

OPTIMIZING PUBLIC SERVICES THROUGH VILLAGE INFORMATION SYSTEM IN PERTUMBUKAN VILLAGE, WAMPU DISTRICT

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Abstract: This paper discusses the implementation of a Village Information System (VIS) as a tool to optimize public services in Pertumbukan Village, Wampu District. The development and use of this system aim to improve the efficiency, transparency, and accessibility of village administrative services. By digitizing processes such as population data management, public service requests, and village development monitoring, the VIS enhances communication between village officials and residents, resulting in faster service delivery and reduced bureaucratic bottlenecks. The study involved qualitative methods, including interviews with local government officials and village residents, as well as system usability tests. The results indicate significant improvements in service delivery times, user satisfaction, and data accuracy. Additionally, the system has facilitated better resource management and accountability within the village administration. This research concludes that the Village Information System is an effective tool for enhancing public service delivery in rural areas and can serve as a model for other villages seeking to improve governance and public engagement through technology.

INTRODUCTION

In the era of rapid technological advancement, the integration of information technology into various aspects of governance has become a critical factor in improving the efficiency and transparency of public services. In rural areas, where resources are often limited and administrative processes are largely manual, the need for digital transformation is even more pronounced (Raharjo et al., 2023; Irwansyah, 2021). Many villages in Indonesia, including those in the Wampu District, still rely on traditional, paper-based methods for managing administrative tasks and delivering services to the public. These outdated processes are often slow, inefficient, and prone to errors, resulting in long service wait times, mismanagement of village resources, and a lack of

accountability in governance (Li et al., 2017; Ma'ruf et al., 2022).

Pertumbukan Village, located in the Wampu District of Langkat Regency, faces similar challenges. The village government struggles with managing a growing population and meeting the increasing demand for public services. Administrative tasks such as managing population records, processing service requests, and monitoring village development initiatives are currently handled manually, which leads to bureaucratic delays, a higher potential for data inaccuracy, and inefficient resource allocation. These issues ultimately hinder the delivery of timely and reliable services to residents and reduce trust in local governance.

To address these challenges, the Pertumbukan Village government has initiated the development and implementation of a Village Information System (VIS). The VIS is designed as a digital platform that integrates various administrative functions into a centralized, accessible system. The main objectives of the VIS are to streamline administrative processes, enhance communication between village officials and residents, and improve the overall efficiency and transparency of public service delivery (Han et al., 2022; Majapahit, 2023). Through this system, village officials can manage population data more effectively, handle service requests with greater speed and accuracy, and monitor the progress of village development programs in real-time. The introduction of this digital system is expected to significantly reduce bureaucratic bottlenecks, improve accountability, and enhance the quality of public services provided to the community (Sulaksono, 2023; Kasmiah, 2024).

This research aims to evaluate the impact of the Village Information System on the optimization of public services in Pertumbukan Village. Specifically, this study focuses on how the VIS improves the efficiency of administrative processes, increases the accuracy of data management, and enhances the satisfaction of both village officials and residents (Zhao et al., 2022; Noersyahbani, 2023). In addition, this research explores the broader implications of adopting digital governance in rural areas, particularly in terms of promoting transparency, accountability, and public participation in local government activities (Purnamawati et al., 2023; Susilowati, 2024).

The significance of this study lies in its potential to offer insights into how rural villages in Indonesia can leverage technology to improve governance and public

services. As more villages across the country face the pressures of population growth and increased demands for services, the need for effective, scalable digital solutions becomes increasingly urgent (Ubaidillah, 2024; Thirasakthana & Kiattisin, 2021). The findings from this study can serve as a model for other villages seeking to enhance their administrative capacity and better serve their communities through the adoption of digital systems like the VIS (Qiu & Zhou, 2023).

This paper is structured as follows: the following section reviews existing literature on digital governance, e-government initiatives in rural areas, and the use of information systems to optimize public service delivery. Next, the research methodology is outlined, detailing the qualitative and quantitative approaches used to assess the effectiveness of the VIS in Pertumbukan Village (Putra et al., 2022). The results section presents the key findings from the study, followed by a discussion of the implications of these findings for rural governance and public service improvement. Finally, the conclusion summarizes the key insights and suggests directions for future research and practical implementation of digital governance systems in rural communities (Putri & Hartanto, 2022; Tasril et al., 2023).

RESEARCH METHODS

This study employs a combination of qualitative and quantitative research methods to evaluate the effectiveness of the Village Information System (VIS) in optimizing public service delivery in Pertumbukan Village, Wampu District. The research is designed to assess the impact of VIS on service efficiency, data accuracy, and user satisfaction. The research process is divided into several key stages: data collection, system testing, and data analysis (Hafni Hafni, 2023; Perwitasari & Hendrawan, 2020).

1. Study Design

This research adopts a case study approach, focusing specifically on the implementation of the VIS in Pertumbukan Village. The case study method allows for a comprehensive examination of the system's influence on village governance and public services, providing both in-depth qualitative insights and quantitative measurements of system performance. Through this approach, the study aims to capture the practical experiences of village officials and residents while also collecting measurable data on service improvements (Ranti Eka Putri et al., 2023).

2. Data Collection

The data collection process includes both primary and secondary sources. Primary data is gathered through interviews, surveys, and system usability testing, while secondary data comes from official village records and documentation related to public service processes before and after the implementation of VIS.

- Interviews: Semi-structured interviews are conducted with key stakeholders, including village officials, system developers, and residents who frequently use the VIS. These interviews aim to understand their experiences, challenges, and the perceived impact of the system on public service efficiency and transparency.
- Surveys: Surveys are distributed to residents to assess their satisfaction with the services provided via VIS. The surveys include questions about ease of use, response times, and overall satisfaction with the village services.
- System Usability Testing^{**}: To evaluate the technical performance of the VIS, usability testing is conducted with a sample of village officials and residents. The testing focuses on key features of the system, such as population data management, service request handling, and village development monitoring.

3. Data Analysis

The collected data is analyzed using a combination of qualitative and quantitative techniques.

- Qualitative Analysis: Thematic analysis is used to process the interview data, identifying recurring themes related to the impact of VIS on public service processes, system usability, and governance transparency. This analysis highlights the perspectives of both village officials and residents, providing a nuanced understanding of how the system addresses administrative challenges.
- Quantitative Analysis: Statistical analysis is applied to the survey data to measure improvements in service efficiency, data accuracy, and user satisfaction. Key performance indicators (KPIs) such as service request response times, error rates in population data, and satisfaction levels before and after the implementation of VIS are compared. Descriptive statistics are

used to summarize these findings, while inferential statistics help determine the significance of observed changes.

4. Evaluation Metrics

Several key metrics are used to evaluate the success of the VIS in optimizing village services:

- **Service Efficiency:** Measured by the reduction in the time required to process service requests and administrative tasks compared to the manual system.
- **Data Accuracy:** Evaluated by comparing the error rates in population data management before and after the system's implementation.
- **User Satisfaction:** Assessed through survey responses, focusing on the ease of use, accessibility, and perceived improvements in public services.
- **Governance Transparency:** Measured by the availability and accessibility of information on village governance and development activities through the VIS platform.

5. Limitations

One limitation of this study is its focus on a single village, which may affect the generalizability of the findings to other rural areas with different social and technological contexts. Additionally, the short time frame of the research may not capture long-term impacts of VIS implementation, such as sustained improvements in governance or system sustainability. To address these limitations, future studies could involve longitudinal research and comparative analyses across multiple villages.

RESULTS AND DISCUSSION

The introduction of the Village Information System (VIS) in Pertumbukan Village, Wampu District, has demonstrated significant improvements in various aspects of village administration, including service efficiency, data accuracy, user satisfaction, and governance transparency. These findings, derived from a combination of quantitative analysis of performance metrics and qualitative feedback from stakeholders, highlight the transformative potential of digital systems in rural governance. The following sections present detailed results, supported by a table summarizing key performance indicators

(KPIs) before and after VIS implementation, and a discussion of the implications of these findings.

1. Service Efficiency

The transition from manual administrative processes to a digital system through the VIS resulted in substantial improvements in service efficiency. The time taken to process common public service requests, such as issuing certificates (e.g., birth, death, or residency certificates) or updating population data, was significantly reduced. Before VIS was introduced, these processes required multiple days, largely due to paperwork, manual approvals, and frequent data inconsistencies. The study shows that after the implementation of VIS, average processing times decreased by approximately 40%, reducing from 5–7 days to 2–3 days. This improvement is attributed to the system's capability to automate routine tasks and centralize data, allowing village officials to handle requests more quickly and accurately.

Table 1. Service Efficiency

Service Type	Average Processing Time (Pre-VIS)	Average Processing Time (Post-VIS)	Percentage Improvement
Population Data Updates	6 days	2 days	67%
Service Request Handling	7 days	3 days	57%
Certificate Issuance	5 days	2 days	60%

The reduction in processing times has led to faster service delivery, improved satisfaction among residents, and better management of village administrative tasks. Village officials noted that the automation of forms, digital signatures, and real-time updates have reduced the workload and enhanced the speed at which services are provided.

2. Data Accuracy

Prior to the implementation of VIS, data accuracy was a significant challenge in Pertumbukan Village. Population data, which forms the backbone of many village

services, was often prone to errors due to manual entry and inconsistent record-keeping. Before the system was introduced, the estimated error rate in population data management was around 15%. After the implementation of VIS, this error rate dropped to approximately 3%, a significant improvement attributed to the system's standardized data entry procedures and validation mechanisms.

Table 2. Data Accuracy

Metric	Pre-VIS	Post-VIS	Improvement
Error Rate in Data Entry	15%	3%	80% reduction

The improvement in data accuracy not only enhanced the reliability of services provided to the residents but also allowed village officials to make better decisions regarding resource allocation and development planning. For instance, accurate population records helped in identifying the actual number of residents requiring government assistance, which led to more effective distribution of village resources.

3. User Satisfaction

A key aspect of the study was to gauge the satisfaction levels of both village officials and residents regarding the usability and effectiveness of VIS. Surveys and interviews conducted with the residents revealed a high level of satisfaction with the system. Over 85% of respondents indicated that the system made it easier to access village services, and 75% expressed satisfaction with the overall transparency and accountability that the VIS provided.

Table 3. User Satisfaction

Satisfaction Metric	Pre-VIS	Post-VIS	Percentage Increase
Ease of Access to Services	55%	85%	30%
Satisfaction with Transparency	60%	75%	15%
Overall Service Satisfaction	58%	82%	24%

The user-friendly interface of VIS and its ability to provide real-time updates on service requests contributed to the positive reception. Residents particularly appreciated being able to submit requests online without having to visit the village office physically, which was especially beneficial during times of limited mobility, such as during the COVID-19 pandemic. In addition, the system's transparency

allowed villagers to track the status of their requests and gain insight into village activities, fostering a sense of trust in local governance.

4. **Governance Transparency**

One of the key benefits of VIS was its ability to enhance governance transparency in the village. The system allows residents to access detailed information about village development projects, financial reports, and administrative activities. Interviews with village officials revealed that the system increased their accountability, as they could now maintain detailed digital records of all transactions and activities, which are easily accessible for auditing and review by the public. The availability of financial records, budget allocations, and project updates on the VIS platform made it easier for residents to stay informed about village governance. This increased transparency has not only improved the relationship between residents and the village administration but has also empowered the local community to participate more actively in decision-making processes.

5. **Challenges and Limitations**

Despite the notable success of VIS in Pertumbukan Village, several challenges were encountered during its implementation. Technical issues, such as occasional system downtime and network connectivity problems, posed temporary disruptions to service delivery. Additionally, the digital divide, particularly among older residents and those unfamiliar with technology, resulted in some difficulties in using the system. Approximately 10% of respondents, mostly elderly, reported difficulties in adapting to the new system, highlighting the need for continued training and support programs to ensure that all residents can benefit from the digital services.

6. **Discussion**

The results of this study demonstrate that the Village Information System is a highly effective tool for optimizing public services in rural areas. The reduction in service processing times and error rates, along with the improvements in transparency and user satisfaction, underscore the value of adopting digital solutions in village administration. By streamlining administrative tasks and making information more accessible, the VIS not only enhanced service delivery but also fostered a more inclusive and participatory form of governance. The success of VIS in Pertumbukan

Village suggests that similar systems could be beneficial in other rural areas across Indonesia, particularly those facing challenges related to manual administrative processes and limited access to services. However, the technical challenges and the digital divide observed in this study point to the need for comprehensive infrastructure support and user education programs. Ensuring that all segments of the population, particularly older individuals and those without prior experience with technology, can effectively use such systems is critical to their long-term success.

CONCLUSION

The implementation of the Village Information System (VIS) in Pertumbukan Village, Wampu District, has proven to be a transformative tool for optimizing public service delivery, improving data accuracy, and enhancing governance transparency. Through the digitalization of administrative processes, the system has successfully reduced service request processing times, improved the accuracy of population data, and significantly increased user satisfaction among residents. These advancements have fostered greater trust between the local government and the village community, as the system provides real-time access to information, promotes transparency, and ensures accountability in village governance.

The success of VIS underscores the potential of digital solutions in addressing the unique challenges faced by rural communities, where manual administrative processes often lead to inefficiency and lack of transparency. This study demonstrates that by integrating technology into village administration, local governments can significantly improve service quality and community engagement, which are critical to rural development. The positive outcomes observed in Pertumbukan Village suggest that VIS and similar systems could serve as models for other rural areas in Indonesia seeking to improve governance and public service delivery through digital innovation.

However, the study also highlights several challenges, including technical issues such as connectivity problems and the digital divide among residents, particularly older individuals. These challenges suggest the need for further infrastructure development and continuous digital literacy training to ensure that all members of the community can benefit from such systems. Future research could focus on the long-term impact of VIS and explore ways to scale these digital solutions across different rural contexts.

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