

THE EFFECTIVENESS OF VILLAGE INFORMATION SYSTEM INNOVATION IN IMPROVING PUBLIC SERVICE DELIVERY

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ABSTRACT

Research Objectives - This study aims to analyze the effectiveness of the Si DePan (Pangi Village Information System) service innovation in improving administrative services in Pangi Village, Bajo District, Luwu Regency.

Method - This study employed a case study approach, using interviews, observations, and documentation as data collection techniques. Data were analyzed using the Miles, Huberman, and Saldaña model and Richard M. Steers' (1985) effectiveness theory, which encompasses six effectiveness indicators.

Research Findings - Si DePan improves administrative efficiency by reducing the number of service visits, accelerating document processing, and optimizing village officials' resources. It also promotes transparency in Village Revenue and Expenditure Budget (APBDes) information, strengthens public oversight, and facilitates more accessible public communication. However, its effectiveness remains suboptimal due to low community adoption, limited digital literacy, unstable internet connectivity, and insufficient public outreach.

Theory and Practical Implications - These findings reinforce the importance of evaluating digital innovation effectiveness based not only on service outcomes but also on the extent to which the community utilizes the system. Village governments should strengthen public outreach, provide digital literacy assistance, improve internet infrastructure, and update service features

Novelty - This study highlights the gap between improvements in service efficiency and community adoption levels in the implementation of village information systems.

INTRODUCTION

Digital transformation in the public sector has become a key agenda in achieving effective, transparent, accountable, and citizen-oriented governance. This development encourages governments not merely to transfer conventional administrative procedures to digital platforms, but also to establish service systems that are accessible, responsive, and inclusive. Latupeirissa et al. (2024), through a comprehensive review of public service digitalization, emphasize that the use of digital technology has the potential to improve service delivery quality but may also widen existing disparities if population groups with limited access and digital capabilities do not receive adequate support. In the Indonesian context, the Village Information System (Sistem Informasi Desa [SID]) represents one form of electronic government implementation at the level of government closest to the community. Research by Sihotang et al. (2024) demonstrates that SID adoption is influenced by transformational leadership and technological, organizational, and environmental conditions. These findings indicate that the success of village government digitalization is determined not only by application availability but also by organizational capacity and the support of the implementation ecosystem. Therefore, the effectiveness of digital service innovation at the village level needs to be examined in terms of the tangible benefits it generates for service providers and the community as service users.

Nevertheless, the effectiveness of a village information system cannot be established solely by the availability of a digital platform or the government's ability to operate it. Research by Rahayu et al. (2021) on the Purwogondo Village Information System indicates that information relevance, output diversity, and information quality remain challenges in the implementation of village information systems, particularly in relation to human resource capacity, work procedures, and organizational communication. Meanwhile, Novianti and Agustina (2024) found that implementing SID can accelerate administrative services, although its effectiveness has not been fully achieved because of limited public outreach and difficulties experienced by older community members in using the system. These studies demonstrate that the technical benefits of digital systems do not necessarily translate directly into overall service success. However, evaluations that focus exclusively on system quality and implementation constraints may not fully explain how changes in service processing time, operational workforce efficiency, information transparency, and public acceptance occur simultaneously. Accordingly, further contextual research is needed to connect the operational outcomes of innovation with the experiences and service utilization patterns of the community, particularly in villages that have recently implemented website-based information systems.

A further research gap concerns differences in adoption contexts, institutional support, and user characteristics across village information systems. Sihotang et al. (2023) examined the SID adoption ecosystem in Gunungkidul Regency through a stakeholder theory perspective and demonstrated the importance of engagement among village governments, local governments, supporting organizations, and communities in sustaining the system. Subsequently, Sihotang et al. (2024) emphasized the role of transformational leadership and the Technology–Organization–Environment framework in explaining SID adoption in Indonesia. These studies enrich the understanding of institutional factors and adoption ecosystems but do not specifically explain the dynamics of service effectiveness in the case of Si DePan in Pangi Village, particularly when administrative efficiency benefits are becoming apparent while community utilization of digital services remains limited. To examine this issue, Steers' (1985) organizational effectiveness theory can serve as an analytical foundation for assessing goal attainment and resource utilization, while Rogers' (2003) diffusion of innovations theory helps explain innovation acceptance in terms of relative advantage, compatibility, complexity, trialability, and observability. These two perspectives complement each other: effectiveness theory assesses the outcomes achieved, whereas diffusion of innovations theory helps explain why the benefits offered do not necessarily encourage widespread adoption. This approach is important because the success of digital public services cannot be assessed solely on the basis of technology availability; it must also consider the extent to which services align with community needs, capabilities, and established practices.

The novelty of this study lies in its contextual analysis of the effectiveness of Si DePan service innovation by linking changes in administrative service operations, village information transparency, and community adoption levels within a single village government case. Unlike previous studies that focus on information quality, overall system effectiveness, or institutional factors driving adoption, this study examines the gap between the operational benefits experienced by the village government and community utilization of digital services. According to the research documentation, Si DePan, launched in March 2025, has helped reduce the number of visits required to process administrative documents from two to one and optimize the number of operators from two to one. The system also provides access to information on the Village Revenue and Expenditure Budget (Anggaran Pendapatan dan Belanja Desa [APBDes]), while the utilization of digital services continues to face challenges related to digital literacy, internet connectivity stability, and public outreach. The novelty of this study does not lie in claiming that research on SID or digital service effectiveness has not previously been conducted, but rather in providing empirical insight into how operational benefits can coexist with limited adoption during the early stages of innovation implementation. Accordingly, this study is expected to enrich digital public administration research by providing a more integrated understanding of the relationship between service effectiveness, accessibility, and public acceptance at the village level.

This study aims to analyze the effectiveness of the Pangi Village Information System (Si DePan) service innovation in improving public administrative services in Pangi Village, Bajo District,

Luwu Regency, by examining goal attainment, service quality, user satisfaction, resource efficiency, impacts and benefits, and responsiveness. The study employs a qualitative approach using a case study method, with interviews, observations, and documentation conducted to understand both implementation outcomes and barriers to system utilization. Theoretically, this study is expected to contribute to the development of research on public service innovation effectiveness and technology adoption in village governance. Practically, its findings may provide recommendations for village governments to strengthen public outreach, digital literacy assistance, network infrastructure, and system governance. Nevertheless, this study has limitations because it focuses on a single village and one service innovation within a relatively recent implementation context. The qualitative approach is also not intended to measure causal relationships or generate statistical generalizations applicable to all villages in Indonesia. Therefore, the findings should be interpreted within the local context of Panggi Village, while future research could employ comparative or mixed-methods approaches to examine differences in adoption levels, user satisfaction, and digital service effectiveness across several villages over a longer observation period.

METHOD

This study employed a qualitative approach using a case study method to analyze the effectiveness of the Panggi Village Information System (Si DePan) service innovation in improving public administrative services in Panggi Village, Bajo District, Luwu Regency, South Sulawesi, Indonesia. The qualitative approach was selected because the study focuses on developing an in-depth understanding of the innovation implementation process, user experiences, operational changes in service delivery, and barriers affecting community utilization of the digital system. Yin (2018) explains that case studies are appropriate for examining contemporary phenomena in depth while taking into account the real-world contexts in which they occur. Bingham (2023) also emphasizes the importance of systematic, iterative, and transparent qualitative analysis to ensure that empirical data generate credible and defensible findings. Furthermore, previous case study research indicates that combining interviews, observations, and documentation enables researchers to develop a more comprehensive contextual understanding of the phenomena under investigation (Harrison et al., 2023). Based on these considerations, a qualitative case study approach was considered appropriate for explaining the effectiveness of Si DePan in terms of both service goal attainment and community acceptance and utilization. The study was conducted in Panggi Village, focusing on three main aspects: administrative efficiency, transparency and accountability, and public information and communication systems.

Data were collected through semi-structured interviews, direct observations, and documentation, drawing on both primary and secondary data sources. Semi-structured interviews were conducted to obtain in-depth information from informants with relevant knowledge and experience regarding the implementation of Si DePan. The informants included the village head, system operator, head of the government section, representatives of the Village Consultative Body (Badan Permusyawaratan Desa [BPD]), youth representatives, women's representatives, and community leaders. Informants were selected based on their positions, competencies, involvement, and understanding of the issues under investigation. Observations were conducted to examine administrative service processes, information system utilization, interactions between village officials and community members, and the condition of supporting facilities and network infrastructure. Documentation involved reviewing administrative service records, document application data, village government activity reports, Village Revenue and Expenditure Budget (Anggaran Pendapatan dan Belanja Desa [APBDes]) information, relevant policies, and other documents related to Si DePan implementation. These three techniques complemented one another to compare informants' accounts with actual conditions and documentary evidence. The use of multiple sources of evidence is an important characteristic of case study research, enabling researchers to develop a more comprehensive understanding of the phenomenon under investigation (Yin, 2018). Data collection continued until sufficient information had been obtained to address the research focus, with attention to consistency across sources, information relevance, and the need for further data exploration.

The primary analytical framework in this study was based on the interactive model of Miles, Huberman, and Saldaña (2014), which comprises data condensation, data display, and conclusion drawing and verification. Analysis was conducted iteratively from the data collection stage until interpretations consistent with the research focus were established. During data condensation, the researcher selected, focused, simplified, and organized interview findings, observational notes, and documents relevant to the effectiveness of Si DePan. The data were subsequently coded and grouped into categories based on the six effectiveness indicators used in this study: goal attainment, service quality, user satisfaction, resource efficiency, impacts and benefits, and responsiveness, while allowing for the emergence of new themes from the field data. During the data display stage, information was organized into narrative descriptions, thematic matrices, and cross-source comparisons to illustrate the relationships among innovation objectives, service implementation, perceived benefits, and implementation constraints. Subsequently, conclusions were drawn and verified by identifying patterns in the findings, comparing evidence from multiple sources, examining information consistency, and relating the analytical results to Steers' (1985) organizational effectiveness theory. Bingham (2023) emphasizes that systematic qualitative analysis requires coding, category development, analytical reflection, and documentation of research decisions to ensure that interpretations are traceable. To enhance the credibility of the findings, this study employed source and methodological triangulation by comparing accounts from different informants and examining their consistency with observational findings and documentary evidence. This analytical framework was used not only to determine whether Si DePan improved service delivery but also to explain how these benefits emerged and why community utilization continued to face barriers.

RESULTS AND DISCUSSION

Effectiveness of Si DePan in Improving Administrative Efficiency. *Goal Attainment.*

The findings indicate that the implementation of the Pangi Village Information System (Si DePan) has supported the achievement of administrative service digitalization objectives, particularly by simplifying document processing and reducing the need for community members to make repeated visits to the village office. The Head of Pangi Village stated that online document request services reflect the village government's commitment to providing more accessible services to the community (interview with RN, September 29, 2025). This finding is supported by accounts from village officials, who explained that before Si DePan was implemented, community members generally had to visit the village office at least twice: once to submit an application and again to collect the document. Following implementation, community members only need to visit once to collect their documents, while simple documents, such as certificates of domicile, can be processed in approximately 30 minutes to one hour.

These findings indicate that Si DePan has transformed administrative service procedures by reducing face-to-face interactions and processing times. From the perspective of Steers (1985), goal attainment can be understood in terms of the alignment between established objectives and the outcomes actually achieved. From this perspective, Si DePan has demonstrated progress in improving accessibility and accelerating administrative processes. However, these achievements do not yet indicate comprehensive success because innovation effectiveness depends not only on system availability but also on the extent to which the target population utilizes the service.

Service Quality. These procedural changes are also associated with improvements in service quality. Reduced visits and shorter document processing times indicate that digitalization can simplify administrative procedures and reduce the time burden on community members. Nevertheless, digital service quality should be assessed not only in terms of speed but also in terms of usability, procedural clarity, system reliability, and the ability to meet user needs. Accordingly, Si DePan's achievements in service quality are particularly evident in the improved processes experienced by community members who can access the system, while the equitable distribution of these benefits remains challenging because digital capabilities vary across the population.

Resource Efficiency. The implementation of Si DePan has also affected the management of village administrative resources. According to the research documentation, digitalization has helped reduce manual administrative tasks, save time and labor, and support the digital management of

documents and reporting. The study also reports that operator resources have been optimized, with the number of operators reduced from two to one.

These findings demonstrate that information technology has the potential to improve the internal efficiency of village government through streamlined work processes. Nevertheless, reducing the number of operators does not, by itself, establish an overall increase in productivity. A more comprehensive assessment should also consider operator workloads, system stability, maintenance requirements, and service continuity in the event of technical disruptions.

The Gap Between System Availability and Utilization. One important finding is the relatively low level of community adoption of Si DePan. The research documentation records approximately two to three digital document requests per day, whereas manual services continue to accommodate approximately eight to nine visits per day.

This situation indicates a gap between technology availability and changes in community behavior when accessing public services. In other words, Si DePan provides a more convenient service alternative, but it has not yet fully displaced the community's reliance on conventional procedures.

This situation can be explained through Rogers' (2003) diffusion of innovations theory, which emphasizes that innovation adoption is influenced by perceptions of relative advantage, compatibility with existing needs, complexity, trialability, and observability. In the context of Si DePan, the benefit of time savings is evident, but the low adoption rate suggests that these benefits have not been experienced or understood equally across the community. Research by Nisak and Sukmana (2024) on the implementation of SIPRAJA in Indonesia similarly indicates that digital public service platforms have the potential to simplify service delivery, although limited public outreach and technical challenges remain important implementation concerns.

Therefore, improvements in administrative efficiency in Pangi Village need to be accompanied by sustained public outreach and assistance for community members who are not yet accustomed to using digital services.

Effectiveness of Si DePan in Promoting Transparency and Accountability.
Achievement of Transparency Objectives. The findings indicate that Si DePan supports information disclosure regarding the Village Revenue and Expenditure Budget (Anggaran Pendapatan dan Belanja Desa [APBDes]), including budget realization and progress in development programs. One community informant, JM, expressed appreciation for this transparency because community members could view village budget utilization and development progress. Meanwhile, the secretary of the Village Consultative Body (Badan Permusyawaratan Desa [BPD]), NM, explained that Si DePan helps the BPD obtain data to carry out its oversight function (interviews with JM, October 1, 2025, and NM, September 30, 2025).

These findings indicate that Si DePan functions not only as an information dissemination tool but also as a mechanism that facilitates community and oversight institutions' access to village governance information. From the perspective of Steers (1985), effectiveness should be assessed according to the extent to which program objectives are realized in practice. The availability of APBDes information through a digital system represents progress toward transparency objectives because information can be accessed without requiring community members to request direct explanations from village officials on every occasion. Nevertheless, transparency cannot be measured solely by the availability of information. Information must also be updated consistently, presented in easily understandable language, and made useful for helping community members understand government decisions and the implementation of development programs.

User Satisfaction and Strengthening Oversight. The benefits of Si DePan are also evident in its support for community information needs and the oversight function of the BPD. Access to budgetary and village government activity information can expand opportunities for community members to understand how public resources are utilized. This is consistent with Bovens' (2007) perspective that accountability involves a relationship in which those exercising authority are obliged to explain and justify their actions to parties responsible for evaluating or overseeing them. In the context of Pangi Village, information disclosure through Si DePan has the potential to strengthen the

prerequisites for accountability because community members and the BPD gain access to relevant information for carrying out their oversight functions.

Nevertheless, access to information does not automatically demonstrate that all aspects of accountability have been optimally achieved. Accountability also requires accurate information, adequate explanations, mechanisms for submitting questions or objections, and follow-up actions in response to community feedback. Therefore, Si DePan's contribution to accountability should be understood as supporting transparency and oversight rather than as evidence that all accountability issues in village governance have been resolved. Further assessment should examine the consistency of data updates, the completeness of available information, and the extent to which community feedback is acted upon by the village government.

Impacts and Benefits. In terms of its broader impact, Si DePan has the potential to strengthen relationships among the village government, community members, and the BPD through more open access to information. When information about budgets and development activities becomes more readily available, community members have greater opportunities to understand government programs and participate in oversight. The research documentation also indicates that the public information and communication system supports participation in village government activities, including village deliberative meetings and development planning consultations.

Accordingly, the benefits of Si DePan extend beyond accelerating administrative processes to supporting more transparent and participatory village governance. Nevertheless, meaningful participation continues to depend on the community's ability to understand the information provided, the opportunities available to express opinions, and the village government's responsiveness to the aspirations communicated by community members.

Effectiveness of Si DePan as a Public Information and Communication System. Quality of Information Services. The findings indicate that some users consider the information provided through Si DePan easy to understand, relatively quick to access, and helpful for obtaining information or submitting complaints without always having to visit the village office in person. For example, informant JD stated that the information available through Si DePan was easy to understand and could be accessed quickly (interview with JD, October 2, 2025).

These findings indicate that Si DePan has functioned as a digital communication channel between the village government and the community. From the perspective of Steers' (1985) effectiveness theory, service quality is associated with an organization's ability to provide services that meet the needs of its target population. Therefore, ease of access and information comprehensibility are important dimensions in assessing Si DePan's success as a public communication medium.

However, the positive assessments provided by the interviewed users cannot be generalized to the entire population of Pangi Village, particularly because the research documentation also identifies low system adoption. In other words, good service quality among active users does not necessarily mean that the service is easy to use for all community groups. Quality assessments should consider the experiences of users with varying levels of digital literacy, including older residents and those who are less accustomed to using digital devices. This approach is important to ensure that digitalization success is measured not only by technological performance but also by accessibility and the community's ability to utilize the service.

User Satisfaction. Interviews with informant NS indicate that the user was reasonably satisfied because Si DePan facilitated access to information at any time and was perceived to enhance trust in the village government (interview with NS, October 2, 2025).

These findings suggest that easier access to information can provide users with a better service experience. Based on the user satisfaction indicator in Steers' (1985) framework, this condition signals that the service has met some community needs. However, the satisfaction reported by the informant should be interpreted within the scope of the available qualitative data. The finding reflects the experiences of the interviewed user rather than a quantitative measure of satisfaction among the entire population.

User satisfaction should also be considered alongside the level of system utilization. The low utilization of Si DePan indicates that some community members have not yet used or fully

experienced the benefits of digital services. Accordingly, broader improvements in user satisfaction require greater usability, clearer instructions, more effective public outreach, and assistance for residents who need support. These measures can help ensure that digital services are satisfactory not only for groups already accustomed to technology but also accessible to community members with varying levels of digital capability.

Responsiveness and System Development. Regarding responsiveness, informant LS stated that Si DePan was helpful for accessing information and submitting complaints, and that it enabled the village government to respond to feedback or complaints through digital communication features. However, the informant also expressed the need for system updates and additional service features (interview with LS, October 1, 2025).

These findings indicate that the system has provided a communication channel that facilitates the expression of community needs, although further development is required to accommodate users' evolving needs.

Responsiveness involves more than simply providing a complaint submission feature; it also concerns the government's ability to address complaints promptly and communicate the outcomes of their resolution. Therefore, the effectiveness of public communication through Si DePan would be strengthened by clear complaint-handling procedures, well-defined responsibilities among village officials, and mechanisms for monitoring follow-up actions. Feature updates should be based on actual community needs and the system administrators' capabilities so that technological development produces tangible improvements in service delivery.

Constraining Factors and Their Implications. Overall, the research documentation identifies three major constraints affecting Si DePan implementation: limited digital literacy, particularly among older and non-working-age residents; dependence on stable internet connectivity; and public outreach that has not yet adequately reached the entire community.

These three constraints are interrelated. Limited digital literacy can make it difficult for community members to understand service procedures, internet disruptions can impede access, and inadequate public outreach can reduce opportunities for residents to become familiar with and try the system. This situation demonstrates that the success of village-level digital innovation depends not only on application availability but also on user readiness, administrative capacity, and supporting infrastructure.

These findings are consistent with the research of Nisak and Sukmana (2024), which highlights the importance of public outreach and infrastructure improvements in supporting the implementation of digital government services in rural areas.

Based on the findings in Pangi Village, improvement efforts should focus on conducting regular public outreach through community meetings and village communication channels, providing direct assistance to residents who are unfamiliar with digital services, improving internet connectivity stability, and establishing standard operating procedures (SOPs) for Si DePan administrators. The village government should also periodically review system features in accordance with user needs and ensure that manual services remain available to residents who encounter digital barriers.

Synthesis of the Discussion. Based on the six effectiveness indicators proposed by Steers (1985), Si DePan has demonstrated positive outcomes, particularly in streamlining administrative procedures, reducing the number of visits required to process documents, optimizing administrative personnel resources, improving APBDes information transparency, and providing a public communication channel. However, its effectiveness remains suboptimal because community utilization is still limited, while digital literacy, internet connectivity quality, and public outreach continue to present significant constraints.

Thus, the findings indicate that Si DePan's effectiveness should be understood in a balanced manner: the system has improved administrative processes and information access for its users, but more comprehensive success requires increased adoption, more equitable access, and stronger follow-up mechanisms for service delivery. The principal implication is that the digitalization of village administrative services should be implemented as a governance transformation process involving technology, administrative personnel, and the community simultaneously.

CONCLUSION

This study concludes that the Pangi Village Information System (Si DePan) service innovation in Pangi Village, Bajo District, has demonstrated effectiveness in improving village administrative services, particularly by simplifying document processing procedures, reducing the number of community visits from two to one, accelerating document completion, and optimizing administrative personnel resources by reducing the number of operators from two to one. Si DePan also supports transparency and accountability by providing real-time information on the Village Revenue and Expenditure Budget (Anggaran Pendapatan dan Belanja Desa [APBDes]), expanding public access to government information, and supporting the oversight function of the Village Consultative Body (Badan Permusyawaratan Desa [BPD]). Nevertheless, its effectiveness remains suboptimal because community adoption is still limited, primarily due to inadequate digital literacy, dependence on stable internet connectivity, and insufficient public outreach. Therefore, the success of this innovation depends not only on technology availability but also on the community's ability to use it and the village government's readiness to ensure service sustainability.

Compared with previous studies emphasizing the potential of village information systems to improve public service accessibility, this study provides more context-specific findings by revealing the gap between service process effectiveness and community adoption levels. Si DePan has generated tangible improvements in administrative procedures and information transparency, but these benefits have not been utilized equally across the entire community. These findings enrich discussions on village service digitalization by emphasizing that innovation effectiveness should be assessed not only in terms of service speed and information availability but also through actual utilization, inclusive access, and government responsiveness to community needs. Therefore, strengthening public outreach, providing digital literacy assistance, improving internet connectivity, updating system features, and establishing standard operating procedures are essential measures to ensure that Si DePan delivers more equitable and sustainable benefits.

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