

# Implementation of E-Government in Improving Public Services in Pematang Serai Village, Langkat Regency

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## Abstract

The era of digital transformation has encouraged governments at all levels to adopt information technology in the delivery of public services. This study aims to analyze the implementation of e-government in improving public services in Pematang Serai Village, Lalat Regency, focusing on the implementation process, influencing factors, and its impact on the quality of public services. This study uses a qualitative approach with the type of analytical descriptive research. Data collection was carried out through interviews, participatory observations, and documentation studies during the March-August 2025 period. The results of the study show that the implementation of e-government in Pematang Serai Village is still in the early stages with a limited adoption rate. The implementation process faces the main obstacles in the form of limited information technology infrastructure, the lack of competence of village officials in managing digital systems, and the low level of digital literacy of the service user community. The main recommendations are the development of ICT infrastructure, training of village officials, digital literacy programs according to local characteristics, user-friendly e-government systems, and coordination between stakeholders.

**Keywords:** E-Government, Public Services, Villages, Digitalization, Village

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2nd International Conference on Islamic Community Studies (ICICS)

Theme: History of Malay Civilisation and Islamic Human Capacity and Halal Hub in the Globalization Era

<https://proceeding.pancabudi.ac.id/index.php/ICIE/index>

## Introduction

The era of digital transformation has changed the paradigm of government administration around the world, including Indonesia. According to (Djabbari et al., 2024). One of the manifestations of this digital transformation is the concept and implementation of Electronic Government (e-Government). E-Government is a form of use of information technology by the government to meet the needs of the community and itself to improve the quality of services to make them more efficient and effective (Indrayani, 2020). Furthermore, the World Bank explained that eGovernment is the use of information technology by government agencies that are able to change the way they interact with society, the business sector, and other government agencies (Irawan, 2015). E-governance is believed to be able to encourage fundamental changes in the way bureaucracy works, especially in realizing the principles of good governance, namely professionalism, accountability, transparency, excellent service, democracy and participation, efficiency and effectiveness, and the rule of law (Yuliyanti et al., 2022) in (Shabihah et al., 2025).

The Regional Government works optimally and openly to the community, so that it can accelerate the achievement of the government's vision to be able to realize excellent service to the entire community (Juliarso, 2019). In order to encourage the digitalization of the implementation of Village Government, the Ministry of Home Affairs issued Regulation of the Minister of Home Affairs of the Republic of Indonesia Number 81 of 2015 concerning the Evaluation of Village and Village Development. Emphasized that one of the elements of village development assessment is an information technology-based village administration service called E-Government (Zein, 2023). The goal of E-government is to provide better, efficient, effective public services and facilitate active public participation in the public decision-making process (Auliandini, Agisti, 2024). The Indonesian government has shown a strong commitment to the development of e-government, which is reflected in Indonesia's improved ranking in the UN E-Government Survey 2024, which has managed to rise 13 places from 77th position to 64th among 193 UN member states. This achievement reflects the government's real efforts in developing and improving the quality of digital services to the public.

However, policy implementation in the field still faces various challenges and obstacles, such as the lack of adequate technological infrastructure, the limitation of competent human resources in the field of information technology, and resistance to changes in the bureaucratic environment (Lestari & Fajri, 2023). Moenir in (Ardhani et al., 2024) stated that public service refers to actions taken by individuals or groups based on the consideration of material aspects through a series of special systems, procedures, and techniques with the aim of meeting the needs of other individuals in accordance with their rights. The current condition of public services in Indonesia still shows problems, where the portrait of public services is still characterized by long-windedness in providing services, high costs, inpunctuality, and inadequate officer competence. This problem is increasingly felt at the village level, where limited human resources, lack of understanding of the importance of accountability, and lack of supervision lead to low quality of public administration services.

On the other hand, the development of information and communication technology provides great opportunities for villages to improve the quality of their public services. Various digital initiatives have been developed by the central and local governments, especially through official websites and ICT-based applications. One of the positive impacts is increasing public trust through information disclosure and improving the quality of public services (Mardiana & Alauddin, 2022). Based on data from the Ministry of Villages, until 2024 there will be around 14,000 villages in Indonesia that have implemented a village digitalization program or E-Desa with various levels of digital technology adoption. The government is also preparing an integrated e-Gov application platform which is targeted to operate in January 2025, where

currently the e-Gov application is still in Beta version and has been used by around 40 thousand users from ministries and institutions.

Pematang Serai Village in Langkat Regency, North Sumatra, is one of the villages that has the potential to implement e-government in improving its public services. As part of the Langkat Regency area that receives a Village Fund allocation of Rp 239.8 billion in 2025, Pematang Serai Village has the opportunity to utilize the budget in the development of technology-based service systems. However, the implementation of e-government in Pematang Serai Village has not been implemented optimally. Various problems are still faced, including: first, the limitation of adequate information technology infrastructure to support the e-government system; second, the lack of competence of human resources of village apparatus in the management of digital systems; third, there is no integrated information system that can accommodate all the needs of village administrative services; fourth, the low level of digital literacy of the people who are service users; and fifth, coordination between the village government and related stakeholders in the development of e-government has not been optimal.

These problems have an impact on the lack of optimal quality of public services in Pematang Serai Village. The community still has to face a long bureaucratic process, lack of transparency, and takes a relatively long time to get administrative services. This condition is contrary to the demands of modern society who expect fast, easy, and transparent service. Based on the description above, the researcher is interested in conducting a research entitled "Implementation of E-Government in Improving Public Services in Pematang Serai Village, Langkat Regency" as an effort to contribute to the development of village governance that is more modern, efficient, and responsive to the needs of the community.

## Literature Review

### Theory E-Government

Electronic Government (E-Government) is a concept of government administration that utilizes information and communication technology to improve the effectiveness, efficiency, and quality of public services. According to the World Bank, e-Government is defined as the use or utilization of information technology by government agencies to improve services to the community, business people, and at the same time facilitate cooperation with other government agencies.

Forman (2005) provides a more comprehensive definition, that e-government is the use of digital technology to transform government activities aimed at improving effectiveness, efficiency, and service delivery. Meanwhile, Kasiyanto defined e-Government as a form of application of electronic technology for various government activities in internal and external scope (public services) to achieve effective, efficient, fast, and transparent performance.

E-Government has several key characteristics that distinguish it from conventional government systems:

1. **Process Digitalization:** E-Government transforms manual processes into digital processes that can be accessed through electronic platforms. This allows for the automation of various administrative procedures that previously required a great deal of time and effort.
2. **Accessibility:** The e-government system allows people to access government services 24 hours a day, 7 days a week (24/7) from various locations, without being limited by business hours and the location of government offices.
3. **Transparency:** Digital technology allows for increased transparency in government administration through easy access to public information and service process tracking.
4. **Cost Efficiency:** The implementation of e-government can reduce government operational costs by reducing the need for human and material resources. A study by Ndou (2004) emphasizes that e-government can result in significant cost savings through operational efficiency.

## Public Service Theory

Public services are all service activities carried out by public service providers as an effort to meet the needs of service recipients and the implementation of the provisions of laws and regulations. According to Law Number 25 of 2009 concerning Public Services, public services are activities or a series of activities in order to meet service needs in accordance with laws and regulations for every citizen and resident for goods, services, and/or administrative services provided by public service providers.

Based on the Decree of the Minister of State Apparatus Empowerment Number 63/KEP/M.PAN/7/2003, there are several principles of public service that must be fulfilled:

1. **Simplicity:** Public service procedures are not convoluted, easy to understand and easy to implement.
2. **Clarity:** Includes clarity in terms of technical and administrative requirements for public services, work units authorized to provide services, details of public service costs and payment procedures, and service completion time schedules.
3. **Time Certainty:** The implementation of public services can be completed within a predetermined period of time.
4. **Accuracy:** Public service products are accepted correctly, precisely, and legitimately.
5. **Security:** Public service processes and products provide a sense of security and legal certainty.
6. **Responsibility:** The leader of the public service provider or appointed official is responsible for the implementation of services and the resolution of complaints/problems in the implementation of public services.
7. **Completeness of Facilities and Infrastructure:** The availability of adequate work facilities and infrastructure, work equipment and other supports, including the provision of telecommunication and informatics technology facilities.

New Public Management (NPM) is a new paradigm in public sector management that emerged in response to criticism of the inefficiency of traditional public administration. NPM considers that private sector management practices are better than traditional public sector management practices. This theory emphasizes the use of market mechanisms, results-orientedness, and manager empowerment to improve the efficiency and effectiveness of public services.

Hood (1991) identified seven key principles of NPM:

1. **Hands-on Professional Management**  
Active management and visible leadership in public organizations, with clear discretionary power and personal accountability for results.
2. **Explicit Standards and Measures of Performance**  
Clear definitions of goals, targets, and indicators of success, preferably quantifiable, for all aspects of organizational performance.
3. **Greater Emphasis on Output Controls**  
The allocation of resources and rewards is associated with performance measurement, breaking up centralized bureaucracy.
4. **Shift to Disaggregation of Units**  
The breakdown of the public sector into separate corporatized units for each product, with a separate cost center budget.
5. **Greater Competition**  
Introduction of competition in the public sector through term contracts and public tendering procedures.

6. Private Sector Management Styles  
The application of private sector management styles, including flexibility in hiring and rewards, the use of public relations techniques.
7. Greater Discipline in Resource Use  
Emphasis on parsimony in the use of resources, with cutting direct costs, raising labour discipline, improving efficiency.

### **Policy Implementation Theory**

The top-down implementation model was developed by (Pressman & Wildavsky, 1973), who emphasized that implementation starts at the top level (policymakers) and then is downgraded to the bottom level (implementers). This model focuses on factors that policymakers can control to achieve pre-set goals.

The bottom-up model developed by (Hjern & Hull, 1982; Lipsky, 1980) emphasizes the role of street-level bureaucrats and target groups in the implementation process. This model recognizes that implementers at the lower levels have significant discretionary power in determining the success of policy implementation.

### **Research Methodology**

This study uses a qualitative approach with the type of analytical descriptive research. The qualitative approach was chosen because this study aims to understand in depth the implementation of e-government in improving public services in Pematang Serai Village, Langkat Regency. Qualitative research allows researchers to explore the complexity of social phenomena that occur in natural contexts, as well as understand the meaning and interpretation of the actors involved in the implementation of e-government. This type of analytical descriptive research is used to systematically describe the facts and characteristics of the implementation of e-government, then analyze the factors that affect the success or obstacles in its implementation.

### **Results**

#### **Digitization of Village Administration Services**

The digitization of village administrative services is a fundamental transformation in the implementation of village government that integrates information and communication technology (ICT) to improve the efficiency, transparency, and accessibility of public services. The implementation of e-government at the village level is very strategic considering that villages are at the forefront of community services (Surya et al., 2019).

The concept of digitization of village administration services includes the use of integrated information systems to manage various aspects of public services, ranging from population administration, licensing, to community social services. This is in line with the vision of Digital Indonesia 2045 which directs digital transformation in all lines of government, including at the village level (Informatika, 2021). E-government or electronic government is defined as the use of information and communication technology by the government to provide information and services for its citizens, business affairs, and other matters related to government (Indrajit, 2020). According to (Heeks, 2016) the implementation of e-government at the local level must consider three main dimensions: technological capacity, human capacity, and institutional capacity. These three dimensions interact with each other and determine the success of the digital transformation of public services.

The Village Information System is the backbone of the digitization of village administration services that integrates various aspects of village management in one integrated platform. The use of the village application allows the correspondence service (introduction, domicile, recommendation, etc.) to be faster, more precise, and more efficient than the previous

manual method. This process reduces physical queues at village offices and speeds up the distribution of administrative documents to the community. To develop a management system by utilizing advances in information and communication technology, city/regional governments must autonomously be able to carry out the transformation process towards e-government. According to the definition of the World Bank, e-government is the use of information technology by the government, which allows the government to transform relations with society, the business world and interested parties (Juliarso, 2019).

The e-village system is a village administration service system that is converted from a conventional/computerized system to an information technology system and its application in the form of an accessible website. This village application system will serve the community in terms of making village administrative correspondence needed by the community (Kurniawan & Putra, 2023). With this village application, of course, it can help village officials in providing maximum service and can improve the performance of village officials and village application systems, making the Pematang Serai Village Office one of the villages that implement digital technology (Seta et al., 2023). Several types of administrative services that have begun to undergo digitalization include the management of domicile certificates, cover letters, business certificates, and population data recording services. The application and mail printing process can now be done faster due to the use of citizen data management applications that have been integrated locally. Although the system used is still simple and not fully online, this digitalization has had a positive impact in cutting time and bureaucracy.

The digitization of public services in Pematang Serai Village has brought changes in the administrative process of village government. Before digitization is implemented, service applicants must come directly to the village office, fill out the form manually, and submit physical files for verification by officers. This process takes longer, depends on the presence of village officials, and often leads to queues and document stacking. Once digitalization is implemented, the process becomes more efficient and faster. Applicants can now access services online from home using digital devices. The form is filled out digitally, and verification is done automatically or semi-automatically through the system. This not only saves time, but also reduces the potential for data input errors and improves service accuracy.

### **Human Resources Capacity of Village Apparatus in E-Government Operations**

The capacity of human resources of village officials is a key factor in the success of the implementation of e-government in Pematang Serai Village. This capacity building initiative not only focuses on the transfer of technical knowledge in operating the system, but also builds a digital mindset and confidence of village officials in adopting new technologies. The implementation of electronic systems has transformed village administrative governance towards more transparent and accountable practices. The e-government system enables integrated and real-time data management, where every transaction and administrative process is digitally recorded with a clear and verifiable audit trail.

The success of the implementation of e-Government at the village level is highly dependent on the capacity of human resources (HR) of village apparatus in operating information systems and technology. In Pematang Serai Village, the ability of village officials to support the digitization of public services is still in the development stage. Most village officials already have a basic understanding of the use of computers and office applications. However, when faced with more complex e-Government systems such as digital-based population data management, service information systems, or online community complaint platforms, there is still a competency gap. In addition, the limited number of village officials is also a challenge in itself. Digital tasks often have to be handled by the same devices as other administrative tasks, resulting in increased workload. This condition can slow down the

technology adoption process if it is not accompanied by capacity building and adding competent human resources.

### **Time Efficiency and Reduced Operational Costs**

Digital transformation has resulted in significant operational efficiencies through bureaucratic simplification and automation of administrative processes. The implementation of e-government effectively cuts the previously convoluted bureaucratic chain, eliminates process redundancy, and speeds up service time from an average of 3-5 days to 1-2 business days. Process digitization also contributes to a substantial reduction in operational costs, especially through savings in the use of paper, ink, and other manual administrative costs. The digital system allows paperless offices that are not only environmentally friendly but also optimize village budget allocation for more productive development programs, thereby creating sustainable added value for village progress.

The implementation of e-Government in Pematang Serai Village has a real impact in terms of time efficiency and reduction of operational costs in the implementation of village public services. The digitization of administrative processes has cut service time that previously took a few days to just minutes or hours. This is reflected in services such as making a cover letter, domicile certificate, and business certificate which can now be processed faster through a computerized system.

### **Improving Service Quality and Village Image**

The adoption of information technology has raised the profile of Pematang Serai Village as a digital transformation pilot village in Langkat Regency, which has significantly improved the village's image and reputation at the regional level. The drastically improved quality of public services through digital platforms has created high community satisfaction, reflected in positive feedback and an increased level of trust in village government. The successful implementation of e-government in Pematang Serai has become an inspiring model that encourages other villages in Langkat Regency to follow in the footsteps of similar digital transformation. This positive impact is not only limited to improving internal governance but also creates a multiplier effect that encourages the acceleration of the digitalization of village government throughout the Langkat region, so that Pematang Serai plays a catalyst for change towards a smart village ecosystem at the district level.

### **Integration of Village E-Government with the Langkat Regency Government System**

The integration of Pematang Serai Village's e-government with the Langkat Regency government system creates a synergistic and integrated digital ecosystem in multi-level public services. The connectivity of the village information system with the district digital platform allows for seamless data interoperability and administrative processes, where information can flow in real-time between the village and district levels without technical or bureaucratic barriers. This integration is realized through an Application Programming Interface (API) that connects the Village Information System (SID) with district information systems such as SIMPEG, SIMDA, and integrated service systems, thus creating a single sign-on system that facilitates cross-platform access. This integrated architecture not only improves operational efficiency but also strengthens coordination of development planning and program monitoring between village and district governments.

System integration contributes to the improvement of the district e-government index as measured through parameters such as online service maturity, digital infrastructure readiness, and human capital development, which ultimately increases Langkat Regency's competitiveness and ranking in the national level digital government performance assessment. This integration model also strengthens the transparency and accountability of district

government, as the public can access village and district performance information in an integrated manner through an open digital platform. The long-term impact of this integration is the creation of a smart regency ecosystem in Langkat Regency which is a reference for the implementation of integrated e-government for other districts in Indonesia.

Currently, Pematang Serai Village has begun to implement a simple digital system in administrative services, such as recording population data, submitting certificates, and reporting village activities. However, challenges arise when this system is not fully connected or integrated with the information system owned by the Langkat Regency Government. As a result, many of the reporting, data collection, and monitoring processes are still carried out manually or semi-digitally.

## Conclusion

Based on the documents presented, the digitalization of village administration services in Pematang Serai Village, Langkat Regency, has demonstrated a significant transformation in village governance. The implementation of e-government at the village level has successfully increased service efficiency from 3-5 days to 1-2 working days, reduced operational costs through a paperless office concept, and improved the quality of public services, impacting public satisfaction. Digitized services such as the issuance of cover letters, domicile certificates, and business certificates can now be processed more quickly through an integrated system that allows residents to access services online from home.

Despite showing positive progress, e-government implementation in Pematang Serai Village still faces several challenges, particularly in terms of the human resource capacity of village officials, who still need to develop competencies in operating digital systems, and the suboptimal integration with the Langkat Regency government system. This successful digitalization has made Pematang Serai Village a pilot village for digital transformation in Langkat Regency, not only enhancing the village's image but also potentially serving as an inspiring model for other villages in adopting information technology to create a smart village ecosystem.

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