2023). In addition, this system reduces the possibility of data fraud and misuse because all data is stored centrally and closely monitored.

3.2.2. Taxation

In the taxation sector, the implementation of e-government through e-filing and e-billing systems has increased efficiency and transparency in the tax reporting and payment process (Rokhman et al., 2023). Previously, taxpayers had to come and be present directly to the tax office to take care of taxes, which took time and additional costs. With e-filing, taxpayers can report their taxes online anytime and anywhere, thus reducing the administrative burden and increasing taxpayer compliance. The system also allows the

government to monitor and audit tax transactions in real-time, reducing opportunities for corruption and tax revenue leakage (Kumar & Kumar, 2018).

3.2.3. Health

In the health sector, the implementation of e-government in the form of electronic medical records (EMR) and integrated health information systems has improved the efficiency and transparency of health services (Cowie et al., 2017). With EMR, patient data can be easily accessed by various health facilities, thereby reducing duplication of examinations and speeding up the diagnosis and treatment process. An integrated health information system also allows the government to monitor and manage health services more effectively, ensure that resources are optimally allocated, and be transparent (Shahmoradi & Habibi-Koolaee, 2016).

In addition to positive impacts, the implementation of e-government also produces negative impacts on several things. E-government can exacerbate the digital divide, creating inequities in access to public services between those with access and technological skills and those without (Hardill & O'Sullivan, 2018). The use of the internet and e-government can reduce the level of public trust in government and citizens' compliance with government policies. E-government technologies can reduce or eliminate policy discretion at the frontline bureaucratic level, which can limit employees' ability to tailor services to individual needs (Buffat, 2015).

Overall, the implementation of e-government in various public service sectors has brought several positive impacts. The implementation of e-government in Indonesia has increased the efficiency and speed of public services, changing the relationship between elements in the state to be more effective (Farida et al., 2020). E-government enables faster and more efficient public services, and improves service quality through the use of digital technology (Shevchenko & Sidorenko, 2020). E-government increases transparency in electronic procedures, which helps reduce corruption and promote efficient management of fiscal resources (Shahsavandi et al., 2018).

3.3. Challenges and Opportunities Faced in the Implementation of E-Government in Indonesia

3.3.1. Challenges Faced in Implementing E-Government in Indonesia

The implementation of e-government in Indonesia faces various challenges. Generally, developing countries face many challenges in its implementation because they have a poorer context than developed countries (Choi et al., 2016). A case study conducted by Rusadi & Rahmadany (2023) concluded that inadequate information technology infrastructure, limited human resource capabilities, and lack of standardization in content development are challenges that hinder the optimization of E-government in Pontianak City, Indonesia. Another case study in Sidoarjo Regency related to DUKCAPIL online services conducted by Ummaroh & Choiriyah (2023) found that challenges in implementing E-government in Indonesia include limited public awareness and understanding, making it difficult to access online services.

In addition to infrastructure readiness issues, another challenge is cultural and institutional resistance. Many government employees and the public are still reluctant to accept changes from manual to digital systems. This is often due to a lack of understanding of the benefits of E-government as well as concerns about data security and privacy. This resistance can also arise from distrust of new technologies and uncertainty about how these changes will affect their work (Aminah & Saksono, 2021).

The issue of cybersecurity presents a significant challenge. As reliance on digital systems increases, so does the risk of cyberattacks and data breaches (Alharbi et al., 2017). Research by Permanasari (2022) indicates that Indonesia faced a doubling of cybersecurity problems, rising from 2019 to 495,337,202 incidents in 2020. Therefore, the government must ensure that the implemented E-government system has robust security measures to protect sensitive data from cyber threats.

Additionally, a shortage of skilled human resources in ICT poses an obstacle. Many government agencies lack experts who can effectively manage and maintain e-government systems (Ummaroh & Choiriyah, 2023). Addressing this challenge requires investment in training and competency development for government employees to ensure the sustainability and effectiveness of e-government implementation.

3.3.2. Opportunities for E-Government Implementation in Indonesia

Despite facing various challenges, the implementation of e-government in Indonesia presents significant opportunities to enhance governance and public services. One of the primary benefits is the potential to increase the efficiency and effectiveness of government administration (Farida et al., 2020). E-government can also foster greater transparency and accountability in government operations (Utama, 2020). With an integrated and easily accessible system, the public can more readily monitor and evaluate government performance, thereby minimizing opportunities for corruption and unethical practices. Furthermore, this transparency encourages more active public participation in decision-making processes.

The adoption of digital technology in government also stimulates innovation and promotes collaboration between the public and private sectors (Utama, 2020). By partnering with technology companies, the government can develop innovative and efficient e-government solutions. This collaboration has the potential to create a stronger digital ecosystem and support the growth of Indonesia's digital economy. In summary, while challenges remain, the implementation of e-government in Indonesia holds great promise for enhancing the quality of governance and public services, as well as strengthening public participation and trust in government.

4. CONCLUSION

The role of e-government has the potential to enhance administrative efficiency and government transparency. Its implementation across various sectors, including population administration, taxation, and health, demonstrates that this system can lower public service costs, expedite administrative processes, and elevate service quality. For instance, the e-KTP system in population administration streamlines the management of identity documents, while e-filing and e-billing in the taxation sector boost taxpayer compliance and reduce administrative expenses.

However, the implementation of e-government in Indonesia confronts several challenges. A significant obstacle is the inadequate technological infrastructure in many regions. Additionally, cultural and institutional resistance to transitioning from manual to digital systems poses a challenge, stemming from a lack of understanding of e-government's benefits and concerns about data security. The limited availability of

skilled human resources in information and communication technology further hinders effective implementation.

Despite these challenges, the potential for e-government in Indonesia to enhance the quality of governance and public services is substantial. With supportive policies, investments in infrastructure development, and efforts to build human resource capacity, e-government can serve as a vital tool for improving governance and advancing public welfare. The effective and sustainable implementation of e-government will enable Indonesia to address global challenges and achieve a more efficient, transparent, and accountable government.

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