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IMPLEMENTATION AND INITIAL EVALUATION OF VILLAGE INFORMATION SYSTEM (OPENSID) UTILIZATION IN WEST SUMBAWA REGENCY

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Abstrak: Untuk mendukung tata kelola digital di wilayah perdesaan, Dinas Komunikasi dan Informatika (Diskominfo) Kabupaten Sumbawa Barat telah mengimplementasikan sistem informasi desa berbasis open source, OpenSID, di 65 desa dan kelurahan pada delapan kecamatan. Penulis terlibat langsung dalam proses implementasi, mencakup instalasi sistem, pelatihan operator, serta pendampingan teknis sebagai bagian dari program pengabdian kepada masyarakat. Penelitian ini bertujuan untuk mengevaluasi tingkat adopsi awal dan pemanfaatan sistem tersebut, khususnya pada aspek pengisian data kependudukan selama enam bulan pertama pasca-implementasi. Pendekatan kuantitatif digunakan dengan mengamati data statistik yang tersedia secara publik melalui situs resmi desa. Analisis dilakukan dengan membandingkan jumlah entri penduduk dalam sistem dengan estimasi jumlah penduduk tiap desa untuk mengukur progres pengisian data. Hasil menunjukkan adanya variasi signifikan antarwilayah, yang mencerminkan ketimpangan dalam pemanfaatan sistem. Ketimpangan ini berpotensi memengaruhi akses layanan publik digital dan efisiensi administrasi kependudukan di tingkat lokal. Studi ini menekankan pentingnya dukungan teknis berkelanjutan, pelatihan lanjutan, dan monitoring berkala guna memastikan keberhasilan dan keberlanjutan digitalisasi desa.

Kata Kunci: OpenSID, sistem informasi desa, evaluasi pemanfaatan, data kependudukan, desa digital

Abstract: To support digital governance in rural areas, the Department of Communication and Information Technology (Diskominfo) of West Sumbawa Regency has implemented an open-source Village Information System, OpenSID, across 65 villages and sub-districts in eight districts. This study presents the implementation process and an initial evaluation of system utilization, focusing on population data entry during the first six months post-deployment. The author played an active role in the implementation, including system deployment, technical training, and mentoring of village operators as part of a structured community service program. A quantitative approach was used by observing publicly available statistical data from official village websites. The analysis measured data entry progress by comparing recorded population entries in the system with estimated village population figures. Findings reveal significant disparities among regions, indicating uneven system utilization that could lead to imbalances in access to digital public services and administrative efficiency. This study highlights the importance of technical support, continuous training, and regular monitoring to ensure the success and sustainability of rural digital transformation. The results offer practical insights for future policy development and replication in other rural regions.

Keywords: OpenSID, village information system, utilization evaluation, population data, digital village

Introduction

The advancement of digital technology has influenced public administration across various levels of government, including village governance (Afrilia et al., 2024). In Indonesia, village administrations often face challenges in maintaining accurate and up-to-date population data, which are essential for public services, statistical reporting, and development planning (Amiril & Choiriyah, 2024). Manual data management, limited operator skills, and inadequate

infrastructure contribute to inefficiencies in village-level administration (Aryani & Kusumaningrum, 2024), especially in rural and remote areas such as West Sumbawa. Previous community service initiatives have shown that targeted digital training can significantly enhance underserved groups' administrative and entrepreneurial capacities, such as former migrant workers, by equipping them with ICT skills for managing data, promoting services, and improving productivity (Laksono et al., 2021).

To address this, OpenSID (Open-Source Village Information System) has emerged as an alternative digital solution (Candra Pamungkas et al., 2024). OpenSID enables village officials to manage administrative services and population data more effectively through a web-based platform (Septianingrum & Oktariyanda, 2024). Despite its increasing adoption in several regions, empirical evidence on the actual utilization and sustainability of OpenSID post-deployment is still limited, particularly regarding population data entry (Ardiana et al., 2024). Taufik (2025) stated represents a knowledge gap in understanding how far the system is used beyond the installation phase, and what factors influence its effectiveness on the ground.

Previous studies have focused primarily on the technical design or perceived benefits of OpenSID in improving public service delivery (Septianingrum & Oktariyanda, 2024). However, few studies have explored the post-implementation challenges at scale, particularly through a data-driven evaluation approach that examines the actual use of OpenSID features—such as population data management—within a specific time frame (Ramjaya et al., 2024; Seta et al., 2023). Furthermore, the role of cross-sectoral collaboration between local government departments and village authorities in ensuring system sustainability remains underexplored (Sihotang et al., 2023).

To fill this gap, the Department of Communication and Informatics (Diskominfo) of West Sumbawa Regency, supported by its in-house programming team and in collaboration with the Department of Village Community Empowerment (DPMD) and the Central Statistics Agency (BPS), implemented OpenSID in 65 villages and sub-districts. The authors of this study were directly involved in the process of system deployment, technical assistance, and operator training as part of a research-based community service initiative. This paper evaluates the extent of population data entry six months after implementation and analyzes the enabling and inhibiting factors that influenced system adoption. The findings offer strategic insights to enhance the sustainability and effectiveness of digital governance systems in rural areas.

Methods

The implementation of OpenSID in 65 villages and sub-districts of West Sumbawa Regency followed a structured process consisting of six main stages: starting with digital infrastructure deployment, followed by institutional onboarding, initial population data entry, integration with administrative services, identification of challenges and support mechanisms, and concluding with evaluation and analysis procedures, as outlined in Chart 1.

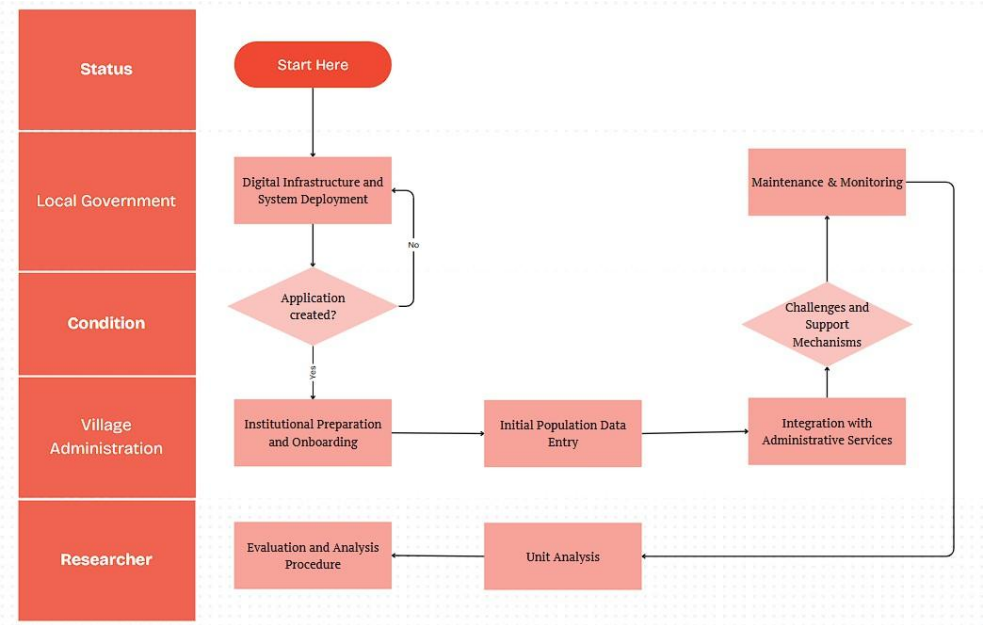

Chart 1. Flowchart of Implementation and Operationalization of OpenSID in West Sumbawa

The implementation of OpenSID in 65 villages and sub-districts in West Sumbawa Regency was part of a community service program (*Pengabdian kepada Masyarakat*/PkM) led by the author in collaboration with the local government. The author was actively involved in various stages, including system deployment, technical training, and mentoring of village operators as part of a structured community service program.

The unit of analysis in this study is the 65 villages that directly participated in the OpenSID rollout. The evaluation and analysis procedure was conducted based on internal documentation, technical support logs, and system usage data collected during the first six months of implementation. As part of the technical support team working alongside Diskominfo and BPS, the author used administrative data and cross-referenced system reports with district-level records to assess the progress of population data entry. This approach also enabled the identification of enabling and inhibiting factors such as local leadership support, operator digital literacy, and consistency of system usage across different villages.

Digital Infrastructure and System Deployment

The initial phase of this digital transformation initiative began with establishing separate digital platforms for each village. Every village was assigned a unique subdomain under the regency's official domain structure (e.g., villagename.desa.sumbawabaratkab.go.id), providing a uniform digital identity while allowing for localized administration. The deployment of the OpenSID system in each subdomain was carried out centrally by the regency's technical team in Local Government, ensuring consistency and ease of maintenance.

Institutional Preparation and Onboarding

Following the technical setup, village governments were onboarded into the system. This onboarding process involved configuring the digital profile of each village within the platform, including the village's legal identity, organizational structure, and local operators, often

administrative staff or appointed digital officers, who were provided with user accounts to begin managing the system (Adnan et al., 2024).

Initial Population Data Entry

The primary operational task for village operators involved entering population data. The process began with the registration of family units through the system's family card (KK) module, followed by the entry of individual demographic records (Subari et al., 2021). Operators were required to fill in key data fields such as name, NIK (national identification number), gender, birth details, education, and occupation (Taufik, 2025). The inclusion of each individual under a family unit was critical, as OpenSID relies on a relational structure between households and individuals to support administrative functions (Suharso et al., 2022).

While straightforward in design, the population data entry process proved to be one of the more time-intensive aspects of the system's use (Subari et al., 2021). The pace of data entry varied significantly across villages, reflecting disparities in digital literacy, available human resources, and local leadership support (Rodiyah & Bolanitan, 2024). In some villages, Yuhefizar et al. (2024) stated that progress was accelerated through internal coordination and prioritization, while others experienced slower adoption due to staffing limitations or lack of technical confidence.

Integration with Administrative Services

Beyond population data, OpenSID supports a range of administrative services that benefit directly from the digital registry. These include the automated generation of official letters (e.g., residence certificates, business permits, or marriage eligibility), which can be printed or archived through the system. The platform also enables the publication of local news, budget information, and community announcements, contributing to increased transparency (Putri, 2024).

The utility of OpenSID's dashboard tools further aids village administration by providing real-time demographic statistics—such as gender ratios or resident status categories—that are visualized and updated as data entry progresses (Mandar et al., 2022).

Challenges and Support Mechanisms

While the technical foundation for the system was uniformly provided, operational outcomes were uneven. Villages that received early and consistent support—either from sub-district coordinators or internal champions—tended to perform better in terms of data completeness. Conversely, villages that lacked immediate access to technical guidance, or where operator turnover was frequent showed minimal or stagnant progress (Adnan et al., 2024)

Unit Analysis

This study employs a quantitative descriptive approach to assess the early adoption (Setyawan et al., 2024) and usage of the OpenSID platform across 65 villages and sub-districts in West Sumbawa Regency. Data collection was conducted through systematic observation of publicly available statistics (Johnston, 2014) from each village's official website. Specifically, the total number of registered population entries was extracted from each village site's/data-statistik/jenis-kelamin or /data-statistik/status-penduduk endpoints.

Evaluation and Analysis Procedure

To ensure consistency and comparability, only data accessible within the same observation period (within six months post-implementation, from December 2024 to June 2025) were included. Where data on total population counts were available (from government publications or BPS reports) (Hendrayani et al., 2025), they were used as benchmarks to calculate the percentage of data entry completion per village and district. Villages with inaccessible or missing statistics were recorded with a value of zero, in line with established practices in data completeness assessment.

Data were then grouped by district and analyzed using simple descriptive statistics such as total entries per district and percentage completion. Bar charts were used to visualize disparities and patterns in adoption. This approach aligns with best practices in digital system monitoring and public service data evaluation, particularly in rural and low-resource settings. Relying solely on open-access data without intervention or interviews reduces bias and ensures replicability.

Results and Discussion

The implementation of OpenSID in West Sumbawa Regency represents a strategic step towards strengthening digital governance at the village level. The system has been deployed in 65 villages and sub-districts across eight districts, with varying levels of data entry progress and operational engagement. As part of this initiative, the author—serving as both coordinator and lead speaker—conducted a series of structured technical guidance sessions in each district (Figure 1a, 1b, 1c). These sessions were designed to equip village officials with the necessary competencies to operate and manage OpenSID effectively. Training modules included population data entry, administrative documentation, and website content management, each tailored to the participating villages' specific needs and digital readiness.

This activity, carried out under a community service program (*Pengabdian kepada Masyarakat/PkM*) (Figure 1d) served not only as a capacity-building mechanism through technical mentoring, but also as an evaluative platform to assess the early-stage adoption and real-world utilization of OpenSID. In particular, the author directly observed and recorded patterns in population data management and administrative implementation practices across diverse rural contexts.

However, the disparities in adoption levels highlight several underlying issues that require further attention. Villages with higher levels of data input tended to exhibit stronger local leadership support, better digital literacy among operators, and more consistent institutional commitment (Indrayanto et al., 2024). Conversely, lower-performing areas often faced limited human resource readiness, a lack of follow-up mentoring, and reduced motivation due to unclear reward mechanisms or competing administrative priorities. These findings suggest that the success of rural digitalization is not solely technical but deeply social and organizational (Yuhefizar et al., 2024). Bridging these gaps will require a more integrated strategy—combining technical capacity building, leadership involvement, and incentivized policy frameworks—to

ensure equitable digital transformation across all villages. Mazloum Yar (2024) suggests that broader implications point toward the need for inclusive digital governance models that are sensitive to local socio-cultural contexts and leadership dynamics.

Figure 1. a) Technical Guidance Session for Brang Rea, b) Technical Guidance Session for Brang Ene, c) Technical Guidance Session for Poto Tano, d) Post Technical Guidance Photo Session for Sekongkang

West Sumbawa, with its predominantly rural character and diverse geographical challenges, presents a unique context for the adoption of digital systems. OpenSID, as an open-source village information system, provides structured modules for administrative data management, including population statistics, service documentation, and village regulations. The system deployment was carried out uniformly using subdomains such as villagename.desa.sumbawabaratkab.go.id (Figure 2), ensuring centralized control while enabling local access.

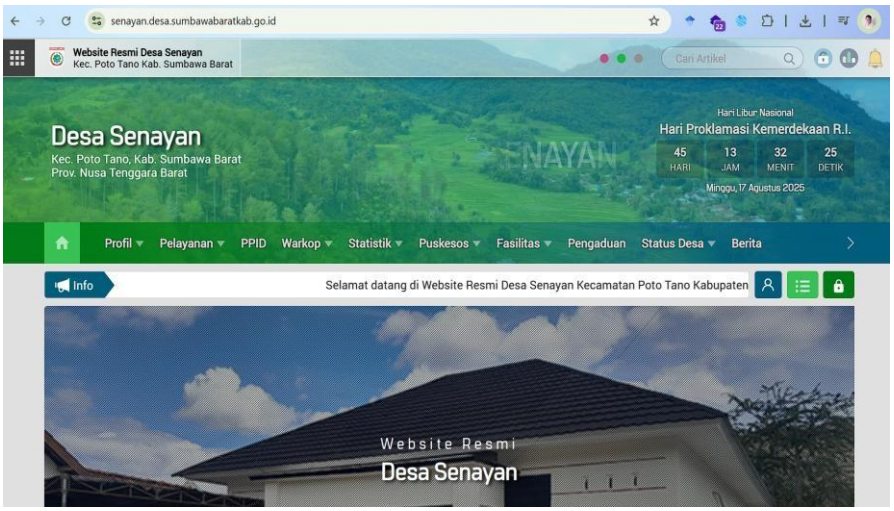

Figure 2. Homepage View of a Village's OpenSID System

Table 1 presents the total number of population data entries in the OpenSID system for each village and sub-district located in three districts of West Sumbawa Regency: Seteluk, Taliwang, and Brang Ene on 31 May 2025. The data collection results indicate a significant variation in the data entry level between villages. In Seteluk District, *Seteluk Atas* and *Tapir* villages stand out with the highest number of entries, reaching 2,252 and 1,962, respectively. In contrast, several villages such as *Kelanir* and *Seteluk Tengah* have not entered any data.

Table 1. Total Data Entries in OpenSID in Seteluk, Brang Ene, and Taliwang Districts

District	Village	Entry Total	District	Village	Entry Total
Seteluk	Air Suning	97	**Taliwang**	Banjar	275
	Desaloka	1		Batu Putih	2425
	Kelanir	0		Labuhan Kertasari	97
	Lamusung	1		Labuhan Lalar	38
	Meraran	97		Labuhan Liang	157
	Rempe	1		Sermong	58
	Seran	902		Seloto	1
	Seteluk Atas	2252		Tamekan	97
	Seteluk Tengah	0		Lamunga	0
	Tapir	1962		Arab Kenangan	0
Brang Ene	Kalimantong	1426		Bugis	874
	Lampok	2		Dalam	1322
	Manemeng	1525		Kuang	0
	Mataiyang	4		Menala	0
	Mujahiddin	5		Sampir	106
	Mura	4		Telaga Bertong	0

In Taliwang District, Batu Putih Village demonstrated the highest performance with 2,425 entries, followed by Dalam and Bugis. However, several urban and rural villages such as Arab Kenangan, Kuang, Menala, and Telaga Bertong recorded zero entries, reflecting a gap in the system's implementation. Meanwhile, in Brang Ene District, Manemeng and Kalimantong Villages recorded relatively high numbers of entries, with 1,525 and 1,426 respectively. However, other villages such as Mujahiddin, Mataiyang, and Mura still showed very low entry numbers, with fewer than 10 entries.

Table 2 presents the total number of population data entries in the OpenSID system across several districts in West Sumbawa Regency. Sekongkang District demonstrates relatively high and consistent data entry performance across almost all villages. Talonang Baru and Sekongkang Atas villages recorded significant numbers, with 2,018 and 1,450 entries respectively, followed by Sekongkang Bawah (1,392) and Ai Kangkung (1,294). Only Tatar Village showed a low number, with just 48 entries.

Table 2. Total Data Entries in OpenSID in Sekongkang, Brang Rea, Poto Tano, Jereweh, and Maluk Districts

District	Village	Entry Total	District	Village	Entry Total
Sekongkang	Ai Kangkung	1294	**Poto Tano**	Kiantar	97
	Kemuning	106		Kokarlian	97
	Sekongkang Atas	1450		Mantar	98
	Sekongkang Bawah	1392		Poto Tano	1110
	Talonang Baru	2018		Senayan	2292
	Tatar	48		UPT Tambak Sari	0
	Tongo	708		Tebo	97
Brang Rea	Bangkat Monteh	4		Tuananga	0
	Beru	1906	**Jereweh**	Belo	97
	Lamuntet	12		Beru Jereweh	97
	Moteng	909		Dasan Anyar	97
	Rarak Ronges	2		Goa	78
	Sapugara Bree	3	**Maluk**	Benete	0
	Seminar Salit	9		Bukit Damai	97
	Tepas	2331		Maluk	2
	Tepas Sepakat	665		Mantun	12
				Pasir Putih	4

In Poto Tano District, Senayan Village had the highest data entry count with 2,292 entries, followed by Poto Tano Village (1,110), while UPT Tambak Sari and Tuananga have yet to enter any data (0 entries). The Brang Rea District shows significant disparity among its villages regarding OpenSID data entry. Tepas Village recorded the highest number with 2,331 entries, followed by Beru (1,906), Moteng (909), and Tepas Sepakat (665). In contrast, several other villages such as Rarak Ronges (2 entries), Sapugara Bree (3), Bangkat Monteh (4), Seminar Salit (9), and Lamuntet (12) reported extremely low numbers.

In the Jereweh District, all villages have made entries, although the numbers are uniform and relatively low, with each recording 97 entries except for Goa Village, which recorded 78 entries. Meanwhile, Maluk District still demonstrates a generally low level of system adoption. Bukit Damai Village recorded the highest number of entries (97), followed by Mantun (12), Pasir Putih (4), and Maluk (2). Benete Village recorded no entries at all (0).

This data highlights a significant disparity in the utilization of the OpenSID system across villages, likely influenced by factors such as human resource capacity, the commitment of village governments, and the level of technical support and oversight provided by relevant agencies.

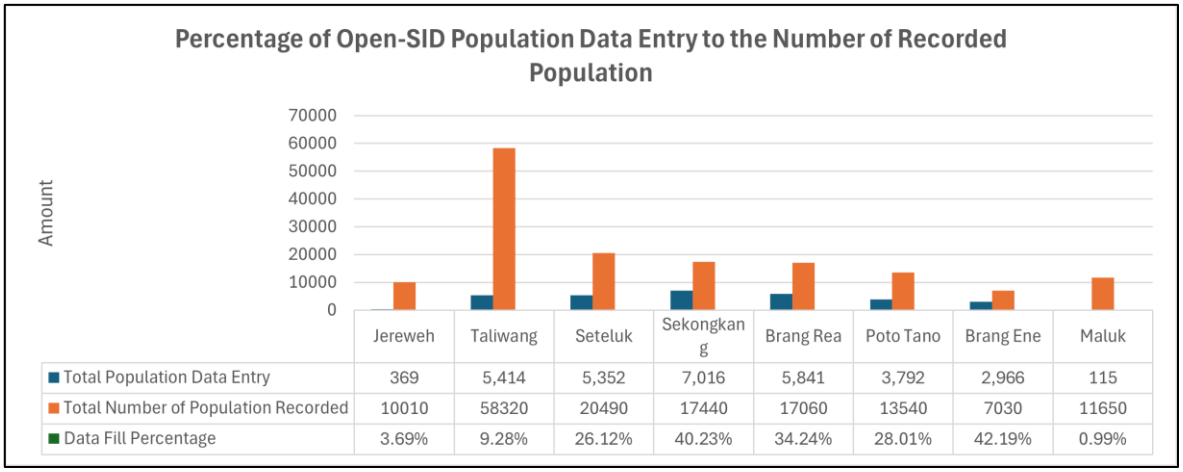

Figure 3 Percentage of Open-SID Population Data Entry to the Number of Recorded Population (Hendrayani et al., 2025)

Figure 3 shows the level of population data entry in the OpenSID system across eight districts in West Sumbawa Regency. Brang Ene District recorded the highest entry percentage at 42.19%, followed by Sekongkang (40.23%) and Brang Rea (34.24%), indicating a strong commitment to digital data collection. Seteluk and Poto Tano also reported relatively good figures, with 26.12% and 28.01% respectively. Meanwhile, Taliwang, as the regency capital, had the highest absolute number of entries (5,414 entries), but its percentage remained relatively low (9.28%) compared to its large population size. Jereweh showed the second-lowest entry rate at 3.69%, while Maluk ranked the lowest with only 0.99%, indicating minimal data entry activity in the area.

These findings highlight the disparity in system adoption levels across districts, underscoring the need for greater technical assistance and capacity-building for field operators. This inequality affects the balance of access to information and digital public services between villages and potentially hinders the efficiency of local population administration management (Akbar & Wijaya, 2024; Afrilia et al, 2024.; Amiril & Choiriyah, 2024). Similar digital gaps have been observed in other rural contexts, such as among ex-migrant entrepreneurs in Wonosobo who initially lacked ICT skills, resulting in reduced business performance before receiving targeted digital training (Susanti et al., 2025).

Conclusion

The evaluation of OpenSID adoption across 65 villages and urban villages in West Sumbawa Regency reveals uneven progress in the region's digital transformation efforts. Only a fraction of the villages had actively entered population data within the first six months of implementation, indicating that digital infrastructure and systems alone do not guarantee effective utilization. The success of such initiatives largely depends on the readiness of human resources, ongoing technical support, and strong engagement from both village and sub-district-level governance. This disparity in adoption also reflects deeper inequalities in digital access and

capabilities, potentially disrupting the balance of public service delivery and hindering efficient population administration management at the local level.

To enhance the sustainability and impact of the village digitalization program, a structured framework for implementation is necessary. Key strategies include providing regular technical training for village operators, establishing mentoring schemes, and conducting continuous monitoring and evaluation led by the Office of Communication and Information Technology (Diskominfo) and the Village and Community Empowerment Agency (DPMD). System integration with the Central Statistics Agency (BPS) is also critical to ensure accurate data validation and interoperability. Additionally, performance-based incentives and supportive local policies can encourage greater participation. Introducing a localized support mechanism—such as digital literacy modules, on-site troubleshooting assistance, and community-based peer learning—can further empower villages to adopt and sustain the system effectively. Future research is recommended to explore how social, cultural, and leadership factors influence digital adoption across different rural contexts.

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