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# Inside Wareng – An Integrated Portal for Information Systems, Administration, and Public Services of Wareng Village, Gunungkidul

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| ARTICLE INFORMATION                                                                                          |
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## ABSTRACT

Village SDGs represent an integrated effort to develop economic, social, environmental, legal, and community governance at the village level. The Faculty of Informatics at Telkom University has partnered with Wareng Village, Gunung Kidul, Yogyakarta, to implement these SDGs through community service initiatives. The community service activities in Wareng Village began with observation, team discussions, system design, system testing, system improvement, and the implementation of SID Wareng. Positive responses from village officials and the community indicated active involvement in the platform development process, with 62.5% agreeing and 37.5% strongly agreeing, despite initial challenges with digital literacy. To ensure the program's sustainability, village officials have been trained in data management and security skills, enabling them to manage the platform independently. Recommendations for further development include adding MSME promotional features and integrating central services. With a robust sustainability plan, SID Wareng is expected to enhance the efficiency of public services and serve as a model for digital villages in the future.

## INTRODUCTION

### A. Background

Wareng Village is located in Wonosari District, Gunungkidul Regency, Special Region of Yogyakarta, Indonesia. The village covers an area of 658.70 hectares and has a population of 4,272 residents (1,062 households) as of 2023 [1]. The majority of Wareng Village residents work in the agricultural sector.

According to the 2022 National Digital Literacy Survey conducted by the Ministry of Communication and Informatics (Kominfo), Indonesia's digital literacy index reached only 3.49 on a scale of 5. This index indicates that the Indonesian population still has relatively low levels of digital understanding and skills [2]. Figure 1 shows a comparison graph of the digital literacy index from 2021 to 2022.

Based on interviews conducted with the Wareng Village administration, the village faces limitations in its information systems, administrative processes, and public services. In terms of the village information system, Wareng Village has difficulties

in disseminating information such as village activities, schedules, and general public announcements.

In the administrative sector, Wareng Village still relies on manual processes, which are time-consuming and inefficient. As a result of these challenges, the village requires a service platform that allows residents to submit feedback, suggestions, and complaints. However, Wareng Village currently does not have an online service system and still depends on offline services, which limits the effectiveness of information dissemination and public service delivery.

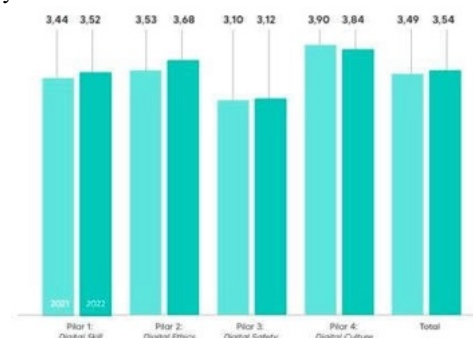


Figure 1. Comparison of the digital literacy index based on four pillars from 2021 to 2022 [2]

Therefore, Wareng Village requires an integrated portal platform that combines information systems, administration, and public services. This platform is designed to support the dissemination of village information and to simplify administrative processes and public service delivery in Wareng Village.

### B. Problem Formulation

Based on the background described above, the problems identified in Wareng Village are as follows:

1. Village information is difficult to access because it is scattered across multiple platforms, and community participation is limited due to low levels of digital literacy.
2. Village administration is inefficient because it still relies on manual processes and fragmented platforms, combined with limited human resources skilled in technology.
3. Public services are less effective because residents face difficulties accessing various services, and digital innovations cannot be sustained without proper community education and habituation.

### C. Proposed Solution and Expected Outcomes

Based on the problems described above, the proposed solutions are as follows:

1. **Village information system**  
The designed village information system integrates governmental information from the central, provincial, and regency levels into a single dashboard.
2. **Village administration system**  
The village administration system integrates administrative processes, ranging from population data management to village asset management, within a unified dashboard connected to central, provincial, and regency government systems.
3. **Village service system**  
The village service system facilitates various public services for residents, such as applications for official certificates, e-government services, and access to other public service information through a single integrated platform connected to central, provincial, and regency authorities.

Based on these proposed solutions, the expected outcomes of this program are:

1. **Village Information System**  
The availability of an integrated dashboard that displays real-time governmental information from central, provincial, and regency levels, making it easier for users to access and analyze data. In addition, improved accessibility of information for village residents through a user-friendly online portal.
2. **Village Administration System**  
The availability of an integrated system for managing population and village asset data, reducing the risk of data loss and improving administrative efficiency. The system also enables the rapid generation of accurate periodic reports on village administration, including demographic and asset statistics.

3. **Village Service System**  
Increased efficiency in public services by enabling online submission of certificate requests and other service applications, thereby reducing waiting times. Furthermore, improved community satisfaction with public services, measured through post-implementation surveys. Wareng Village has a population of approximately 4,000 residents, most of whom work as farmers and laborers. The target users of the SID Wareng platform are illustrated in Figure 2.

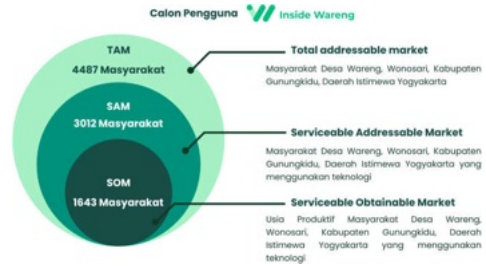


Figure 2. Target Users of SID Wareng

### D. Community Service Activity Steps

This community service program aims to create an innovative and sustainable solution for Wareng Village. The activity steps are carried out as follows:

1. **Conducting field observation in Wareng Village**  
Observations are carried out through a Focus Group Discussion (FGD) involving village officials and community leaders. This activity aims to discuss the planned programs and identify relevant system requirements. Socialization sessions with community leaders are also conducted to introduce the project plan and collect qualitative interview data, which are used to formulate the user flow and user requirements of the system.
2. **Team discussions**  
Intensive team discussions are conducted using information obtained from the FGD and socialization sessions as the basis for developing user flows and system requirements. All team members collaborate to formulate an appropriate implementation strategy that meets the needs of the village government and the Wareng community.
3. **System design**  
The system design phase begins with creating the website's UI/UX design based on the FGD results, user flows, and user requirements. After completing the UI/UX design, the development process continues with front-end implementation followed by back-end development, all guided by the collected design information.
4. **System testing**  
System testing is conducted to obtain feedback from village officials and target community users. During this stage, both front-end and back-end components are thoroughly tested by prospective users. Feedback from testing is used to identify issues and areas for improvement before the official launch.
5. **System refinement**

Improvements are made based on testing results and user feedback. Any identified issues or shortcomings are addressed to ensure the system operates according to user needs. A comprehensive evaluation is also performed to enhance each development stage and guarantee platform feasibility and efficiency.

#### 6. System implementation

Implementation begins with the final deployment of the website platform so it can be publicly accessed. This step is followed by data management and entry, conducted with assistance from village officials and youth organizations to populate the database accurately. Finally, training and socialization sessions are provided to ensure that both village staff and residents can effectively use the platform.

System monitoring is conducted to ensure operational stability, along with periodic evaluations to verify that the system functions according to its objectives and provides optimal benefits for the residents of Wareng Village. Finally, the official launch and public use of the website are carried out by the village authorities together with the local community. The implementation process of the SID Wareng platform is illustrated in Figure 3.

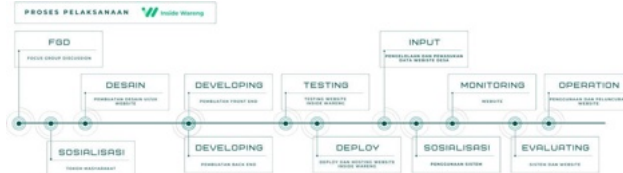


Figure 3. Implementation Process of the SID Wareng Platform

## RESULTS OF THE COMMUNITY SERVICE ACTIVITIES

#### A. Activity Format, Location, and Schedule

As a guideline for implementing the community service program, the timeline of activities is presented in Table 1.

Table 1. Timeline of Community Service Activities

| No | Activity                    | Location            | 2024  |     |      |      |
|----|-----------------------------|---------------------|-------|-----|------|------|
|    |                             |                     | April | May | June | July |
| 1  | Socialization survey        | Wareng Village Hall |       |     |      |      |
| 2  | First socialization session | Wareng Village Hall |       |     |      |      |
| 3  | Platform finalization       | Wareng Village Hall |       |     |      |      |
| 4  | Final socialization session | Wareng Village Hall |       |     |      |      |

#### B. Socialization Participants

Socialization participants are a key element in every stage of the community service activities. The involvement of various stakeholders ensures that the designed system can be well accepted and effectively utilized by the community. The participants involved in each activity are as follows:

#### 1. Observation activities

Participants: village officials and community leaders.

#### 2. System testing activities

Participants: village officials, community leaders, and youth representatives.

#### 3. System implementation activities

Participants: village officials, community leaders, youth representatives, and representatives from the Community Information Group (KIM).

### C. Results of the SID Wareng System Design

At this stage, the Wareng Village Information System (SID Wareng) was designed, including the user interface layout and the development of its main features. SID Wareng can be accessed at <https://wareng.id>. The results of the SID Wareng design are presented through interface illustrations and explanations of its available features.

#### 1. Village Information Feature

This feature provides basic information about Wareng Village, including the village profile, history, vision and mission, local regulations, and demographic data. The information is accessible to the public to help them better understand Wareng Village. The UI/UX design of the village information feature is shown in Figure 4.



Figure 4. Village Information Interface Design

#### 2. Village Activity Information Feature

This feature presents information about activities held in Wareng Village, such as socio-cultural and religious events. It allows residents to stay informed about upcoming village activities. With increased transparency of information, community participation in village events is expected to improve. The UI/UX design of this feature is shown in Figure 5.



Figure 5. Village Activity Information Interface Design

#### 3. Digital Village Service Feature

This feature enables residents to request official introduction letters from the village office for various purposes, such as education, employment, and administrative documentation. Applications can be submitted online through this feature. The UI/UX design of the digital village service feature is shown in Figure 6.

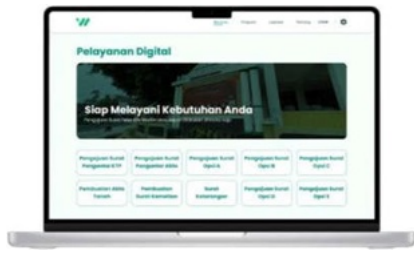


Figure 6. Village Service Interface Design

#### 4. Government Administration Portal Feature

This feature provides easy access to various government websites, such as the Ministry of Villages (Kemendes PDTT) and other government portals. It integrates and simplifies access to multiple government platforms, helping users obtain information and services more efficiently. The UI/UX design of this feature is shown in Figure 7.



Figure 7. Village Administration Portal Interface Design

## 5. Village Aspirations Feature

The Village Aspirations feature allows residents to submit suggestions, feedback, and aspirations to the village government. It serves as a channel for community participation in village development. The UI/UX design of this feature is shown in Figure 8.



Figure 8. Village Aspirations Interface Design

### B. Response to the Implementation of the SID Wareng Program

During the system implementation phase, questionnaires were distributed to collect feedback from the target community regarding the SID Wareng system. The results of the implementation feedback are shown in Figure 9.

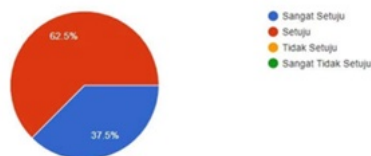


Figure 9. Results of the SID Wareng Implementation Feedback

## CONCLUSION

The implementation of the community service program in Wareng Village generally proceeded according to the planned schedule. Each stage including observation, team discussions, system design, system testing, system refinement, and the implementation of SID Wareng was successfully completed. The SID Wareng platform is accessible at <https://wareng.id>. Positive

responses from village officials and community members indicate active participation in the platform's development process, with 62.5% of respondents agreeing and 37.5% strongly agreeing with the system's usefulness, although digital literacy initially posed a challenge.

Several obstacles emerged, such as limited technological understanding among some residents and issues related to data synchronization with central systems. However, the project team addressed these challenges by providing additional outreach and mentoring to village officials and local youth. Incentives such as door prizes and recognition for active participants also helped increase community enthusiasm and engagement in using the technology.

To ensure program sustainability, village officials have been equipped with skills in platform management and data security so they can independently maintain the system. Recommendations for future development include adding features to promote local small and medium enterprises (SMEs) and integrating additional central government services. With a solid sustainability plan, SID Wareng is expected to continue improving public service efficiency and serve as a model for future digital villages.

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