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E-Government Implementation and Its Impact on Economic Efficiency

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ABSTRACT

The implementation of e-government has become a significant focus of efforts to improve government efficiency and transparency in various countries. E-government, which involves using information and communication technology (ICT) in government administration, aims to reduce operational costs, increase productivity, and improve the quality of public services. Through digitizing data and services and enhancing accessibility and public participation, e-government can reduce bureaucracy and increase accountability. However, challenges such as the digital divide, data security, and resistance to work culture change must be addressed to ensure successful implementation. With the right strategy, e-government can contribute significantly to economic efficiency and sustainable growth.

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INTRODUCTION

In an era of globalization and rapid technological development, many countries integrate information and communication technology (ICT) into their governance systems. This digital Transformation is known as e-government, which aims to improve the efficiency, transparency, and accessibility of public services. The use of this technology is not only a response to technological advances but also an effort to meet the increasingly high expectations of society for fast and efficient public services (Avianto et al., 2022; Ivic et al., 2022; Shevchenko & Sidorenko, 2020).

E-government refers to the use of ICTs by governments to provide information and services to the public, businesses, and other entities electronically. This concept covers various aspects such as e-administration, e-services, and e-democracy. With e-government, public services are expected to become more efficient and transparent and increase public participation in government processes (GHERASIM &; IONESCU, 2019; Sergeeva &; Denisov, 2019).

The implementation of e-government brings various significant benefits to the government. One of the main benefits is the reduction of operational costs. By reducing paper usage and speeding up administrative processes, e-government can save substantially on expenses. In addition, e-government also increases the productivity of civil servants by automating routine tasks so that they can focus more on more important strategic tasks and contribute more effectively to the achievement of Government objectives (Averin et al., 2021; Manita, 2023; S, 2019).

E-government plays an essential role in increasing transparency and accountability in government. The public can easily access data and monitor government activities with information available online. This increases public trust in the government and reduces corruption and budget abuse opportunities. Greater transparency also means higher accountability, where government officials must be accountable for their actions and decisions (Bahasoan et al., 2024; Shaikh et al., 2023; Steinbach et al., 2019).

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The implementation of e-government also has a significant positive impact on the economy. By simplifying the licensing process and tax payments, e-government can improve the ease of doing business. This can boost economic growth, attract foreign investment, and create new jobs. In addition, reducing bureaucracy and increasing operational efficiency increase a country's economic competitiveness in the global arena (Dorsey-Palmateer &; Niu, 2020; Kolodiziev et al., 2021; Semwal et al., 2020; Thuy & Hong, 2020) Although many benefits can be obtained, the implementation of e-government cannot be separated from various challenges. One of the main challenges is the digital divide, where not all citizens have equal access to technology. This can lead to inequality in the receipt of e-government benefits. In addition, data security and privacy issues are also a significant concern. Governments must ensure that citizens' data is safe from cyber threats and misuse (Braun et al., 2018; Chenthara et al., 2019; Govindarajan, 2018; Susanto et al., 2021).

The successful implementation of e-government depends mainly on adequate ICT infrastructure and trained human resources. Investment in developing digital infrastructure, such as fast and reliable internet networks, is essential. In addition, training and competency development of government employees in using new technologies is also crucial. Without skilled and knowledgeable human resources, the implementation of e-government will not run effectively and efficiently (Apleni &; Smuts, 2020; Chohan &; Hu, 2022; Odutola et al., 2023; Shin et al., 2020).

The change from manual to digital systems also requires a shift in work culture in the government environment. Government employees must be prepared to adapt to new technologies and abandon conventional working methods. This process often faces resistance, especially from employees working with the old system for a long time. Therefore, changes in work culture must be accompanied by a wise approach, effective communication, and support from government leaders.

Many countries have successfully implemented e-government with various approaches that can be used as case studies and best practices. For example, Estonia is one of the leading countries in e-government, with almost all public services available online. The experience of these countries can be a valuable lesson for other countries that are just starting or are in the process of developing e-government. By learning from the successes and challenges faced by different countries, the government can implement e-government more effectively and efficiently and achieve the goal of increasing economic efficiency and public welfare (Adeodato &; Pournouri, 2020; Morze et al., 2021; Pappel et al., 2021)

By understanding the background, benefits, and challenges of e-government implementation, this article will further explore how e-government can be an effective tool to achieve economic efficiency and strengthen sustainable economic growth.

METHODS

This research uses a qualitative approach with a case study method to explore the implementation of e-government and its impact on economic efficiency. The qualitative approach was chosen because it allows researchers to understand complex phenomena through narrative and descriptive analysis deeply. Case studies were selected to provide a concrete picture of the implementation of e-government in several countries, as well as identify factors that influence the success and challenges faced (Ahmed et al., 2021; Apleni &; Smuts, 2020; Marino & Pariso, 2019).

Data in the study were collected through various sources, including a literature review, document analysis, and semi-structured interviews. The literature review includes scientific articles, government reports, and other publications relevant to e-government and economic efficiency. Document analysis was carried out on policies, strategies, and reports on the implementation of e-government in several countries, and these were used as case studies. Semi-structured interviews were conducted with experts and practitioners in the field of e-government to gain in-depth

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perspectives and practical experience related to e-government implementation (Md. Abdur Rashid &; Mohammad Shorif Uddin, 2023; Wanto, 2019).

The collected data is analyzed using thematic analysis techniques to identify relevant patterns, themes, and categories. Thematic analysis allows researchers to organize data systematically and identify critical issues emerging from the data. The study involves coding data, grouping code into central themes, and interpreting those themes to answer research questions (Mishra &; Dey, 2022; Scharp & Sanders, 2019; Wan, 2018). The findings from this analysis are used to develop a more comprehensive understanding of how e-government affects economic efficiency and the factors that influence its implementation.

To ensure the validity and reliability of the study, researchers use data triangulation by combining various data sources and data collection methods. This triangulation helps minimize bias and increase the credibility of the findings. In addition, researchers also conduct member checking by confirming findings and interpretations with several respondents to ensure the accuracy and suitability of the data. Careful documentation and transparency in the analysis process are also applied to allow other researchers to replicate and verify the study (Caretta & Pérez, 2019; DeCino & Waalkes, 2019; Zairul, 2021).

With this research method, it is hoped that this research can provide deep and comprehensive insights into the implementation of e-government and its impact on economic efficiency, as well as offer practical recommendations for governments that want to optimize the implementation of e-government in their countries.

RESULTS AND DISCUSSION

Benefits of E-Government Implementation

The implementation of e-government provides various significant benefits for the government and society. One of the main benefits is increased operational efficiency. By adopting information and communication technology (ICT), administrative processes that previously took a long time can be completed more quickly and efficiently. For example, business license applications that previously took weeks can now be completed in a matter of days through an online portal. This saves time and reduces operational costs that must be incurred by the government and society (Mohammed &; Ibrahim, 2019; Prokopiadou, 2020).

One concrete example of improved operational efficiency is managing documents and archives. With digitizing documents, searching and managing information becomes more accessible and faster. Employees no longer need to spend hours searching for physical files in piles of files. This process saves time and reduces the need for physical storage space, ultimately saving operational costs (Bhaskar et al., 2020; Kasemsap, 2018).

In addition, e-government enables the automation of various administrative processes, such as tax and bill payments, vehicle registration, and identity renewal. With this automation, people no longer need to queue at government offices to complete their administrative affairs. This dramatically reduces the workload of civil servants and allows them to focus on more strategic and vital tasks (Lagodiienko et al., 2022; Memon et al., 2019).

E-government also provides easy access to information for the public. With public service portals available online, people can easily access the information they need anytime and anywhere. This includes information about government services, regulations, policies, and procedures. This ease of access to information increases convenience and efficiency in interacting with the Government (John &; Glorindal, 2023).

In addition to increasing efficiency, e-government also plays a vital role in increasing government transparency and accountability. With information available online and accessible to the public, the public can monitor government activities and ensure that public funds are used efficiently

and on target. This increased transparency also reduces the chances of corruption because the public and supervisory agencies can monitor every government transaction and expenditure in real-time (Christopher et al., 2019).

Apparent examples of increased transparency are budget management and procurement of goods and services. With the e-procurement system, the procurement process becomes more transparent and can be supervised by the public. Information about bidding, contracts, and project execution can be accessed online, reducing the chances of corruption and collusion in the procurement process (Niu et al., 2022).

Government accountability has also increased with e-government. Online reporting systems allow the public to provide feedback and report any problems or abuses. The government can respond quickly to these reports and take necessary action. This builds people's trust in the government and ensures that the government is held accountable for its actions (Almuqrin et al., 2022; Campo et al., 2022; Lameiras et al., 2022).

Implementing e-government provides significant benefits, including improved operational efficiency, transparency, and accountability. By adopting information and communication technology, the government can provide public services more quickly, efficiently, and transparently, ultimately increasing public trust and participation in government.

Positive Impact on the Economy

E-government has a significant positive impact on the economy. The business environment becomes more conducive with easy access to public services and reduced bureaucracy. A faster and more transparent licensing process encourages investment from within and outside the country. For example, in countries that successfully implement e-government effectively, there is a significant increase in foreign direct investment (FDI) as investors have more confidence in the efficiency and transparency of local bureaucracies (Chaudhary et al., 2020; Yu & Li, 2020).

Reducing bureaucracy through e-government speeds up the licensing process and reduces the costs that business actors must incur. Long and convoluted procedures are often a significant barrier to investment, especially for small and medium-sized enterprises. With e-government, business actors can take care of permits and other administration online without incurring additional costs for travel or intermediary services (Contractor et al., 2020; Relief, 2023).

In addition, e-government reduces the potential for corrupt practices in the licensing and administration process. The transparency generated by digital systems allows the public and authorities to oversee every administrative process step. This creates a more fair and competitive business environment, where companies can compete based on quality and innovation, not because of connections or bribes (Khushnood et al., 2020).

E-government also increases the productivity of the public and private sectors. Public servants can focus on more strategic and value-added tasks, while businesses can allocate more time and resources to productive activities rather than taking care of various administrative procedures. For example, with the online tax payment system, business actors can pay taxes more efficiently and on time, thereby reducing administrative burden and avoiding late fees (Phung et al., 2019; Yiadom et al., 2023).

The cumulative impact of this increase in efficiency is an increase in the overall competitiveness of a country's economy on the global stage. Countries that successfully implement e-government well tend to have a more dynamic and innovative business environment. This attracts foreign investors and encourages domestic economic growth through increased productivity and innovation in various sectors (Martyniak &; Bakushevych, 2021; Onileowo et al., 2021).

A vivid example of the positive impact of e-government on the economy can be seen in Estonia. The country is known as a pioneer in implementing e-government, with almost all public

services available online. As a result, Estonia has attracted many foreign investors and is one of the fastest-growing economies in the European Union. The e-residency program offered by Estonia also allows entrepreneurs from all over the world to set up a company in Estonia without having to live in the country, making an additional contribution to the economy.

The implementation of e-government also encourages the development of the country's digital ecosystem. The private sector can utilize the technology infrastructure built to support e-government in developing various digital services and products. This creates new opportunities for startups and tech companies to grow and innovate, ultimately driving job creation and improving people's well-being.

In addition, e-government also plays a role in increasing people's digital literacy. With more and more public services available online, people are encouraged to learn and adopt digital technology daily. This increases efficiency in accessing public services and opens up opportunities for people to utilize digital technology in other fields, such as education, health, and business (Deng et al., 2019; Kim & An, 2022).

Overall, e-government has a broad and profound positive impact on the economy. By creating a more conducive business environment, increasing productivity, and encouraging innovation, e-government contributes significantly to sustainable economic growth. Countries that successfully implement e-government effectively will have higher competitiveness at the global level and be able to provide better welfare for their people.

Challenges in E-Government Implementation

Although many benefits can be obtained, implementing e-government cannot be separated from various challenges. One of the main challenges is the digital divide. Not all communities have equal access to technology, especially in remote or less developed areas. This can lead to inequality in the receipt of e-government benefits, where people who do not have internet access or digital devices cannot enjoy the services provided. This gap can potentially exacerbate social and economic inequities, as only those with access to technology can enjoy the ease and efficiency of e-government services (Nakayama et al., 2023; Philip & Williams, 2019).

To address this digital divide, considerable investments in technology infrastructure are needed, especially in remote areas. The construction of a fast and reliable internet network must be a top priority. In addition, education and training programs for the public on the use of digital technology are also significant. The government can work with the private sector to provide technological devices at affordable prices and establish digital training centers in various regions (De La Cruz-Ramirez &; Olaza-Maguiña, 2021).

Data security and privacy issues are also significant concerns in implementing e-government. With more and more personal data being stored and processed electronically, the risk of data leaks and cyberattacks is increasing. Governments should ensure that e-government systems have adequate protection against such threats, including by implementing encryption, strong authentication, and periodic security audits. Data security must be a priority to maintain public trust in the e-government system (Song et al., 2020).

The implementation of e-government also requires a change in work culture among civil servants. Many employees may feel familiar with manual procedures and reluctant to switch to digital systems. Resistance to these changes can be a severe obstacle to implementing e-government. Therefore, a comprehensive training and development program is needed to improve employees' digital competence and change their mindset to be more open to Technology (Bulatova et al., 2023).

In addition, budget constraints are often an obstacle in implementing e-government. The construction and maintenance of digital infrastructure require a lot of money. The government needs to ensure a sufficient budget for e-government projects, including costs for system development,

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employee training, and public outreach. Sources of funds can come from the state budget, international loans, or cooperation with the private sector (Wen et al., 2023).

Coordination between government agencies is also a challenge in implementing e-government. The implementation of e-government requires close cooperation between various ministries and government agencies. Lack of coordination can lead to duplication of effort, inefficiencies, and confusion among the public. Therefore, a clear framework and effective coordination mechanism are needed to ensure that all government agencies can work well together in implementing e-government (El-Bawab, 2020).

Another challenge is the limited technological infrastructure in some countries. Although some developed countries already have adequate technological infrastructure, many developing countries still face severe infrastructure constraints. The availability of electricity, reliable internet networks, and adequate technological devices is still a big challenge. Governments of IT countries need to invest heavily in developing technological infrastructure to support the implementation of e-government (Ye &; Yang, 2020).

In addition to the above challenges, paying attention to legal and regulatory aspects in implementing e-government is essential. Clear and firm regulations regarding personal data protection, cybersecurity, and the use of information technology are needed. The government must ensure that existing rules can support and protect the implementation of e-government and provide legal certainty for all parties involved. Regular regulatory updates are essential to adjust to ever-changing technological developments (Philip & Williams, 2019).

Although the implementation of e-government offers many benefits, the challenges require severe attention and comprehensive handling. The government must work hard to overcome these challenges so that the implementation of e-government can run successfully and provide maximum benefits to the community.

Case Study: E-Government Implementation in Estonia

Estonia is one example of a country that has successfully and effectively implemented e-government. Almost all public services in Estonia are available online, from applying for a business license paying taxes, to elections. Estonia's success in e-government is inseparable from significant investments in digital infrastructure, supportive regulations, and education and training for government employees and the public. The country started its digital journey in the early 2000s and is firmly committed to building an inclusive and efficient digital society (Stephany, 2019; Tammpuu &; Masso, 2019).

One of Estonia's well-known initiatives is e-Residency, which allows people from all over the world to become "digital residents" of Estonia and access digital business services provided by the Estonian government. The initiative has attracted thousands of business people from various countries, increased state revenues, and strengthened Estonia's position as a global leader in e-government. E-Residency gives users a digital identity, allowing them to electronically sign documents, manage businesses remotely, and participate in the Estonian financial system easily (Bharosa et al., 2020).

Estonia's success is also underpinned by innovative and adaptive regulation. The Estonian government recognizes the importance of flexible rules to support technological developments. Laws governing the use of digital signatures, encryption, and data privacy have been adjusted to support the implementation of e-government. The government is also developing the X-Road system, which enables secure and efficient data exchange between government agencies and the private sector, ensuring high data integrity and security (Hoffmann &; Solarte Vasquez, 2022).

In addition to infrastructure and regulation, education and training are also crucial to Estonia's success. The Estonian government has launched various digital education programs to improve digital literacy among the public and government employees. The program includes training in information

technology, cybersecurity, and data management. With the improvement of digital skills, Estonians can easily access and utilize e-government services, while government employees can carry out their duties more efficiently and responsively (Aru-Chabilan, 2020; Storozhenko, 2023).

The implementation of e-government in Estonia has also had a positive impact on operational efficiency and government transparency. Administrative processes that previously took a long time can now be completed quickly and easily through digital platforms. In addition, transparency resulting from the e-government system has increased government accountability, reduced corruption, and built public trust in public institutions. Estonia is now known as one of the countries with the lowest levels of corruption in the world, thanks in large part to the transparency enhanced by e-government (Adeodato &; Pournouri, 2020; Morze et al., 2021).

Estonia's success in implementing e-government provides valuable lessons for other countries that want to follow in its footsteps. The keys to success include strong government commitment, investment in digital infrastructure, supportive regulations, and ongoing education and training. By adopting a comprehensive approach focused on inclusivity and security, other countries can develop effective e-government systems that deliver significant benefits to their societies and economies.

Recommendations for E-Government Implementation

Based on the findings of this study, several recommendations can be made to improve the implementation of e-government. First, the government must ensure equitable access to technology, especially in remote areas. This can be done by building adequate digital infrastructure, such as high-speed internet networks, and setting up technology service centers in those areas. In addition, the government can provide subsidy programs or assistance for technological devices and internet access for underprivileged communities. With this step, all levels of society can feel the benefits of e-government fairly and equitably.

Second, data security and privacy should be top priorities in developing e-government systems. Governments should implement high-security standards, such as data encryption, double authentication, and sophisticated monitoring systems, to protect personal and sensitive information. In addition, conducting periodic security audits is critical to detecting and remediating potential vulnerabilities before a data leak or cyberattack occurs. Through this policy, public trust in the e-government system can be maintained, and the risk of cyber threats can be minimized.

Third, education and training for government employees and the public must be improved. The government should provide comprehensive training programs to improve the digital competence of civil servants and the general public. This training should cover essential aspects such as using software and the internet and more complex cybersecurity and data management topics. With adequate skills, government employees can effectively carry out their duties, and people can more easily access and utilize e-government services.

In addition, promoting a work culture that supports innovation and the use of technology is also significant. The government should encourage employees to be open to changes and adaptations to new technologies. This can be done by providing incentives for innovative ideas and implementing a performance appraisal system that rewards digital initiatives. Thus, employees will be more motivated to continue learning and innovating, increasing the efficiency and effectiveness of public services.

Furthermore, cooperation between the public and private sectors also needs to be improved to support the implementation of e-government. Governments can partner with tech companies to develop innovative solutions to improve public services. In addition, the cooperation could also include joint training programs, where technology companies can share knowledge and skills with government employees and the public. With good synergy between the public and private sectors, the implementation of e-government can run more smoothly and effectively.

Finally, adaptive and supportive regulations need to be developed to support the implementation of e-government. The government must ensure that existing rules accommodate rapid technological developments and changing societal dynamics. This includes regulations on data protection, cybersecurity, and the use of information technology. Clear and firm regulations will provide legal certainty for all parties involved and encourage innovation and use of technology in the public sector. With the proper rules, the implementation of e-government can run more smoothly and provide maximum benefits to the community.

CONCLUSION

The implementation of e-government brings various significant benefits that can improve operational efficiency, transparency, and government accountability. By adopting information and communication technology, governments can provide public services more quickly, efficiently, and cost-effectively. In addition, e-government also helps increase transparency by allowing the public to access government information in real time, increasing public trust and reducing opportunities for corruption. The positive impact on the economy is also seen with increased ease of doing business, investment withdrawal, and new job creation driven by a more conducive business environment. However, to ensure successful e-government implementation, governments must address various challenges, such as the digital divide, data security, and resistance to changing work culture. Investments in digital infrastructure, education, and human capital training are critical to support this Transformation. With firm commitment and collaboration between government, private sector, and society, e-government can achieve higher economic efficiency and strengthen sustainable economic growth. Case studies from prosperous countries like Estonia can be valuable lessons for optimizing e-government implementation in other countries.

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