

Village Information System Development for Data Sovereignty

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Submitted: July, 2025

Revised: September, 2025

Accepted: September, 2025

Abstrak

Keberadaan Pengembangan Sistem Informasi Desa (SID) dimandatkan oleh UU Desa No.6 Tahun 2014 menjadi penting sebagai pendokumentasian data desa yang terdiri dari data kependudukan, potensi desa, dan program desa. Hal ini tentunya dapat terjadi bila desa mampu memaknai data yang dimiliki. Penelitian bertujuan untuk mengetahui pengembangan SID sejak awal inisiasinya, keterlibatan pihak-pihak terkait dan pemanfaatan data SID dalam pembangunan. Penelitian menggunakan metode deskriptif analitik, teknik perolehan data diperoleh dari FGD, wawancara, observasi, dan dokumentasi. Pelaksanaan penelitian dilakukan sejak akhir 2022 hingga akhir 2024. Analisis data menggunakan teknik analisis interaktif. Hasil penelitian menunjukkan Pemerintah Kalurahan Panggungharjo telah mengembangkan SID secara mandiri dengan dukungan kelembagaan, pendanaan, dan sumber daya manusia profesional. SID mendukung pelayanan administrasi lebih transparan, mendorong kemunculan berbagai program publik (beasiswa dan bantuan lansia) yang berbasis data. Temuan ini menegaskan bahwa Panggungharjo telah mengimplementasikan prinsip daulat data, yakni desa memiliki kontrol atas data dan menjadikannya landasan untuk pembangunan dan pelayanan masyarakat.

Kata Kunci: Data, Daulat Data, Pengembangan Data, Sistem Informasi Desa

Abstract

The existence of the Village Information System (SID) Development, mandated by Village Law No. 6 of 2014, is crucial for documenting village data, including population data, village potential, and village programmes. This can only occur if villages are able to interpret their data. This study aims to determine the development of SID since its initial initiation, the involvement of relevant parties, and the utilization of SID data in development. The study used a descriptive analytical method, with data obtained through focus group discussions (FGDs), interviews, observations, and documentation. The study was conducted from late 2022 to late 2024. Data analysis used interactive analysis techniques. The results show that the Panggungharjo Village Government has independently developed SID with institutional support, funding, and professional human resources. SID supports more transparent administrative services and encourages the emergence of various data-based public programmes (scholarships and elderly assistance). These findings confirm that Panggungharjo has implemented the principle of data sovereignty, namely that villages have control over data and use it as a foundation for development and public services.

Keywords: Data, Data Sovereignty, Data Development, Village Information System

INTRODUCTION

Villages have a strategic position to build Indonesia. Village development in Indonesia is important because the number of villages throughout Indonesia is quite large, according to BPS data, totaling 83,971 (BPS, 2024). The village is an organization that is directly related to the community and has a role, especially in the aspect of public services (Dilham et al., 2020). Village development is a systematic, sustainable process to improve the quality of life with the socio-economic well-being of people living in rural areas (Pramanik et al., 2017). Village development has the goal of improving living standards, reducing poverty and improving community welfare, because the complexity of problems in the village is followed by low quality of human resources, facilities, and infrastructure are still lagging (Anggun Nadia & Mahi, 2023).

The existence of Village Law No. 6 of 2014 gives authority to villages to plan and build villages independently. The law transformed the development program that was initially centralized from the top to a decentralized paradigm with increased budget allocation and better governance arrangements, a change that is expected to encourage villages to have sovereignty to determine development, aiming to make villages self-sufficient. The Village Law also prioritizes the principle of recognition and subsidiarity. This law emphasizes the importance of encouraging community participation to improve public services in the village. The principle of recognition means recognizing the diversity and local wisdom of the village, while subsidiarity gives authority to the village to manage its own households (Antlov et al., 2014; Prayitno, 2024).

In addition to the Village Law, other legislation reinforces the strengthening of information systems, namely Law No. 14 of 2008 on Public Information Disclosure and Law No. 27 of 2022 on Personal Data Protection. Both regulations affirm that the management of information and data at the village level is not only related to transparency but also concerns the protection of citizens' fundamental rights over their personal data. In this regard, SID functions not merely as an administrative instrument but as a strategic means to realize village data sovereignty. The concept of data sovereignty is understood as the village government's capacity to independently control, manage, and utilize data for the purpose of village development. The laws on public information disclosure and personal data protection provide a normative foundation for village data governance. Together with the Village Law, these three regulations strengthen the urgency of SID, positioning it not merely as an administrative tool

but as an essential instrument for realizing data sovereignty and enhancing the quality of village governance.

Currently, the change in village authority is followed by the implementation of a village information system to display and store village data, village development data, and other information related to development. In the current era, information and communication technology is a medium that can be used by villages. The use of information technology is one way to realize village independence, especially with appropriate technology, so that several breakthroughs can be made to catch up with villages to realize independence (Lindawaty, 2023). The use of information and communication technology through the village information system is part of the implementation of e-government in the village. The use of e-Government provides benefits for villages as public sector organizations because it makes village government management more transparent, accountable and independent (Al-Khoury, 2011; Mayowan, 2016; Watrianthos et al., 2019). The existence of a village information system allows villages to convey information and encourage public information disclosure. The village information system also provides space for more organized data storage without the worry of damage due to disasters, and allows data to be updated at any time.

However, on the other hand, the implementation of SID in villages is not optimal. Based on an article entitled Informational Capability and the Development of Village Information System and Village Owned Enterprises in Four Villages in Java, it shows that SID is more dominant and is used for administration, as not yet a medium for empowering village communities. Another previous research related to the implementation of SID in Panggunharjo Village is that Panggunharjo Village utilizes data for the preparation and implementation of village public policies, followed by transformative-transactional village head leadership. This research focuses more (Hendra et al., 2022) on aspects of transformational leadership and cross-actor collaboration. Another research related to the implementation of the village information system in realizing Panggunharjo Village as a smart village (Sulistyowati et al., 2021).

The Village Information System (SID) has played an important role in realizing the concept of a smart village by fostering relationships between the village government (kalurahan), the community, and the environment. These relationships are reflected in various policies and development initiatives carried out in Panggunharjo Village. This study demonstrates the role of SID in advancing the smart village agenda, which has been set as a target by the Bantul regency government. The distinction from the following study lies in its

research focus: while this study emphasizes how villages can exercise control over their own data as a basis for public service delivery and community empowerment in the pursuit of a smart village. The third study concerns data sovereignty in BRICS countries (Brazil, Russia, India, China and South Africa). That research highlights data as a strategic asset that holds not only economic value but also political, social and security dimensions (Belli et al., 2024). In this context, data sovereignty is defined as the capacity of an entity to understand how and by whom data is processed, while ensuring regulatory control that safeguards autonomy.

This study differs from previous research as it emphasizes the use of the Village Information System (SID) as an instrument of data sovereignty, namely, the capacity of the village to control and utilize its own data for development planning and public service delivery. Panggungharjo Village has successfully implemented SID; however, its use extends beyond administrative management. SID has been leveraged for village development planning and service delivery, thereby enabling the village to exercise sovereignty over its data. The Village Information System should not merely be understood as a village website but as an integral component of village governance, encompassing information dissemination and data documentation for development purposes. Information systems are inherently linked to the organizational units that generate and disseminate information as a product for policy decision-making. In this regard, information systems are not only about data but also about people (human resources), systems, management, and organizational structures (Adeoti-Adekeye, 1997; Rianto et al., 2017).

In relation to data sovereignty, this study highlights the village's ability to independently document, manage, and utilize data for development planning and public service. By contrast, research conducted in BRICS countries defines data sovereignty as the capacity of an entity to understand how and by whom data is processed, while ensuring regulatory control that guarantees autonomy. Thus, while the dimensions, contexts, and actors differ, both perspectives illustrate the complexity of data sovereignty, ranging from global geopolitical concerns to governance at the village level.

Panggungharjo Village, located in Sewon Subdistrict, Bantul Regency, Yogyakarta, has been one of the successful cases in implementing SID since 2015. The village government has employed SID to achieve self-reliance through the management of population data, village potential data, and village programs, all of which are utilized in development planning. This study aims to examine how SID has enabled Panggungharjo Village to employ its data resources as a foundation for local development.

The Village Information System (SID) is important to be implemented in villages as part of e-government. E-government is part of the use of Information and Communication Technology (ICT) for more efficient and cost-effective government management, facilitating public services and allowing greater public access to information, and increasing accountability as part of governance and establishing relationships between the government and the community (Monga, 2008). According to Pascual (Anwar & Sujai, 2020) e-Gov is the use of information technology (IT) by using automation and computerization to improve the relationship between the government, society and business that encourages leadership innovation, organization and information delivery. E-Government is an option for many countries because of its effectiveness for public services, and allows access to information for the wider public, which encourages transparency and increases public participation in government management. Although its realization takes a long time, the existence of (Veeramootoo et al., 2018). E-Government has more value in terms of increased community involvement, better public services, increased community participation and raising trust in the government, which means encouraging greater participatory democracy (Curtin et al., 2013).

The village information system is computer-based and web-based so that this information can be accessed by residents. The SID license is developed in a free and open source software system platform, which means it can be used, copied, distributed, improved in performance and modified according to the needs of the web-based platform (Jahja et al., 2012). This makes it easier to manage and the community that accesses it. Websites are applications that utilize web technology that can be accessed through the internet, a wide range and are more accessible to users. Other advantages of the power of hypertext facilities allow users to access records, reports, databases, videos, graphs and others (Delima et al., 2017; Safdar et al., 2020; Ernungtyas et al., 2024).

The target of SID implementation is to support village management, especially in the provision of databases used for village development planning. This means that the implementation of SID is not just about using tools or following information technology developments, but the application of information technology must prioritize consideration of community access to technology and emphasize its function to encourage better village governance (Pamungkas, 2018). The development of SID is not easy because it is not only the provision of infrastructure and facilities but also requires community participation, increasing human resources and others.

With the existence of SID, data can be more easily documented and updated at any time. Related to the mandate of the Village Law, the village has the authority to determine the direction of village development. Villages are representations of several basic principles of democracy. These principles are the principles of representation, transparency, accountability, responsiveness and participation, which are the basic foundations for policy management, village planning, financial management and public services for the community (Lindawaty, 2023)

SID is a village tool for village data management related to village administration, resource management and population issues. SID is an implementation of e-Government as an appropriate technology to simplify the data management process in village offices (Fitri et al., 2017). The existence of the SID mandated in the Village Law provides space for villages to be more accountable, transparent, easy to control, and more accessible to the community. The existence of the SID allows villages to carry out more organized data documentation and information management for the community.

In the current era, the existence of data is a crucial issue related to policy affairs. Data is one of the determining factors for the success of policies and social services. Data is a valuable asset for the organization, especially in decision-making, so it is important to ensure the accuracy of the data (Meng, 2021; Nilashi et al., 2023).

Data is still a raw material that is processed into information, information systems process data into information, and information becomes a resource needed in management/management. Thus, the existence of a village information system application makes it easier to convert the input data into information so that it can be used for development planning. The existence of this information should be easily accessible to the public so that the information does not only belong to the village apparatus. According to McLeod, information is data that has been processed into forms so that it has meaning/meaning for the recipient and for decision-making, both now and in the future (Jaluanto Sunu Punjul Tyoso, 2016; Nurmasita Achsin et al., 2015).

One of the targets of achieving the existence of SID is to allow villages to have authority over village data and provide wide access for the community. This is part of the data sovereignty effort, which is an important concept in today's digital era, especially in the context of information management at the village level. Data sovereignty also provides space for the public to have the right to information and manage, access, and utilize data related to people's lives.

There are three important elements to produce village data sources that describe the actual condition of villages in Indonesia are efficient, effective, and precise. Efficient means that data collection does not require large costs; Effective means that data collection, validation, and verification can be done by villagers with the help of parties outside the village (Grace Natalie & Sofyan Sjaf, 2021).

RESEARCH METHODOLOGY

The approach used in this study is qualitative research with an analytic descriptive approach. This research presents a specific picture of the situation, social arrangement or relationship. Descriptive studies provide an overview of the type of person or social activity and focus on the question of "how and who". In this study, the phenomenon of the use of SID as an innovation in village government management is focused on how to use it to support villages in owning and utilizing data (Neuman, 2017).

Panggunharjo Kapanewon Sewon Village, Bantul Regency, Yogyakarta, is one of the villages that has many awards. Panggunharjo Village is an example for other villages because of good village management, so that this village often becomes a reference and role model for other villages in Indonesia. Geographically, this village does not have many natural resources because of its location on the outskirts of the city, even the community tends to be heterogeneous due to the emergence of several housing complexes in this area. These obstacles are not obstacles and even encourage village officials to carry out various innovations, including in the use of information and communication technology. This condition is what prompted the researcher to choose the location of Panggunharjo Village.

The research was conducted in Panggunharjo Village from late 2022 to late 2024. The informants in the study were selected by purposive sampling, namely those who have a relationship in the development of SID and the village community, namely the Panggunharjo Village Head and devices related to the implementation of SID, community groups that intersect with the village information system, village community representatives, and CRI (Combine Resource Institution).

The data acquisition technique was obtained from: 1) In-depth interviews with selected informants; 2) Focus Group Discussion (FGD), with people who are related to the development of SID, village officials and community representatives; 3) Observations and 4) Documentation related to data in the form of village documents and media.

Data analysis can be sequential and interactive; the presence of presentations and conclusions will affect each other. The presentation of data helps the researcher in determining patterns. The first text that rationalizes the data presentation and demands a new analysis changes into the form of presented data, the revision and expansion of the presented data shows the pattern of relationships and new explanations that make it more unique in a single text, and so on (K. Denzin & Lincoln, 2009).

FINDING AND DISCUSSION

Based on the results of observations, interviews and documentation, it can be described that, development of the SID in Panggunharjo was carried out through collaboration between several parties, but the initiative came from the village government. Panggunharjo Village began pioneering the SID in 2015, driven by the initiative of the then-head of the village, Wahyudi Anggoro Hadi to immediately utilize SID to document existing village data even Panggunharjo was encouraged to conduct a survey on community consumption patterns in 2023 to obtain data on the consumption patterns of the Panggunharjo community.

The village information system, in accordance with the Village Law, should be a policy of the district or local government, as conveyed by Budiman (2021) four factors a role: 1) The commitment of the regional head; 2) The regulatory basis in the implementation of the SID; 3) Funding and 4) Human Resources.

In developing SID, according to Budiman, four factors that can be described as follows (2021).

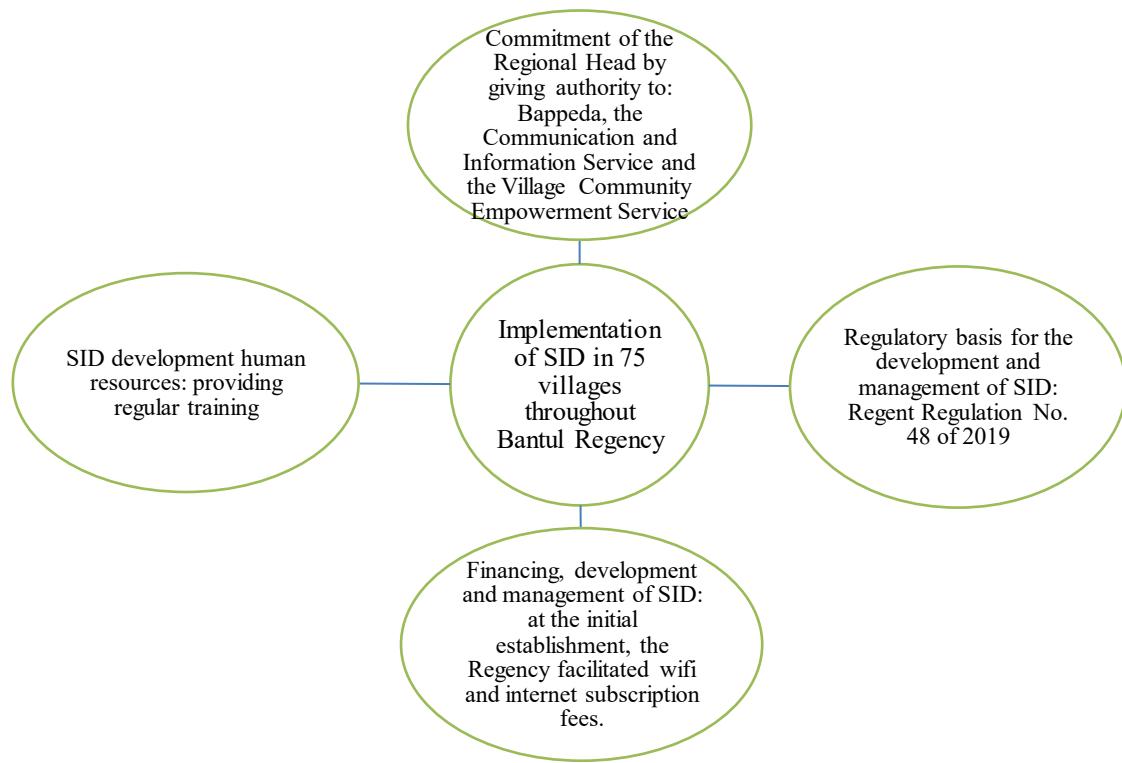


Figure 1. SID Development Facilitation Component

Source: Budiman 2021 and processed researcher

The components that play a role in the development of SID in the district are: 1) Stakeholders who mandate competent parties; 2) The existence of rules/regulations that will later become a reference for villages in the implementation of SID; 3) Financing and 4) Resources that have technical capabilities, technology and information. The parties mandated to develop SID in the villages of Bantul Regency are Bappeda, the Communication and Informatics Office and the Bantul Regency Village Empowerment Office. These parties synergize with each other to facilitate villages in the implementation of SID. In addition, Bantul Regency also collaborates with CRI (Combined Resource Institution) as a partner in the development of SID. CRI is a non-governmental organization established in 2001 that has a target goal to strengthen local institutions, community networks and citizen capacity in the field of information and communication management, including in terms of community empowerment, integrated data management, data security and digital literacy.

The next component of the regulation, the Regent of Bantul issued Regent Regulation No. 48/2019 concerning the Governance of the Village Information System of Bantul Regency. From the Regent's regulation, the Communication and Informatics Office made a roadmap for

the development of SID. The roadmap is a guide in the development of the Bantul Regency SID, so that it is used as a basis for the development of the SID of 75 villages/sub-districts. CRI, as a partner, will assist each village in the development of SID.

The third component is financing, which is currently not only borne by the district but also by the village through village funds. At the beginning, with the implementation of SID in 2015, the district facilitated the establishment of wifi access in each village and financing internet subscriptions. But for now, many villages have spent budgets from their respective village funds for these two facilities. The district always conducts training if it is felt that there is a change in the application, which is attended by all village SID managers.

According to Elis Fitriyati, SIP, MPA, Head of PPM (Governance and Human Development) from the Regional Development Planning Agency (Bappeda), in an interview with the author on November 15, 2023, she stated:

"At the beginning of the implementation, we routinely held training and coordination in the implementation of SID. Currently, out of 75 villages, all have implemented SID, although not all of them are running well, but village data has entered the SID application, so that it has been well documented. But the condition of each village still varies depending on the human resources and the manager."

From the evaluation component of SID development above, several things make implementing SID in the village not the same. In addition, the central government does not have a general platform formulation from SID, so the variety of SID applications is quite diverse. This is in line with what Sri Mulyani from the Bantul Regency Communication and Information Office stated in an interview with the author on January 13, 2023:

"There is no obligation for villages to have to use the SID platform that we conveyed; if the village wants to create and initiate the SID independently, we do not prohibit it because there is no rule that prohibits it, the important thing is that the data can be integrated".

That is why some villages implement SID with independent initiation from the village. One of the villages that finally initiated independence and not based on the strategy in the image above, is Panggunharjo Village. It was officially established in 2017 with funding from village funds, using an application launched by CRI (Combined Resources Institutions).

SID in Panggunharjo is initiated by the village without involving outside parties except for consultation. According to Fajar Budi Aji, Head of the Panggunharjo SID Management, in an interview with the author on November 21, 2022, this was done for the following reasons:

"There is no regulation that conveys that SID must be built together in one district, for that, because Panggunharjo can build SID, we do our own initiation."

In addition, according to the principle of Wahyudi as the village head at that time, the benefits of SID would be large enough so that the village would not lose if it had to spend its own funds. For villages, SID can support data documentation consisting of village potential data, population data, village activity data and village documents. Not only that, web-based SIDs are a medium to support transparency and public openness on village development planning and reporting.

SID in Panggunharjo Village began with the establishment of the Village Information System Manager (PSID) as a special institution to handle the information needed by the community. This institution is under the Head of Government (Jagabaya), thus facilitating technical problems that arise as obstacles in implementing information technology. The team at PSID consists of data managers, media managers, admin and social media staff, website admins and creative library. PSID managers are human resources who have competence in the field of information technology, so that they do not experience difficulties in maintaining SID. The existence of PSID as a village institution enables SID management can run professionally and overcome technical obstacles that usually occur in the use of applications.

The ideal output produced by SID is the collection of data from the community that can be used as a database in village development planning, so that the benefits are felt by the community (Pamungkas, 2018). Village development planning should provide space for residents to participate, so that they no longer use a top-down village development approach like during the New Order period (Grace Natalie & Sofyan Sjaf, 2021). This means that the data collected is actually used to make village development plans.

The data collected is of course, in accordance with the condition of the village, so that this data displays things that need to be improved or optimized in development. If it is in accordance with the conditions and needs of the community, it encourages community involvement or participation. Community participation in development not only provides an opportunity to contribute but also strengthens their involvement in decision-making. In addition to this, it can increase the efficiency and effectiveness of development programs because they are in line with their aspirations (Rohman Kusmayad et al., 2024).

The existence of SID can support the availability of data more accurately, easily stored, easily accessible and faster to update data. So it can be said that SID has a big role in encouraging villages to utilize village databases. The development of SIDs so that they can

function in data collection validly and accurately is a commitment of the village government. The village government's commitment is driven by the leadership of the village head. Village heads have a vision for the future and understand the importance of data that supports village development planning based on village data.

After the SID, several benefits were felt by Panggunharjo Village: 1) Data was neatly documented; 2) Services to the village community are faster and easier; 3) The existence of data is a reference in the submission of village development plans and 4) Villages can come up with several programs that provide solutions for the community, such as scholarships, assistance for the elderly and others. With this application, data update activities are not difficult compared to manual; if data updates are always carried out, the available data is valid enough so that it can be used by the village government to prepare village development planning.

The above conditions show that the Panggunharjo Village has been aware of the importance of data since the beginning of developing the SID. This is not done by many other villages; villages often consider the development of SID as mandatory from above which must be implemented in the village. Or only carry out obligations according to existing regulations, sometimes there is more data at the request of supra villages, both districts and central governments, while villages do not interpret the data they have.

The advantage of this web-based information system is that data can be accessed by the wider community, both information about village activities, village resources, plans and activities carried out in the village and various documents and requirements in managing village services. The availability of data supports transparency and disclosure of information that contributes to public trust in the village. Public trust in the government is one of the keys that determines the competitiveness of the government because it shows the quality of the relationship between the community and the government (Yong-duck Jung & Sea Young Sung, 2012; Porumbescu, 2017; Beshi & Kaur, 2020).

With the existence of SID, public services in Panggunharjo Village have become more efficient and transparent. Public services are a space for interaction between the apparatus and the village community. For the public, it can be said that public services are the most visible benchmark of government performance. The public can directly assess the government's performance based on the quality of public services received because the quality of public services is in the interest of many people, and the impact is directly felt by people from all walks of life. Accurate data can certainly support the performance of the village government

in providing community services. Through SID, transparency in village administration can be easier, for example, including requirements in the management of death certificates, how long the process takes and how much costs are incurred. In Panggungharjo, for all administrative arrangements, there is no charge, and this has been listed in the SID, which is based on the village website. Reliable public services mean that success in building public service performance in a professional, effective, efficient, and accountable manner will raise the government's positive image in the eyes of its citizens (Zaenal Mukarom & Muhibudin Wijaya Laksana, 2015; Yoraeni et al., 2022).

The use of SID in Panggungharjo is not only for administration, but also as a basis for development planning and public services. This shows the implementation of the principle of data sovereignty, namely that the village government controls data as a strategic asset and uses it to meet the needs of the community. In addition to increasing transparency and accountability, SID also strengthens public trust in village government.

The existence of SID not only supports administrative services but also encourages community services in the basic needs sector through village data collection so that it can find out about residents who are experiencing economic difficulties, elderly health problems and others. SID provides accurate data support about the socio-economic conditions of its community, the needs of elderly services and so on. With this data, it is the idea of the village head as a village leader to expand public services of the community, not only limited to administration, but also to public goods and services. For example, by providing scholarship assistance for underprivileged residents who will pursue undergraduate education, the availability of data on the elderly in villages who need health assistance encourages the village government, through its devices, to coordinate with the Health Center.

From some of these findings, the Panggungharjo Village has made data an important information for village development planning. SID managers who are members of the PSID institution always update village data and present it in the SID. The data also encourages substantive village bureaucratic reform with openness and transparency, so that public trust in the village government is realized.

CONCLUSION

The development of village information systems is a mandate of Village Law No. 6/2014. Panggungharjo is a village that already has awareness of the importance of data. This can be seen from his initiation of the development of SID and the use of village data. The

benefits of developing SID for data collection in Panggungharjo Village are as follows: a) Neatly documented data; b) Services to the village community are faster and easier; c) The existence of data as a reference in the submission of village development plans and 4) The emergence of several village public service programs for the community as a solution to community needs, such as scholarship programs, care assistance for the elderly and others.

The development of SID in Panggungharjo Village proves that this system is not just an administrative mandate, but a strategic instrument to realize data sovereignty. By mastering and utilizing village data, Panggungharjo can develop data-based planning, improve public services, and initiate innovative programs according to the needs of the community. It can be said that this makes an important contribution to a data-based village management model that can be replicated in other villages.

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