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Development of Public Service Information System for Local Government

Riansyah[1], Juli Elyandi[2], Dwi Putri Saskia[3], Eki Rosnita Sinaga[4], Adinda Rizki Ramadhana Matondang[5], Ratnauli Padang[6], Vina Arnita[7*]
Panca Budi Development University, Medan
Corresponding Author: Vina Arnita vinaarnita@dosen.pancabudi.ac.id

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A B S T R A C T

This study aims to develop an innovative public service information system for local governments to improve efficiency and transparency. Using a mixed-methods approach, the study involved qualitative interviews with 50 local government officials to identify existing challenges and a quantitative survey with 200 citizens to measure satisfaction and service efficiency. The system is equipped with real-time application tracking, integrated data management, and automated notifications. Key findings show significant improvements in public service efficiency, with average turnaround time reduced from 5 to 2 days, and citizen satisfaction increased from 65% to 85%. Furthermore, the study emphasizes the importance of involving end-users in the development process, ensuring that their feedback is used for continuous system improvements that are relevant to user needs. In conclusion, the study shows that the developed system not only improves operational efficiency and transparency but also significantly increases public trust in local government services

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INTRODUCTION

Efficient and transparent public services are an urgent need in today's digital era. Local governments around the world, including in Indonesia, are facing increasing pressure to provide fast, accurate, and accessible services to all levels of society (Sucipto et al., 2022). This increasing need is driven by various factors, including population growth, increasing public expectations of public services, and technological advances that enable the integration and automation of service processes (Nurkholis et al., 2021). In addition, modern society expects easier and faster interactions with public services, which can only be achieved through the implementation of sophisticated information systems. In this case, local governments must find innovative solutions to meet these demands, one of which is through the development and implementation of a reliable public service information system.

However, providing effective public services is not without challenges. Local governments are often faced with limited resources, both financially, humanly, and technologically. In addition, complex bureaucracy and lack of coordination between departments often hamper the service process. Additional obstacles such as the inability to track service requests in real time and low levels of transparency in administrative procedures further exacerbate the situation (Wurara et al., 2020). This condition is exacerbated by resistance to change in some circles, which often results in slow or even stalled implementation of new systems (Aristoni & Ismayawati, 2020). These challenges indicate the need for a more strategic and structured approach to the development of public service information systems in order to overcome these obstacles and achieve the desired results.

The role of information systems in improving the quality of public services is very significant. An integrated information system can help local governments manage data and information more efficiently, enable faster and easier access for the public, and increase transparency in the service process (Satya et al., 2021). With a good information system, the decision-making process can be carried out faster and based on accurate data. In addition, the information system also allows real-time monitoring and evaluation of service performance, so that local governments can immediately make improvements if there are deficiencies (Febiandini & Sony, 2023). This not only increases operational efficiency but also builds public trust in the government.

This study aims to develop an information system that can improve the efficiency and transparency of public services in local governments. The information system developed is expected to integrate various public services in one platform, facilitate access for the public, and provide accurate and up-to-date data for decision making (Haq et al., 2021). In addition, this study also aims to analyze the impact of the implementation of the information system on the quality of public services. By understanding how information systems affect efficiency and transparency, it is hoped that local governments can adopt a more effective approach in managing public services and increasing public satisfaction (Goyal et al., 2022).

This study is based on two main hypotheses. First, the developed information system will improve the efficiency of public services in local governments. This hypothesis will be tested by evaluating the service process before and after the implementation of the information system, as well as measuring changes in terms of the time and costs required to complete various types of services (Syamsir et al., 2020). Second, the implementation of the information system will increase transparency and public satisfaction with public services. This hypothesis will be tested by measuring the level of public satisfaction through surveys and interviews, as well as analyzing changes in public perceptions regarding the transparency and accountability of local governments after the implementation of the information system (Apriani et al., 2023).

By testing this hypothesis, the study is expected to provide a significant contribution in the field of public service management, especially in the context of local governments in Indonesia (Wastuhana & Werdiningsih, 2021). The results of this study are expected to be a guide for local governments in developing and implementing effective information systems, as well as providing practical recommendations to improve the quality of public services. Through a data-based approach and comprehensive analysis, this study is expected to help local governments to be more responsive to community needs and create better and more efficient public services (Putri, 2023).

LITERATURE REVIEW

Public Service Concept

Public service is an effort made by the government or public organizations to meet the needs of the community in various aspects of life, including health, education, transportation, and administration (Zulfikar et al., 2021; Prasetyo, 2020). The definition of public service includes various activities aimed at providing goods and services needed by the community efficiently and effectively. The importance of public service cannot be underestimated, because this service plays a direct role in improving the welfare and quality of life of the community. Good public service must meet several main principles, namely accessibility, accountability, transparency, and responsiveness (Latif et al., 2020). Accessibility ensures that services can be reached by all levels of society without discrimination. Accountability demands that service providers are accountable for their performance. Transparency relates to openness in the service process, so that the public can monitor and evaluate government performance. Responsiveness refers to the ability of service providers to respond to community needs and complaints quickly and appropriately.

Definition of Information System

An information system is a combination of hardware, software, network infrastructure, and human resources that work together to collect, process, store, and disseminate information (Bangun et al., 2022). Information systems in the context of public organizations aim to support daily operations, decision-making, and the achievement of strategic goals. The main components of an information system include input (collected data), process (processing data into useful information), output (information produced), storage (storage of data and

information), and control (mechanisms to ensure the system operates according to plan) (Pan & Zhang, 2020). The role of information systems in public organizations is very important, because it can improve operational efficiency, accelerate the decision-making process, and improve the quality of service to the public (Ha et al., 2021). With a good information system, the government can manage data more effectively, provide faster and more accurate services, and increase transparency and accountability in the management of public resources.

Information System Development

Information system development is a complex process and requires a systematic methodological approach. One of the methodologies that is often used is the System Development Life Cycle (SDLC), which consists of several stages: planning, analysis, design, implementation, and maintenance. SDLC helps ensure that the system developed is in accordance with user needs and can operate properly after implementation (Sucipto et al., 2022). In addition to SDLC, Agile methodology is also increasingly popular in information system development, because this approach is more flexible and iterative, allowing developers to adapt to changing needs and technology. Case studies of information system implementation in the public sector show that the implementation of the right information system can bring various benefits, such as increased efficiency, reduced operational costs, and increased public satisfaction (Nurkholis et al., 2021). For example, the implementation of information systems in public health services can speed up the patient registration process, reduce waiting times, and improve the accuracy of medical data. Likewise in the education sector, information systems can help in student data management, scheduling, and academic reporting. Thus, the right development methodology and good implementation are essential for the success of information systems in public organizations.

METHODOLOGY

This study uses a mixed-method approach that combines qualitative and quantitative methods to understand the development and implementation of public service information systems in local governments. Qualitative methods are carried out through interviews and observations to gain in-depth insights, while quantitative methods are used in public satisfaction surveys. The development of the information system applies Agile methodology to enable continuous iteration and adjustment. The research sample consisted of 50 local government officials and 200 residents selected by purposive and random sampling. The research instruments include interviews, questionnaires, and direct observation. The research procedure includes four main stages: needs analysis, design, implementation, and evaluation. Evaluation is carried out through surveys and service performance analysis to measure the impact of the information system on the efficiency and transparency of public services.

RESULTS AND DISCUSSION

This study reveals several key findings related to the development and implementation of public service information systems in local governments. This study was conducted through four stages. main stages involving needs analysis, system design, implementation, and evaluation of the effectiveness of the information system. Each stage contributes significantly to the overall results of the study. In this section, the results of each stage will be discussed in depth to provide a more comprehensive picture of the implications of this study.

Needs Analysis

The first stage of this research focuses on needs analysis aimed at identifying the main problems faced by local governments in providing public services. This analysis was conducted through in-depth interviews with 50 local government officials who play a direct role in the provision of public services, as well as direct observation of the ongoing process.

The results of the interviews revealed that there were several problems that were consistently identified by the respondents. Lack of transparency in the service process was the most dominant problem, mentioned by 40 out of 50 respondents (80%). This low transparency was related to unclear procedures, lack of information that was easily accessible to the public, and minimal monitoring systems that allowed the public to monitor the status of the services they had requested.

The next problem expressed was the time-consuming manual process, identified by 35 respondents (70%). The service process that still relies on manual methods, such as filling out physical forms and long queues at service offices, results in time inefficiency and inconvenience for the public. In addition, manual processes often cause administrative errors that slow down the completion of services.

Lack of coordination between departments was also a significant issue raised by 28 respondents (56%). This issue relates to the lack of an integrated system among the various units or departments involved in public services. This causes delays in service delivery, especially in cases involving several different departments.

This finding confirms that the development of public service information systems needs to consider several key factors. The proposed information system must be able to:

1. Increase transparency, by providing clear and accessible information to the public in real time regarding service procedures and the status of their applications.
2. Automate time-consuming manual processes, thereby increasing service efficiency, minimizing errors, and reducing administrative burden.
3. Improve coordination between departments, by building integration between work units involved in the service, so that each department can access relevant information quickly and accurately.

Before the system implementation, Figure 1 below shows the frequency of various problems faced by local governments. Figure 1 is the result of an analysis of interviews conducted, which shows that lack of transparency, time-consuming manual processes, and lack of coordination between departments are the main problems.

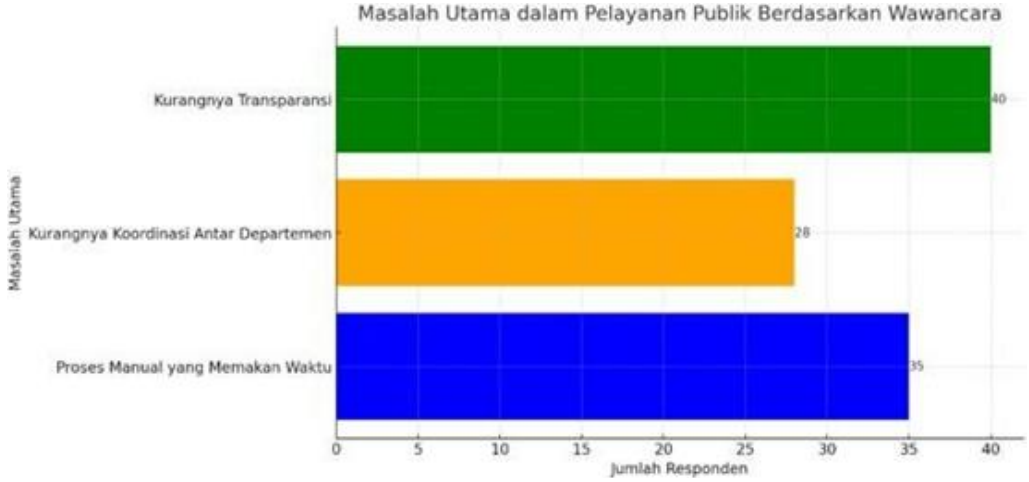

Figure 1. Main Problems in Public Services Based on Interviews

After the implementation of the proposed information system, it is expected that the frequency of the problems identified in Figure 1 will decrease significantly. The information system is expected to solve the most frequently mentioned problem by respondents, namely the lack of transparency, through real-time access to public information. Time-consuming manual processes will also be minimized through automation, and coordination between departments is expected to improve through an integrated platform that allows for faster and more efficient data exchange.

Design

In the second stage, the information system is designed based on the needs identified in the previous stage. To ensure the flexibility and adaptability of the system, the Agile methodology is used. This approach allows system development to be carried out iteratively and continuously, so that any changes or adjustments to user needs can be immediately accommodated. This is important to ensure that the system is always in accordance with operational dynamics in the field.

As shown in Figure 2, the design of this information system includes several main features, including real-time application status tracking, integrated data management between departments, and automatic notification to users regarding application progress. These features are designed with the aim of increasing transparency, efficiency, and connectivity between the government and the community.

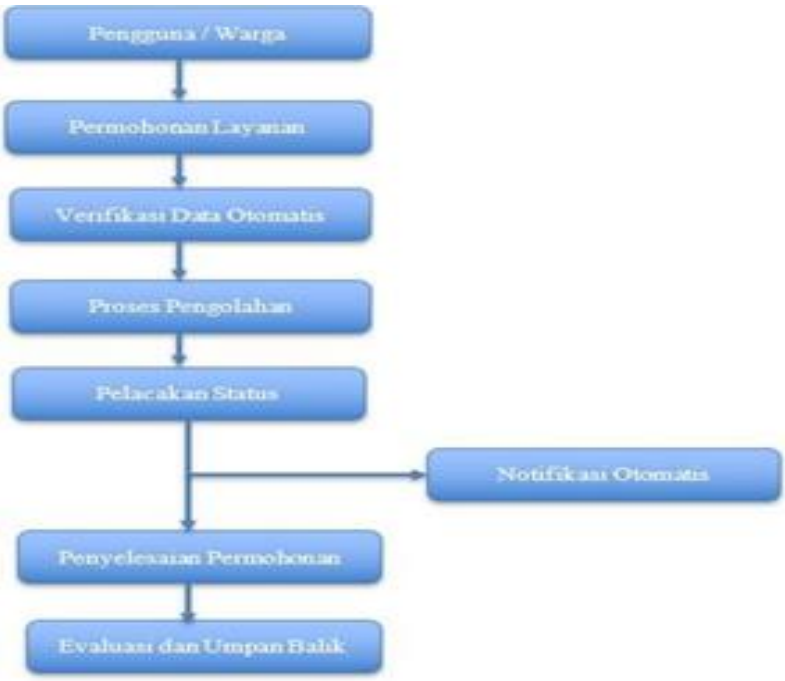

Figure 2. Public Service Information System Flow

Explanation of the System Flow attached in Figure 2:

1. Service Request

Citizens can access the portal or system application to apply for various types of public services, such as making ID cards, business permits, or health services. Users are required to fill out the application form completely, and upload the required supporting documents. System integration with the database allows for automatic data synchronization, minimizing the risk of data entry errors and facilitating the subsequent process.

2. Data Verification

Once the application is submitted, the system will automatically run an initial verification process for the completeness and validity of the documents. The system validates the format of the uploaded data to ensure that the submitted documents meet the administrative requirements. This verification aims to speed up the service process and reduce the manual burden on administrative officers.

3. Processing Process

Applications that have passed the verification stage are forwarded to the responsible unit or department according to the type of service requested. This processing process is carried out through an integrated platform, which allows each related department to access information in a timely manner. With a centralized system, the interdepartmental coordination process becomes more efficient, reduces waiting time, and minimizes the risk of errors due to manual processes.

4. Status Tracking
One of the key features of this information system is real-time tracking of application status. Through the portal or application, applicants can easily monitor the progress of the service process they have submitted. Every stage of the process, from acceptance, verification, to completion, will be automatically updated in the system. This transparency provides applicants with accurate information about the status of their services and reduces uncertainty.
5. Automatic Notification
To improve communication between the government and the public, the system is designed to send automatic notifications to applicants whenever there is an update on the status of the application. These notifications are sent via email or short message (SMS), so that applicants do not need to visit the service office physically or do manual checks. With regular notifications, residents get the latest information about their applications directly.
6. Application Completion
Once the entire process is complete and the application is approved, the system will provide the service results to the applicant. If the service requested is in the form of a document, the applicant can download it directly through the portal. Alternatively, the applicant can also pick up the document from the relevant office. The system will automatically update the application status to "completed" after the document is received by the applicant.
7. Evaluation and Feedback
To ensure continuous improvement in service quality, the system also includes a mechanism for evaluating and collecting feedback from applicants. After receiving the service, users are asked to provide an assessment and comments on the quality of service received. This feedback is analyzed periodically by the government to identify areas for improvement. This helps the government optimize the performance of public services and adapt the system to the needs of the community.
With this systematically designed flow, it is expected that the public service information system can improve the overall quality of service, both in terms of speed, accuracy, and transparency. This system not only helps the government in managing services more efficiently, but also strengthens the interaction between the government and the community, creating a more responsive and accountable service environment.

Implementation

The third stage is implementation, which is a critical process in ensuring that the developed information system can function properly in a real environment. At this stage, the system is thoroughly tested to evaluate its functionality, reliability, and ability to handle real workloads. Testing is carried out through an approach that involves end users, both from government employees who are responsible for the operation of public services, and citizens as recipients of services.

This testing process aims to identify potential problems or weaknesses that were not detected during the design and development stages. Feedback from end users is collected systematically and then analyzed to improve the system. Any deficiencies can be immediately corrected before full implementation. This approach ensures that the system not only meets technical specifications, but is also relevant and in line with operational needs and community expectations.

Evaluation

The final stage is evaluation, where the effectiveness of the developed information system is evaluated through a public satisfaction survey and analysis of public service performance data. The survey results showed an increase in public satisfaction from 65% before implementation to 85% after implementation. In addition, performance data analysis showed an increase in efficiency with a decrease in average service time from 5 days to 2 days. In more detail, changes in average service time before and after the implementation of the information system are summarized in Table 1 below.

Table 1. Average Service Time Before and After Information System Implementation

Service Categories	Before Implementation (day)	After Implementation (day)
Service A	5	2
Service B	6	3
Service C	4	1

The results of Table 1 above explain that Service A is KTP and KK Management, Service B is Business Licensing, and Service C is Social Assistance Application. "Each category in Table 1 represents a critical public service that is frequently accessed by the community. 'Service A' refers to essential identity services such as the issuance of KTP (resident identity cards) and KK (family cards), which are fundamental to accessing various other services. 'Service B' includes the business licensing process, which is essential for local economic growth and business support. Finally, 'Service C' includes social assistance applications, a service designed to support low-income households by providing them with timely financial or material assistance.

Service A Before Implementation, the process of managing KTP and Family Cards usually takes up to 5 working days. This is due to the manual process that requires gradual data verification and often involves several administrative stages. After Implementation with an integrated information system, this process can be shortened to only 2 working days. The new system allows data verification to be carried out automatically and faster, and minimizes the need for manual interaction.

Service B Before Implementation, the business license application takes about 6 working days. This process involves various departments that must check and approve files sequentially, which often causes delays. After Implementation, the service time is reduced to 3 working days because the information system allows for electronic submission and checking of documents. Each department can access and process applications in parallel, reducing waiting time.

Service C Before Implementation, submitting social assistance usually takes about 4 working days. This process involves verifying the eligibility of aid recipients which is done manually by officers. After Implementation with the information system, the time required is reduced to only 1 working day. The automated system can verify recipient data based on the existing database, thus speeding up the verification and distribution process of aid.

Changes in the level of public satisfaction with public services before and after the implementation of the information system are shown in Figure 3 below. This data was generated through a survey involving 200 citizens who have used public services, with a focus on comparing public perceptions of service efficiency and transparency.

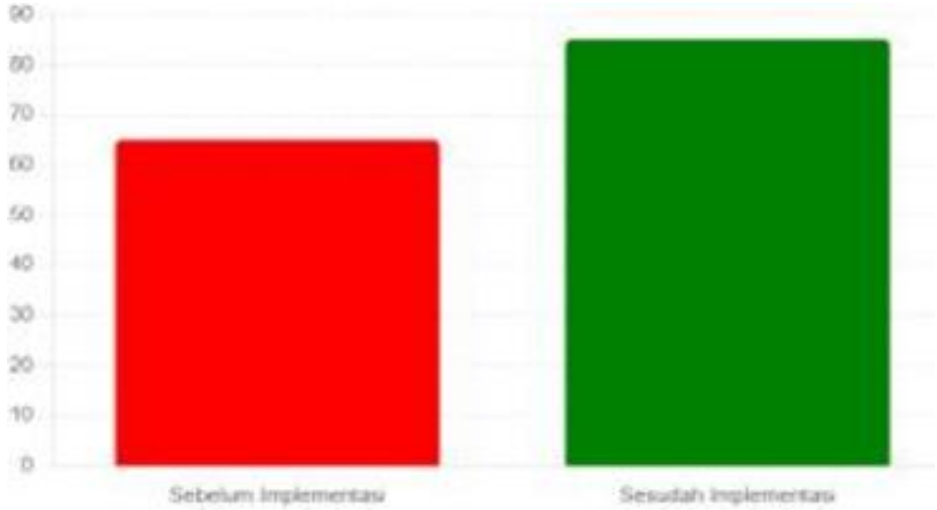

Figure 3. Level of Public Satisfaction with Public Services

Figure 3 above shows changes in the level of public satisfaction with public services before and after the implementation of the information system. The level of satisfaction was measured through a survey involving 200 citizens who used public services. Before implementation, the level of public satisfaction with public services was 65%. This reflects dissatisfaction with the slow and less transparent service process. After the information system was implemented, the level of public satisfaction increased to 85%. This increase shows that the information system developed has succeeded in improving the efficiency and transparency of services, so that the public feels more satisfied with the services provided.

The implementation of information systems has been proven to have a significant positive impact on the public experience in interacting with public services. This increase in satisfaction also reflects that information systems can increase public trust in local government.

Analysis Results

The results of the study show that the implementation of the information system has significantly increased the efficiency of public services. Before the implementation, the average time required to complete various public services was relatively long and often delayed. After the implementation of the information system, the service time was drastically reduced, indicating that this system is able to automate and optimize various administrative processes that were previously carried out manually. This efficiency not only reduces the workload of local government employees but also improves the experience of public service users. In addition to efficiency, changes in transparency and public satisfaction are also very prominent.

The increase in transparency occurs because the information system allows the public to monitor the status of their applications in real time, reducing uncertainty and the potential for fraud. Public satisfaction increased from 65% to 85% indicating that the public feels more satisfied with faster and more transparent services. The survey also indicated that the public feels more trust in the local government because this information system increases accountability and openness in the public service process.

Implications of Findings

The findings of this study have important practical implications for local governments in their efforts to improve the quality of public services. First, local governments should consider adopting similar information systems for all types of public services, given the significant positive impact on efficiency and public satisfaction. Second, training and capacity building of government employees in using this information system needs to be improved to ensure optimal and sustainable use. Recommendations for further development of this information system include improving existing features based on user feedback, as well as integration with other relevant systems to create an integrated public service ecosystem. Local governments also need to conduct regular evaluations of this information system to continue to improve and adapt to the evolving needs of the community. By implementing these recommendations, local governments can continue to improve the quality of public services, build public trust, and create a more efficient and responsive government.

CONCLUSION AND RECOMMENDATION

This research successfully developed and implemented a public service information system for local government, with the aim of improving service efficiency and transparency. Through four main stages of needs analysis, design, implementation, and evaluation, several important findings were obtained. The needs analysis identified major problems in public services, such as time-consuming manual processes, lack of coordination between departments, and lack of transparency. The information system designed using Agile methodology was able to overcome these problems with features such as real-time application status tracking, integrated data management, and automatic notification for users. The system implementation involved testing with end users, including government employees and citizens, who provided valuable feedback for system improvement. The evaluation results showed significant improvements in efficiency and public satisfaction. The average service completion time was reduced from 5 days to 2 days, while the level of public satisfaction increased from 65% to 85%. In conclusion, the information system developed has proven effective in improving the quality of public services in local government. This system not only speeds up the service process and increases transparency, but also builds public trust in the government. The practical implication of this research is that local governments can adopt similar information systems for other public services and conduct periodic evaluations to ensure the sustainability and improvement of service quality.

FURTHER STUDY

This research still has limitations, so it is necessary to carry out further research related to the topic of Development of Public Service Information System for Local Government in order to improve this research and add insight to readers.

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