

## Technological Innovation in Public Administration Transformation: Case Study of e-Government Implementation in Indonesia

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**Abstract:** *This research investigates the impact of technological innovation on the transformation of public administration through the implementation of e-government in Indonesia. The main objective of this research is to analyze the extent to which the implementation of e-government has contributed to efficiency, transparency, and community involvement in the delivery of public services. The research methodology involves a case-study approach to e-government implementation at various levels of government in Indonesia. The results of this research highlight the positive impact of information and communication technology (ICT) innovation in the transformation of public policy, especially in Indonesia. The digitalization of public services, increasing transparency and public participation through social media, efficiency and cost savings through process automation, and efforts to increase data security are key points that support the transformation of public administration. The implementation of e-government in Indonesia, driven by central government policy, reflects efforts to improve services, efficiency, and community involvement. However, challenges such as the digital divide, resistance to change, legal and regulatory issues, and the need for inclusive public participation are things that need to be considered in implementing ICT innovation in public policy. Taking these challenges into account, this research concludes that ICT innovation can be a significant driver in achieving positive transformation in public administration, provided that it is necessary to overcome the obstacles that arise.*

**Keywords:** *Innovation; Information and Communication Technology (ICT); Transformation; Public Administration; e-Government.*

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## **Introduction**

Digital transformation has fundamentally changed the way humans interact and operate in various sectors of life, including public administration (Rosyadi et al., 2021). The development of sophisticated information and communication technology has opened up new opportunities to improve the efficiency and quality of public services. The application of this technology not only speeds up administrative processes but also allows easier access for the public to obtain information and participate in public policies (Islah, 2018). In the context of digital transformation, public administration is no longer solely a bureaucratic entity but has become an online-connected ecosystem, utilizing digital platforms to support various aspects of its tasks (Pangandaheng et al., 2022).

Public administration, as a system responsible for setting and implementing public policy, is increasingly involving itself in the use of online platforms, data analysis, and e-government policies to improve its quality and responsiveness (Scupola & Mergel, 2022). The use of online platforms facilitates faster and more efficient services for the public, while data analysis helps public administration make evidence-based decisions to increase policy effectiveness (Lindgren & van Veenstra, 2018). E-government policies also become the basis for innovation in the delivery of public services, creating an environment where active community participation and transparency become increasingly enhanced values (Dharmanu, 2017). Digital transformation in public administration is not just about applying technology but rather about changing paradigms and work processes to be more

responsive to the growing demands of society (Lestari et al., 2019).

The application of sophisticated information and communication technology in public administration not only creates changes but also has a significant impact on the collection, processing, and exchange of information (Wang & Feeney, 2016). As noted by Myeong & Jung (2019), this technology opens up opportunities to increase efficiency in administrative processes, reduce the burden of manual work, and increase transparency through faster access to information. The use of information and communication technology also speeds up decision-making by providing more accurate and real-time data for decision-makers (Wahono & Ali, 2021).

In this digital era, governments in various countries have actively adopted technological innovation to improve public services and achieve better governance. Adoption of online-based applications, e-government systems, and big data analysis are strategic steps in achieving this goal (Al-Zahrani, 2020). Online-based applications provide easy access for the public to obtain information or carry out transactions electronically, while e-government systems bring transformation to administrative processes, speed up public services, and increase public participation (Alshaher, 2021). Big data analysis is becoming an important tool for detailing and understanding patterns that emerge from collected data, providing a strong basis for smarter decision-making (Ameen et al., 2020).

Law Number 11 of 2008 concerning Electronic Information and Transactions (UU ITE) has become one of the fundamental pillars in the implementation of e-government in Indonesia (Maulani,

2020). Through this law, the government shows its commitment to supporting the development of information technology by providing a solid legal basis. The main focus of the ITE Law is to ensure that the use of information technology can be carried out safely, efficiently, and effectively in order to realize e-government (Kurnia et al., 2017). One important aspect accommodated in the ITE Law is the need for legal infrastructure that supports the development of information technology. This is the basis for the government to formulate policies that regulate the procedures for using information technology in various sectors, including public administration (Heryadi, 2023). The importance of security aspects is also emphasized in the ITE Law, with the main aim of preventing misuse of information technology, which can harm individuals, government agencies, and the general public (Aji, 2023).

Not only paying attention to technical aspects, the ITE Law also looks at the religious and socio-cultural values of Indonesian society. This is in line with the spirit of maintaining harmony and balance in the use of information technology, so that e-government development not only brings benefits in the technological realm but also remains in line with local values that are upheld in high regard (Fitri, 2022). Thus, the ITE Law is not only a technical regulation but also a comprehensive guideline that involves crucial aspects to ensure that e-government in Indonesia runs in line with the moral and cultural values inherent in society (Iswandari, 2021).

Law Number 23 of 2014 concerning Regional Government provides a strong legal basis to direct the implementation of regional government towards realizing community welfare (Khumayah, 2023). In this framework, improving services to the

community is the main focus, and it is hoped that it can have a positive impact on accelerating improvements in the quality of life of the community at the local level (Khumayah, 2020). By paying attention to the principles of democracy, equality, justice, and the uniqueness of a region, this law underlines the importance of involving the community in the decision-making process, in line with the spirit of empowerment and active participation (Rahmawati et al., 2021).

Furthermore, the law emphasizes community participation as an integral part of regional government administration. Community empowerment is the basis for implementing policies that are more inclusive and responsive to local needs (Namlis, 2018). Meanwhile, the aspect of increasing regional competitiveness provides encouragement for regional governments to adopt innovation, including the use of information technology to support administrative efficiency and improve the quality of public services (Akbar, 2020). Thus, Law Number 23 of 2014 provides a holistic legal basis, including the values of democracy and justice, to direct regional governments towards community empowerment efforts and increasing welfare while still paying attention to the uniqueness of each region under the flag of the Unitary State of the Republic of Indonesia (Nurdin, 2018).

E-government, or electronic-based government, has emerged as a crucial innovation in carrying out the transformation of public administration, especially in Indonesia. This country, with its diverse geographic and infrastructure challenges, is often faced with difficulties in improving the efficiency of public services (Irawan, 2017). In this context, e-government provides revolutionary

solutions by utilizing advances in information technology (Darmawan, 2018). By digitizing administrative processes, local governments can significantly improve accessibility, efficiency, and transparency in the delivery of public services. The implementation of e-government allows people to access various government services online, reducing geographical barriers and providing easy access, especially for those in remote areas (Choirunnisa et al., 2023). In addition, digitalized administrative processes can cut bureaucracy and speed up the handling of public requests. Not only that, e-government also has the potential for increased transparency because government information becomes more easily accessible to the public. Data and policies can be presented openly, allowing the public to understand and monitor government performance more effectively (Buchari, 2016).

This research aims to explore the impact of technological innovation on the implementation of e-government in Indonesia, with a focus on the transformation of public administration. Through a detailed analysis of success factors and barriers, this research aims to provide a deeper understanding of the contribution of information technology to redefining administrative processes. The benefits of this research involve theoretical contributions to enriching academic literature on e-government as well as providing practical insights for policymakers to improve e-government implementation, advance public services, and achieve more effective and responsive governance at the national level.

## **Method**

This research will adopt a qualitative approach to explore individual perceptions, attitudes, and experiences

related to technological innovation in the transformation of public administration, with a focus on case studies of e-government implementation in Indonesia. A qualitative approach was chosen to provide space for more in-depth exploration of complex subjective aspects in the context of this research (Yulianah, 2022). This research analysis will rely on an in-depth literature study, summarizing key concepts in technological innovation, public administration, digital transformation, and e-government implementation in Indonesia. By extracting data from document analysis and literature studies, this research aims to provide a comprehensive understanding of the role of technological innovation in the transformation of public administration, using case examples of e-government implementation in Indonesia. It is hoped that the results of this research will provide new insights and significant contributions to understanding the relationship between technological innovation in public administration and the concept of digital transformation, providing a foundation for the development of policies and best practices in the future.

## **Results and Discussion Information and Communication Technology (ICT) Innovation in Public Policy Transformation**

ICT innovation has become a major driver in the transformation of public administration in the current digital era. ICT has changed the landscape of public administration, improved public services, and increased interaction between government and society (Hermawan et al., 2022). The following are the forms of change that have occurred in public administration due to ICT.

### 1. Digitalization of Public Services

Information and communication technology (ICT) innovation has become a major catalyst in changing the face of public services towards more efficient and inclusive digitalization. The adoption of this technology significantly responds to public administration challenges by providing various services online, creating unprecedented ease of access. For example, the tax payment process, which previously took time and effort, can now be done quickly and easily via digital platforms. The use of technology also facilitates online submission of documents and registration, reducing the administrative burden on the public and increasing efficiency in handling various administrative procedures.

The digitalization of public services not only provides convenience but also accelerates the government's response to community needs. Processes that previously might have taken days can now be completed in a matter of hours or even minutes. Apart from that, digitalization also provides an opportunity for the government to improve the quality of public services, increase transparency, and minimize the potential for human error. With ICT innovation, society can experience direct benefits from better efficiency and accessibility in accessing public services, encouraging inclusivity and active participation in administrative processes.

### 2. Transparency and public participation

The role of information and communication technology (ICT) innovation in increasing the

transparency of public administration cannot be ignored. Through the use of information portals, social media, and online participation platforms, ICT innovation has opened the door to greater access for the public to information related to policy and public administration management. Official government information portals provide a platform for presenting data and policies openly, enabling the public to understand more deeply about government decisions and actions. With this transparency, the community has the ability to monitor and assess government performance, forming a strong participatory basis in the development process.

Apart from that, ICT innovation also brings a paradigm shift in interactions between government and society through social media and online participation platforms. The public not only receives information but can also actively participate in the decision-making process. Discussion, feedback, and participation in online surveys provide a platform for the public to convey their views directly to the government. This creates a dynamic and sustainable public space, strengthens community involvement in development, and affirms democratic principles. Thus, ICT innovation is not only a tool for providing information but also a means of strengthening transparency and building more inclusive relationships between government and society.

### 3. Efficiency and cost savings

Information and communication technology (ICT) innovation has a central role in increasing efficiency in

public administration. The use of modern data management systems allows governments to store, manage, and access information more quickly and accurately. Platform integration across multiple administrative levels reduces communication barriers and facilitates more effective data exchange among departments and agencies. Through process automation, routine administrative tasks can be completed more quickly and without human error, minimizing the potential for bureaucracy to slow down the government's response to community needs.

Automation systems also result in significant cost savings in public administration. Manual processes that consume time and human resources can be replaced with more efficient, automated solutions. This not only improves government productivity and responsiveness but also leads to more effective use of the budget. The reduction in bureaucracy that occurs through ICT innovation not only simplifies administrative processes but also has a positive impact on the overall effectiveness and efficiency of public services. Thus, ICT innovation not only brings changes in the way public administration is run but also generates economic benefits through cost savings and optimization of resource management.

#### 4. Data security and protection

Information and communication technology (ICT) innovations bring significant challenges related to data security, especially in the context of managing people's personal information. The increasing volume and sensitivity of data collected by governments through various digital

platforms emphasizes the urgency of the need for strict regulations to protect individual privacy. Data security is essential to prevent potential risks such as identity theft, misuse of personal information, and cyber-attacks on public administration systems.

Strict regulations are also needed to maintain the security of the government's digital infrastructure. Cyberthreats are increasingly complex and evolving, demanding proactive steps in protecting data and the systems that manage it. Regulations should include high security standards, effective early detection systems, and emergency response measures to deal with security incidents. In addition, it is important to ensure that the implementation of ICT innovations not only improves efficiency but also takes into account data protection and cybersecurity as top priorities.

#### 5. Increased Accessibility and Inclusion

Information and communication technology (ICT) innovation plays a crucial role in increasing the accessibility of public services, especially for groups that were previously difficult to reach. Efforts to present technology in an inclusive manner are a priority in realizing equitable services for all levels of society. For example, with the adoption of e-government, public services such as paying taxes, submitting documents, or registering online can be accessed more easily and quickly, overcoming geographic or physical mobility barriers that may be barriers for some individuals.

The importance of ensuring technological inclusivity is reflected in efforts to reduce the digital divide. ICT innovations must be designed and implemented by considering the diversity of user needs and abilities. The government, together with relevant stakeholders, needs to develop policies and technological solutions that support the participation of all levels of society, including those who may have limited physical, economic, or educational access. By paying special attention to inclusivity, ICT innovation can be a means of overcoming inequalities of access and ensuring that the benefits of technological progress can be enjoyed by all of society. In this way, the government can ensure that technological evolution has an equitable and inclusive positive impact on all its citizens.

### **ICT Innovation in E-Government in Indonesia**

Information and communication technology (ICT) innovations implemented by district and city governments in Indonesia are triggered by regulations and policies issued by the central government. This initiative started when the central government issued Presidential Decree Number 50 of 2000 concerning the Indonesian Telematics Coordination Team. This team is tasked with coordinating ICT developments in the government and private sectors. In 2001, the central government issued Presidential Instruction Number 6 of 2001 concerning the National Information and Communication Technology Action Plan, which emphasized the use of ICT as a tool to empower citizens, improve welfare, reduce poverty, and overcome the digital divide.

In 2003, the Indonesian government launched two important instructions, namely Presidential Instruction Number 9 of 2003 concerning the Indonesian Telematics Coordination Team and Presidential Instruction Number 3 of 2003 concerning National E-Government Implementation Policy and Strategy. The Indonesian Telematics Coordination Team is responsible for coordinating and encouraging ICT development in the government, business, and community sectors, as well as increasing the involvement of related actors. Although some local governments have adopted and implemented ICT, there is a lack of coordination and standardization from the central government.

Presidential Instruction Number 3 of 2003 sets out the main objectives of adopting and implementing e-government, including improving public services, developing interactive communication between government and business, improving inter-governmental communication, increasing efficiency and transparency, and facilitating communication between central and regional governments. This Presidential Instruction aims to increase the competitiveness of government institutions, including regional governments, in the global development arena while providing opportunities for citizens to participate in regional development policies. However, the coordination and implementation challenges encountered by local governments highlight the importance of further support and guidance from the central government in realizing the e-government vision consistently across Indonesia.

The following are the needs for ICT innovation in e-government for various functions, namely:

1. Service Function

Service function in the context of e-government refers to the ability to provide public services electronically, utilizing information and communication technology (ICT) innovations. In particular, e-government is directed at increasing the efficiency and accessibility of public services through digital platforms. In this context, ICT innovation allows the government to provide various services to the public online. First, this service function includes the process of paying taxes, submitting documents, registering, and other services that previously may have required physical presence at a government office. By utilizing ICT innovation, the public can access and complete various administrative procedures without having to come directly to government offices. This not only increases convenience for citizens but also speeds up the service process by reducing the time required to handle multiple requests. Additionally, the service function involves providing public information through official government portals, ensuring that citizens can easily access up-to-date and relevant information. ICT innovations enable faster and more accurate presentation of information, increase government transparency, and give citizens the ability to better monitor government policies, programs, or decisions.

2. Setting Function

Regulatory function in the context of e-government refers to the government's ability to manage and

regulate various policies, regulations, and administrative processes electronically. ICT innovation plays a central role in enhancing these regulatory functions by providing platforms that enable governments to effectively manage resources, set policies, and monitor regulatory compliance. In this context, ICT innovation allows the government to formulate and disseminate regulations more efficiently, reduce bureaucracy, and speed up the decision-making process. Information management systems and e-government platforms facilitate coordination between government agencies, enabling faster and more structured data exchange. In addition, the regulatory function includes implementing policies through digital tools. For example, the government can use e-government systems to implement social programs, manage public funds, or monitor the implementation of certain policies. This provides continuity and transparency in the implementation of government policies, as well as facilitating monitoring and evaluation of their effectiveness.

3. Development Function

The development function in the context of e-government refers to the role of information and communication technology (ICT) innovation in supporting the economic, social, and infrastructure development of a country or region. E-government as a development tool focuses on the use of technology to improve people's welfare, reduce inequality, and promote economic growth. In the context of development functions, e-government can be used to accelerate the economic development process by providing a



platform that facilitates business licensing, investment monitoring, and infrastructure development. Digital information systems can also be used to improve the quality of education and health services through e-learning programs, e-health, and technology-based public services. In addition, e-government can support social development by increasing people's access to health, education, and justice services. By utilizing ICT innovation, the government can create social programs that are more effective and equitable, helping people in need in a more targeted manner.

#### 4. Management Administrative Functions

The Administrative Management Function in the context of e-government refers to the ability of information and communication technology (ICT) innovation to increase the efficiency and effectiveness of government administrative management. The focus is on the use of technology to support management tasks, decision-making, and coordination between units or departments within the government. With the adoption of e-government, management systems can be optimized through digital platforms to facilitate various administrative functions. This includes monitoring organizational performance, human resource management, budget management, and planning and reporting on government activities. The use of ICT innovation enables fast and real-time access to administrative data, supporting more informational and accurate decision-making. In addition, management administration functions involve the integration of systems and applications to improve coordination and

collaboration between various government units. Management systems can include online collaboration tools, such as virtual meetings and document sharing, to simplify communication between officials and speed up the decision-making process. The implementation of management administration functions in e-government also involves the use of technology to increase transparency and accountability. A computerized reporting system can help ensure that administrative processes are carried out correctly and in accordance with applicable regulations. This creates better governance and minimizes the risk of errors or misuse of resources.

#### 5. Financial Function

The financial function in the context of e-government highlights the use of information and communication technology (ICT) innovations to organize, monitor, and manage the financial aspects of government. The focus lies on the use of technology for efficiency and transparency in financial management, budget management, and financial reporting. First, in the financial function, e-government can be used to simplify the budget planning and management processes. Computerized financial systems enable governments to plan, allocate, and monitor budgets more effectively. Integrated and real-time financial data facilitates faster and more accurate decision-making regarding resource allocation to various government projects or programs. Secondly, the financial function of e-government includes the implementation of electronic payments and receipts. Utilizing digital payment methods,

such as online tax payments or paying for government services, can increase administrative efficiency and reduce the possibility of human error. Apart from that, the tax revenue process can become more effective and transparent through digital platforms. In addition, e-government can help increase government financial transparency. Through online financial portals, the public can access information about government expenditures and revenues more easily. This provides security and confidence to the public regarding the management of public funds, as well as facilitating accountability and active participation in the supervision of state finances.

#### 6. Personnel Function

Personnel functions in the e-government context relate to the use of information and communication technology (ICT) to carry out human resource management in the government sector. This function covers various aspects, from recruitment, managing personnel data, training, and monitoring employee performance. First, in the personnel function, e-government can be used to facilitate the employee recruitment and selection process efficiently. Online platforms can provide information about job vacancies, requirements, and application procedures, making the recruitment process more open and accessible to more prospective employees. Second, e-government can provide solutions for personnel data management. Computerized personnel management systems allow governments to manage employee-related information, including

personal data, employment history, and training data. With easy and secure access to this data, decision-making regarding personnel can be more effective. Apart from that, in the personnel function, e-government can be used to organize online employee training programs. It allows employees to access training materials, take exams, and obtain certification through a digital platform. This approach not only increases training accessibility but also speeds up the process of increasing employee competency.

#### **Challenges of ICT Innovation in the transformation of public policy**

Technological innovation in public policy transformation, although it provides great potential, is also faced with a number of challenges. The following are some common challenges that may be faced in efforts to implement technological innovation in public policy:

- The Digital/Accessibility Divide

The challenge of the digital divide creates significant divisions in access to and use of technology between various levels of society and regions. On the one hand, most urban communities or those in areas with good technological infrastructure may find it easier to access and adopt technological innovations. They tend to have fast internet access, more sophisticated electronic devices, and adequate digital skills. In contrast, in rural areas or communities with limited infrastructure, access gaps become more pronounced. People in these areas may face limited internet access, limited devices, or even a lack of digital skills.

Apart from the physical access gap, another challenge is the digital skills gap between community groups. Some

individuals, especially those who are older or have less exposure to modern technology, may feel less confident or have sufficient skills to use technological innovations. This can include limitations in using applications, browsing the internet, or even confusion about basic technology concepts. Therefore, efforts to overcome the digital divide not only need to expand physical access to technology but also involve training and education programs that can increase digital literacy at all levels of society. In this way, the digital divide can be reduced, ensuring that the benefits of technological innovation can be felt more equally across society.

- Change Resistance

Resistance to change in the process of public policy transformation involving technological innovation is a serious challenge that needs to be addressed wisely. Internal parties, such as government employees, may experience concerns regarding changes in assignments, new skills required, or even uncertainty regarding the impact of innovation on their job positions. In the face of internal resistance, it is important for the government to provide adequate training and support employees in understanding the benefits of the innovation. Clear communication about the reasons behind the change, as well as how it will improve the efficiency and quality of their work, can help overcome uncertainty and concerns.

Meanwhile, external resistance from society can come from discomfort with changes in the way people interact with the government. Some people may feel anxious or uncomfortable with the use of new technology, and some may

feel a loss of privacy or data security. In the face of resistance from the public, the government needs to run a strong information campaign to explain the benefits of innovation while providing guarantees of data security and privacy protection. An inclusive public participation process can open two-way lines of communication between government and society, enabling better acceptance through dialogue and more active engagement.

- Legal and Regulatory Issues

Legal and regulatory challenges in the use of technology in the context of public policy create complex dynamics in efforts to align technological developments with the applicable regulatory framework. Technological advances often move faster than the ability of legislative and regulatory agencies to keep up with and regulate those changes. This can result in legal and regulatory loopholes that can be exploited or even detrimental to the parties involved. Aligning regulations with technological advances requires close collaboration between government agencies, regulators, and the private sector. The private sector is often a pioneer in the development of new technologies and has a deep understanding of the potential and risks involved. Therefore, involving the private sector in the regulatory formulation process can help identify critical aspects that need to be regulated without hindering innovation. The regulatory harmonization process also requires flexibility in policy formulation to accommodate changing technological developments. This includes regular regulatory updates and holding open dialogue between the government,

regulators, and other stakeholders. Community involvement in policy formulation is also important to ensure that regulations reflect the values and needs of society at large.

- **Public Participation**

Although technology has opened up new opportunities to increase public participation, the main challenge lies in creating truly inclusive platforms and ensuring equal representation of the views and needs of all levels of society. The challenge of inclusion involves ensuring that access to digital platforms is enjoyed by all groups, including those who may face physical or economic barriers. In addition, care needs to be taken that technology does not create a greater digital divide, and solutions must be directed at overcoming these disparities. It is also important to design participation platforms that allow for fair representation of diverse voices and perspectives so that the resulting policies reflect the diversity of society. Thus, technology-based public participation initiatives can be a powerful tool for strengthening democracy and creating policies that are more responsive to the needs of all members of society.

### **Conclusion**

Technological innovation in the transformation of public administration, such as the implementation of e-government in Indonesia, has a significant impact on increasing efficiency, transparency, and quality of public services. This transformation process, although it provides great potential, is also faced with various challenges. First, technological innovation in public administration provides solutions to geographic and infrastructure challenges

in Indonesia, increasing the accessibility, efficiency, and transparency of government services. Along with the adoption of e-government, regulations such as Law Number 11 of 2008 and Law Number 23 of 2014 have become the legal basis for the development of information technology in public administration. Second, the application of advanced information and communication technologies enables significant changes in the collection, processing, and exchange of information, which in turn can increase the efficiency and transparency of public administration. In this digital era, the Indonesian government has adopted innovations such as online-based applications, e-government systems, and big data analysis to speed up public services. However, this transformation is not without a number of challenges. The persistence of the digital divide, resistance to change from internal and external parties, and the complexity of aligning regulations with technological advances are some of the obstacles that need to be overcome. Nevertheless, research on technological innovation in the transformation of public administration, especially through case studies of e-government implementation in Indonesia, has the aim of understanding individual perceptions, attitudes, and experiences related to this innovation. With a qualitative approach and in-depth analysis, this research is expected to provide comprehensive insight into the role of technological innovation in the transformation of public administration and contribute to understanding the relationship between technological innovation and the concept of digital transformation. This conclusion emphasizes the importance of continuing to strive to overcome emerging challenges while maximizing the positive potential of

technological innovation to improve public governance in Indonesia.

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