

Smartphone-Based Smart Village App For Digitizing Wanurejo Services To Support Village SDGs Achievement

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Article Info

Article history:

Received: September 21, 2025

Accepted: January 15, 2026

Published: February 28, 2026

Keywords:

Community service

Digital literacy

MSME empowerment

Smart village

Tourism village

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Pengabdian Masyarakat

Abstract

Tourism villages that are inclusive, adaptive, and sustainable Wanurejo Tourism Village, located near Borobudur Temple in Magelang, Central Java, possesses remarkable potential in culture, nature, creative economy, and community-based tourism. However, challenges remain, including limited digital literacy, suboptimal tourism promotion, and manual village administration services. This community service program aimed to implement digital transformation by developing the “Smart Desa” (DEWI—Desa Wisata Wanurejo) Android application, which integrates public services, local MSME promotion, and tourism information. The service method used in the digitalization program for Wanurejo Tourism Village can be categorized as Participatory Action Research (PAR), as the entire process emphasizes active community involvement—from problem identification and planning to action and evaluation. A training module and Standard Operating Procedures (SOP) were developed to strengthen digital literacy and ensure sustainability. The results indicate that the Smart Desa application successfully digitalized at least five administrative services, engaged over 500 active users, and facilitated the participation of 20 MSMEs within six months. Digital literacy training improved community competence, with 70% of participants demonstrating enhanced skills. Digital promotion on social media increased the village account's followers by 5,000, boosting tourist visits and MSME transactions. Additionally, supporting infrastructure, such as Wi-Fi access points and digital information boards, was provided, while youth forums were established to manage digital content and tourism packages. This program demonstrates that digital transformation not only enhances service efficiency and transparency but also empowers communities, strengthens economic competitiveness, and fosters sustainable tourism development. The initiative aligns with SDGs 8, 9, and 11 and supports higher education performance indicators by involving lecturers, students, and the local community. Overall, Wanurejo Tourism Village has become a model for smart tourism practices.

To cite this article: Permana, D. F., Oktarina, N., Hasanah, U., Ardianto, A. A & Maulida, S. H. N. (2026). Smartphone-based smart village app for digitizing wanurejo services to support village SDGs achievement. *Bubungan Tinggi: Jurnal Pengabdian Masyarakat*, 8(1), 12-32.

INTRODUCTION

Wanurejo Village, as a leading tourist village in Magelang Regency, has extraordinary potential in the tourism, cultural, and creative economy sectors. With its natural beauty and sustainable cultural traditions, the village continues to attract both domestic and international tourists. Strategic development efforts supported by sustainable tourism studies show that Wanurejo has strong cultural and ecological advantages that can be enhanced through community-based empowerment ([Maharani et al., 2024](#)). The improvement of digital literacy and technology awareness in rural communities also plays a significant role in strengthening the capacity of residents to manage tourism services more effectively ([Darusman et al., 2024](#)). In addition, the availability of socio-economic data supports planning for inclusive village development, especially in preparing communities to adapt to digital transformation and tourism growth ([Badan Pusat Statistik, 2024](#)).

This village possesses a wide range of complementary potentials, starting from its rich cultural heritage—such as traditional arts, local ceremonies, and active cultural communities—to its natural attractions, including expansive rice fields, the Menoreh hills, and the Progo River, which support various adventure activities. The creative economy is also growing through bamboo crafts, batik products, traditional foods, and community-based homestays. Additionally, edutourism offers unique experiences through batik and gamelan workshops, organic farming education, and live-in programs. Digitalization efforts are strengthened by the development of the Smart Village application, digital marketing for MSMEs, and an integrated village service information system, in line with various community empowerment programs that highlight the importance of digital literacy and the use of technology in village development ([Ferdiansyah & Mariya, 2024](#); [Fitriyadi et al., 2023](#); [Hasanuh et al., 2023](#)). Socially and institutionally, the community shows strong participation, supported by the village government and external partnerships, emphasizing the role of cultural and technological synergy in enhancing the quality of tourist villages ([Halim et al., 2023](#)). Its strategic location near Borobudur Temple further enhances its potential as an integrated and sustainable tourism destination.

Although Wanurejo Village has superior potential in the fields of culture, nature, and creative economy, in its development, there are several problems that need to be handled. Among them is the lack of optimal use of digital technology, both in public services and the promotion of tourist destinations, reflecting similar issues found in other regions where tourism governance still requires strengthening ([Hatim et al., 2023](#)). In terms of human resources, some people still have poor digital literacy, including in the operation of digital devices and Android-based applications, which aligns with findings that rural communities require increased capacity in basic digital literacy to support Smart Village initiatives ([Husen, 2024](#)). Another problem is that the promotion and marketing of tourist villages has not been maximized, especially on digital platforms, even though digital marketing has been shown to be an effective tool for developing community-based tourism businesses ([Jayadi et al., 2023](#)). In terms of infrastructure, several tourism support facilities, such as information boards, directions, and road access to tourist points, still need to be improved. Furthermore, in terms of regeneration and institutions, the involvement of the younger generation is limited in the management of tourist villages. Finally, environmental awareness and sustainable management systems need to be improved so as not to negatively impact the local ecosystem and the quality of life in the community.

To obtain a comprehensive picture of the potential and challenges faced by Wanurejo Tourism Village, it is necessary to map factual conditions covering various important aspects. The following table presents the latest data and statistics that describe the condition of the village in terms of area, demographics, economic potential, digital infrastructure, as

well as the administrative service system and tourism promotion. This mapping is essential to ensure that village development aligns with sustainable tourism principles that emphasize community empowerment, environmental sustainability, and cultural preservation ([Maharani et al., 2024](#)). Furthermore, the review of digital infrastructure and public service systems is relevant to the implementation of e-government models, which play an important role in improving administrative efficiency and accessibility of services for citizens ([Kusnadi, 2023](#)). In addition, strengthening digital-based tourism promotion and service integration is increasingly crucial, considering the development of smart tourism concepts that require adaptation to digital literacy and tourist needs ([Parung et al., 2024](#)).

Wanurejo Village covers an area of approximately 470.1 hectares with a population of around 4,200 people, where most residents earn their livelihood as farmers, tourism workers, bamboo artisans, batik makers, and MSME entrepreneurs ([Pemerintah Desa Wanurejo, 2024](#)). The village attracts about 8,000 tourists annually and has 63 registered homestays along with 50 active MSMEs in culinary, handicrafts, and tourism services ([Dinas Pariwisata Kabupaten Magelang, 2024](#)). Internet access in the village has reached 70% stability, although the community's digital literacy level remains low at 36.3%, reflecting regional digital infrastructure and capability gaps ([Badan Pusat Statistik, 2024](#); [Pemerintah Kabupaten Magelang, 2023](#)). Village administrative services are still mostly manual, but efforts toward digitalization have begun through the Smart Desa application ([Pemerintah Desa Wanurejo, 2024](#)). Tourism promotion is still dominated by conventional media such as banners and brochures, although the village has started utilizing social media and digital catalogs to enhance visibility and outreach ([Dinas Pariwisata Kabupaten Magelang, 2024](#)).

To strengthen the understanding of the factual condition of Wanurejo Tourism Village, the following image is included as a supporting visualization of the table data presented earlier. This picture provides a vivid illustration of the characteristics of the area, community activities, and tourist facilities available in the village. The use of visual media is important to deepen comprehension and support data interpretation, as visualization can enhance clarity and contextual analysis within educational and administrative reporting ([Permana et al., 2021](#); [Permana et al., 2023](#)). Moreover, integrating visual documentation aligns with current efforts in digital transformation and e-government development within Borobudur tourism areas, where digital platforms—including websites and administrative systems—are increasingly used to present transparent, accessible, and informative village data ([Permana, Oktarina, Wijaya, & Anggraeni, 2024](#); [Permana, Oktarina, Wijaya, & Suryanto, 2024](#)). The characteristics of the Wanurejo tourist village area, community activities, and village facilities are shown in Figure 1.

Based on the potential and problems possessed by the Wanurejo Tourism Village, it is appropriate that this village has good village services in the current era of digital transformation. The use of information technology in the implementation of village government is a strategic step to improve the quality of village services. One form of innovation is the development and implementation of the Android-based “Smart Village” application on smartphones, which facilitates various public services, from population administration, village information, to the promotion of tourism potential and local MSMEs. This effort aligns with the role of local champions who drive innovation and governance improvements in Wanurejo's tourism development ([Prakoso, 2024](#)). The integration of digital applications also supports the strengthening of digital financial literacy and MSME management, which has been shown to enhance community economic capacity in various tourist villages ([Purnomo et al., 2024](#)). Furthermore, the implementation of digital platforms is consistent with broader trends in utilizing technology-based systems

to improve efficiency and accessibility of services, as reflected in community training on the use of integrated learning management systems (Saeroji et al., 2022).



Figure 1 (a) Characteristics of the wanurejo tourism village area, (b) Community activities of wanurejo tourism village, and (c) Facilities of wanurejo tourism village (balkondes, pendopo, homestay, souvenir shop)

This program not only focuses on the technological aspect but also on mentoring, training, and capacity building for village officials and the community to ensure sustainability. With a participatory and collaborative approach, it is hoped that Wanurejo Village can become an example of a tourism village that is adaptive to technology and competitive at the local and global levels. This program is in line with the target of achieving the Village SDGs, particularly SDG 8 (Village Economic Growth), which emphasizes the promotion of tourism and local products as drivers of the village economy; SDG 9 (Village Infrastructure and Innovation), which encourages increased use of information and communication technology to accelerate public services; and SDG 11 (Sustainable Settlements), which supports the creation of organized, transparent, and

responsive village governance systems. These efforts are reinforced by previous findings showing that digital literacy and the ability to utilize social media play an essential role in strengthening community participation and tourism competitiveness in Wanurejo ([Sari et al., 2022](#)). The implementation of this program is also aligned with initiatives to develop tourism through digital literacy as a means to improve community income ([Tutik et al., 2023](#)) and with strategies for optimizing tourism village potential through digital marketing and financial value derived from social media content ([Widyayanti et al., 2024](#)). Through this program, it is hoped that a digital tourism village model will be realized that improves service efficiency and expands promotion networks for tourism and MSMEs. In addition, the implementation of this program supports the achievement of Higher Education IKU indicators, including IKU 2 (student off-campus experience in community empowerment), IKU 3 (lecturer off-campus community service aligned with scientific expertise), and IKU 5 (community utilization of lecturer innovation, reflected in the Smart Village application in Wanurejo). This activity also supports the national development vision stated in the Asta Cita of the President of the Republic of Indonesia, specifically Asta Cita point 6: building from the village and from the bottom to achieve economic equity and poverty alleviation.

METHODS

The service method used in the digitalization program for Wanurejo Tourism Village can be categorized as Participatory Action Research (PAR), as the entire process emphasizes active community involvement—from problem identification and planning to action and evaluation. The program was implemented over an eight-month period, from April to November 2025. The initial phase (April–May 2025) involved preliminary surveys, needs assessments, and participatory discussions with community stakeholders to identify real problems and local potentials. The results of this phase formed the basis for the planning and development phase (June–July 2025), which included the design and development of the Smart Village application, preparation of Standard Operating Procedures (SOPs), and the development of training modules as concrete action outputs.

The implementation phase (August–September 2025) consisted of training activities, mentoring sessions, and digital content development by actively involving community members—particularly village youth—as the main actors, enabling collaborative learning and effective technology adoption. The final phase (October–November 2025) focused on monitoring, evaluation, reflection, and follow-up assistance to assess program outcomes, ensure continuous improvement, and support sustainability through the formation of a digital learning community. Thus, the overall activities demonstrate the application of PAR, which integrates participatory research, empowerment-oriented actions, reflection, and capacity building to support an inclusive and sustainable digital transformation in Wanurejo Tourism Village.

The impact of the Wanurejo Tourism Village digitalization program was measured using a combination of quantitative and qualitative instruments in accordance with the Simlitabmas framework. Pre-test and post-test questionnaires were employed to assess improvements in participants' digital knowledge, skills, attitudes, and self-confidence, while participatory observation sheets were used to evaluate levels of community involvement, collaboration, and operational independence during program implementation. In-depth interviews with key stakeholders were conducted to capture perceptions, experiences, and social changes resulting from the program, complemented by documentation and digital system data to provide objective evidence of technology utilization. In addition, a community empowerment instrument was applied to determine changes in empowerment levels, and a reflective evaluation based on the PAR cycle was

carried out to support continuous improvement and program sustainability. The impact measurement instruments are listed in Table 1.

Table 1 Impact measurement instruments

	Type of Instrument	Measurement Objective	Indicators Measured	Data Sources / Respondents	Data Collection Technique	Data Analysis Technique
1	Pre-test and Post-test Questionnaire	To measure improvements in community knowledge, skills, and attitudes toward village digitalization	a) Knowledge of digital services b) Skills in using digital applications c) Attitudes and technology acceptance d) Digital self-confidence	Village officials, tourism village managers, MSME actors, village youth	Likert-scale questionnaire (1–5)	Descriptive statistics, pre–post comparison, percentage improvement
2	Participatory Observation Sheet	To assess community participation and independence during program implementation	a) Active participation in training b) Operational digital skills c) Team collaboration d) Initiative in digital content development	Training and mentoring participants	Structured direct observation	Scoring and descriptive analysis
3	In-depth Interview Guide	To explore perceptions, experiences, and social changes resulting from the program	a) Perceived program benefits b) Changes in village services c) Challenges and solutions d) Sustainability prospects	Village head, Pokdarwis members, community leaders, youth representatives	Semi-structured interviews	Thematic qualitative analysis

	Type of Instrument	Measurement Objective	Indicators Measured	Data Sources / Respondents	Data Collection Technique	Data Analysis Technique
4	Documentation and Digital System Data	To measure the objective impacts of technology utilization	a) Number of application users b) Frequency of digital service usage c) Volume of digital promotional content	Smart Village system logs and village social media	Documentation study and system log review	Trend analysis and descriptive statistics
5	Community Empowerment Level Instrument	To assess the increase in the level of partner empowerment	a) Digital knowledge b) Digital skills Independence c) Participation	Program beneficiary community	Integrated questionnaire and observation	Categorization of empowerment levels
6	PAR Cycle Reflection Instrument	To evaluate program effectiveness and continuous improvement	a) Program relevance b) Community response c) Continuous improvement actions	Service team and community partners	Reflective discussions and FGDs	Reflective PAR analysis

The following is a description of the implementation method.

Survey and identification of partner needs

Survey activities and identification of partner needs were carried out through direct observation in the field and intensive discussions with Wanurejo Tourism Village officials. Observations were carried out to understand the real condition of the village, including the available infrastructure, community economic activities, and the tourism potential of the village.

The discussion was carried out in a participatory manner by involving village officials, tourism village managers, and community leaders to dig up in-depth information about the problems faced in village management, especially related to aspects of digitizing services and promoting village potential. In this forum, the team also asked about the urgent needs of village priorities that must be addressed immediately to support the development of digital-based villages. Some of the aspects studied include:

- Availability and utilization of information technology in the village environment

- Obstacles in the promotion of village tourist destinations
- Training needs for village human resources in the digital field
- The superior potential of villages that have not been optimally worked on

The results of this stage are then analyzed and formulated into initial recommendations that will be used as a basis for planning the next work program. Thus, all interventions carried out in the next stage will be more targeted and in accordance with the real needs of village partners.

Application design and development

At this stage, the team began the initial design and development process of the Smart Desa application, which is intended as an interactive platform based on Android smartphones. This application is specifically designed to support the needs of tourism village managers and the people of Wanurejo Village in various aspects of digital services and information.

Application development refers to the principles of ease of access, service integration, and community empowerment through technology. The main features that have begun to be developed include the application, which provides a digital village administration service that allows residents to process various documents, such as domicile certificates, SKCK introduction letters, and business permits, without needing to visit the village office. It also offers comprehensive information on local MSMEs through a directory containing product details, locations, contacts, and digital catalogs accessible to both tourists and the wider community. The tourism promotion feature includes information on key destinations, tour packages, cultural event schedules, and interactive maps that help visitors explore Wanurejo Tourism Village. In addition, the application features a digital reporting system that enables residents to submit aspirations, reports of infrastructure damage, public service complaints, and village development suggestions easily and directly.

The purpose of developing this application is not only to improve the efficiency of services and transparency of village government, but also to encourage active community participation and improve citizens' digital literacy in a sustainable manner. This application is also expected to be a tool for village digital transformation towards modern, inclusive, and responsive governance to the needs of the times. This innovation aims to encourage service efficiency, village government transparency, and increase community participation and digital literacy in a sustainable manner.

Preparation of Standard Operating Procedures (SOP) and training modules

At this stage, the team compiled a Training Module and Standard Operating Procedure (SOP) document, which became a technical reference in the use of *the Smart Village application*. This document is designed to be easy to understand and applicable, according to the needs and characteristics of users in Wanurejo Village.

Preparation of Training Modules

The training module is developed based on the local context, including digital literacy materials, the use of village applications, and public services. The modules are arranged in print and digital form (videos/tutorials) so that they are easily accessible and used independently or in groups. The training module is developed contextually, with reference to local conditions and the needs of the village community. The material compiled in the modules includes: The training covers an introduction to basic digital literacy, starting from understanding information technology to the use of smartphones, the internet, and online-based applications. It also provides a step-by-step guide on using the village application, including how to log in, navigate menus, and utilize various features such as village administrative services, MSME information, and citizen reporting. In addition, participants

are equipped with knowledge about the ethics and best practices of digital public services, emphasizing responsiveness, transparency, and accountability in delivering services through digital platforms.

The training materials are provided in two formats: printed guidebooks that can be used during in-person sessions or as daily reference materials, and digital resources such as video tutorials, interactive slides, and PDF-based guides that can be accessed through various applications or online platforms.

Preparation of SOP for Smart Village Application

SOPs are prepared as systematic and standardized operational guidelines to ensure consistency of services and application governance. The SOP includes:

- Procedure for using each application feature by village admins and residents
- Administrative digital service flows
- Follow-up on reports or public complaints
- Mechanism for regular updating of application data and content

This SOP is intended so that all village apparatus have a uniform work reference, accelerate service response, and increase the accountability of the village government in the implementation of digital-based public services. The preparation of these modules and SOPs is an important foundation in the process of transferring knowledge to end users, both independently and in group training sessions.

Implementation of training and mentoring

This stage is the implementation phase of the program, namely by organizing technical training and field assistance directly to village officials and the people of Wanurejo Village. The main goal is to build the capacity of local human resources in operating the *Smart Village application*, as well as understand the use of digital technology in public services and village promotion.

Approach Method

The training activities were carried out using the following approaches:

- Participatory, where participants are actively involved in the learning process and hands-on practice
- Interactive mentoring is carried out intensively and personally to ensure that each participant understands the material and is able to apply it independently

This approach is carried out directly in the field by involving the main target groups, namely:

- Village apparatus
- Tourism village manager
- Local MSME actors
- Community members appointed as digital volunteers

Training Materials and Stages

The training was carried out in stages and thematically, with the following materials:

- Introduction to Digital Technology: basics of Android device use, internet access, and digital security
- Use of the Village Service Application: a guide to using *the Smart Village application*, starting from account registration, use of administrative features, MSME information, citizen reporting, and tourism promotion

- **Digital Promotional Content Management:** training in creating informative content (writing, photos, videos), village social media management, and storytelling techniques for tourism promotion

Each training session is accompanied by live simulations, case discussions, and evaluations to assess participants' understanding. After the training, regular assistance is carried out to ensure that the implementation runs well.

Routine Mentoring

After the training, regular assistance was carried out by the team to:

- Ensure participants can implement the skills acquired
- Help solve technical and non-technical obstacles
- Provide guidance in digital content development and application management
- Overseeing the village's digital transformation process in a sustainable manner

Assistance is carried out periodically, both individually and in groups, through field visits, online communication, and coordination with village officials.

Application Implementation

At this stage, the process of directly implementing the Village Smart Android application into the operational environment of Wanurejo Village is carried out. The goal is to ensure that all features that have been designed and developed can run optimally and answer the real needs of the community and village apparatus.

Application Distribution and Installation

The application is installed on Android devices belonging to village devices and digital volunteers, and is socialized to the community through educational activities. This distribution process is accompanied by simulated usage to ensure users understand the flow and function of each feature.

Feature Validation

Implementation is carried out in stages through:

- Use of application functions by village officials and residents
- Collection of feedback directly in the field
- Identify technical issues and customize the interface to make it more user-friendly.

This entire process aims to ensure that application features such as administrative services, MSME information, digital reporting, and tourism promotion work smoothly and according to the needs of local users.

A Local Needs-Based Approach

The application was developed and implemented with reference to the specific needs of the people of Wanurejo Village. Some examples of local customization include:

- Use of local terms and a simple interface
- Data integration in accordance with the existing village work system
- Notification features that are tailored to the rhythm of community activities

With this approach, the application is not only a technological tool, but also a means of behavior change towards village communities who are more digitally literate and actively involved in the development of their villages.

Digital content creation and social media strengthening

This stage is focused on the production of creative digital content that aims to promote the tourism potential and local MSMEs of Wanurejo Village, while strengthening the village's presence on various social media platforms. This process is carried out through active collaboration between the implementation team, partners, and village youth as the main actors in the field.

Creative Content Production Training

The team and partners host local potential-based content creation training, which includes:

- Creation of promotional videos of village tourist destinations (e.g., virtual tours, historical narratives, behind-the-scenes cultural attractions)
- MSME promotional **content** such as profiles of local artisans, customer testimonials, and product showcases
- Documentation of cultural activities such as traditional ceremonies, art performances, and typical culinary

The training material includes shooting techniques, video and photo editing, writing attractive captions, and engagement strategies with digital audiences.

Adaptation to Digital Platforms

The content produced is tailored to the characteristics of each platform used, namely:

- Smart Village App (for local integration and village internal access)
- Instagram and Facebook (for local and regional reach)
- YouTube (for long-form videos, activity documentation)
- TikTok (for short, engaging and viral content)

Each platform has its own visual style and communication techniques, such as the use of subtitles, vertical/horizontal formats, short or long durations, and the choice of background music.

Social Media Management by Village Youth

The village youth team is empowered as the main manager of the village's social media account. They carry out activities on a regular basis, which include:

- Content upload scheduling
- Interaction with followers and responses to comments
- Statistical monitoring and content analytics
- Collaboration with local creators and tourism village influencers

Technical Assistance and Quality Monitoring

To maintain the quality and continuity of content production, technical assistance is provided periodically. Aspects emphasized include:

- Consistency of branding and communication messages
- Visual and audio quality of content
- Creativity and content appeal to increase engagement

This assistance also includes training on social media performance analysis so that local teams are able to assess the effectiveness of digital campaigns and make strategy improvements. The approach method of digital content creation and strengthening social media is carried out through training on creative content creation based on local potential, such as tourism videos, MSME promotion, and documentation of cultural activities. The content is tailored to the characteristics of the Smart Village platform as well as Instagram, YouTube, TikTok, and Facebook. The village youth team is involved as the main manager of the village's social media accounts, regularly publishing content and interacting with the

audience. Technical assistance is carried out to maintain the consistency, quality, and attractiveness of the content produced.

Evaluation and monitoring of activities

This stage is an important process to assess the success of the program as a whole, especially the effectiveness of the Smart Village application and the use of digital media by village partners. The evaluation is carried out not only to measure achievements but also to develop continuous improvement steps to maintain the relevance and sustainability of the program.

Evaluation Objectives

- Assessing the effectiveness of the use of Smart Desa applications in public services, promotion, and empowerment of MSMEs.
- Measuring the level of participation and digital literacy of the community.
- Evaluate the sustainability of the post-mentoring program.
- Identify barriers as well as opportunities for further development.

Evaluation and Monitoring Methods

Monitoring is carried out periodically and thoroughly using various methods:

- Direct observation of the use of the application by village officials and residents.
- The questionnaire is structured to explore user satisfaction, understanding, and needs.
- In-depth interviews with village officials, youth social media managers, and MSME actors involved.
- Review of social media performance and app usage statistics, such as the number of active users, frequency of access, and most responsive content.

Monitoring and Follow-up Results

The evaluation data is then used to:

- Compile activity reports as documentation of program achievements and learning.
- Improve and adjust application features if technical needs or problems are found by users.
- Develop sustainability strategies, including long-term management schemes, independently by the village.
- Increase the effectiveness of follow-up assistance based on real needs in the field.

Impact Indicators

Some of the indicators of program success monitored include:

- An increase in the number of residents who use village digital services.
- Increase in interaction on village social media.
- Build an active and consistent content management team.
- Positive response from the community to application-based services.

The results of monitoring are the basis for continuous improvement, the preparation of activity reports, and adjustments to implementation strategies so that they are right on target and have an optimal impact on the village community.

Sustainable Capacity Building

This stage is focused on ensuring the sustainability of the use of the Smart Village application and the use of digital media by village partners, even after the main program is completed. These efforts are long-term and emphasize strengthening local capacity independently and sustainably.

Capacity Building Objectives

- Ensuring the continuity of the use of digital technology by village officials and the community.
- Forming an active and supportive digital learning community.
- Encourage a culture of independent learning and adaptation to new technologies.

Strategies and Methods

Capacity building is carried out through a variety of complementary approaches:

- Advanced training focused on advanced technical issues, creative content, social media management, and data utilization.
- Periodic mentoring by a team of experts or facilitators carried out online and offline to assist the adaptation process.
- The establishment of digital learning communities, such as WhatsApp groups or village-based online forums, to exchange information, experiences, and technical solutions.

Self-Paced Learning Support

To enable partners to continue to learn and develop independently, a variety of easily accessible learning resources are provided:

- Local context-based learning modules in print and digital form.
- A technical tutorial video that discusses the use of applications, content creation, and tips for utilizing digital media.
- Online discussion forums and question-and-answer rooms, as a means of interaction between village partners and facilitators, as well as between fellow users.

With the combination of the above methods, it is hoped that the Service Digitization program in Wanurejo Tourism Village will be successfully implemented effectively and provide significant benefits.

RESULTS AND DISCUSSION

Program Outcomes

The Smart Desa application is an Android-based digital innovation specifically designed to improve the quality of public services and strengthen the competitiveness of Wanurejo Tourism Village in the era of digital transformation. This application is here as an answer to various problems that have been faced by villages, ranging from administrative services that are still manual, limited tourism promotions, to low digital literacy of the community.

With integrated features, Smart Village facilitates various needs of the community and tourists. In terms of public services, this application provides a digital administration system that allows residents to take care of documents such as domicile certificates, SKCK introductions, and business licenses online, quickly, and transparently. In the economic aspect, there is a local MSME marketplace that displays village superior products ranging from bamboo handicrafts, batik, traditional culinary, to homestay, as well as a secure digital transaction system.

For tourists, Smart Village is a practical guide to exploring Wanurejo Village. Information on tourist destinations, tour packages, cultural calendars, and homestay reservations can be accessed through only one application. This makes it easier for tourists to find locations for cultural activities, trekking trails, and MSME centers. The application itself can be downloaded through the Google Play Store with the application name DEWI (Wanurejo Tourism Village)

More than just technology, Smart Village also functions as a medium for community empowerment. Village youth are involved as digital content managers, application admins, and tourism ambassadors. The presence of this application opens up space for active participation for residents, increases digital literacy, and builds *an innovative, inclusive, and sustainable* smart village ecosystem.

With Smart Villages, Wanurejo Village is not only able to accelerate public services and digital promotion, but also transform into a digital tourism village model that is adaptive to the times and supports the achievement of the Village SDGs in the fields of economy, infrastructure, and sustainability. The DEWI application (Wanurejo tourist village) is shown in Figure 2.

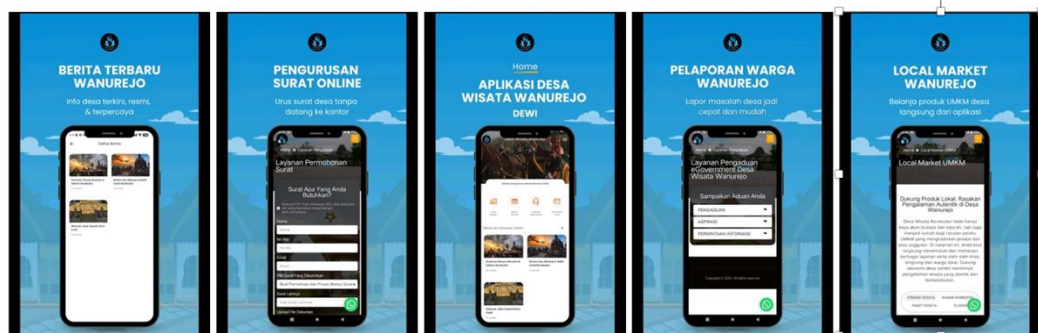


Figure 2 DEWI application (Wanurejo Tourism Village)

The Smart Desa application comes not only with complete digital service features, but also is equipped with a guidebook and training modules. This guidebook is compiled in a simple, contextual manner, making it easier for village officials and the community to understand the steps for using the application. With written guides and digital versions in the form of video tutorials, residents can learn independently or in groups, making the technology adoption process easier, inclusive, and sustainable. The DEWI (Wanurejo Tourism Village) application guide is shown in Figure 3.

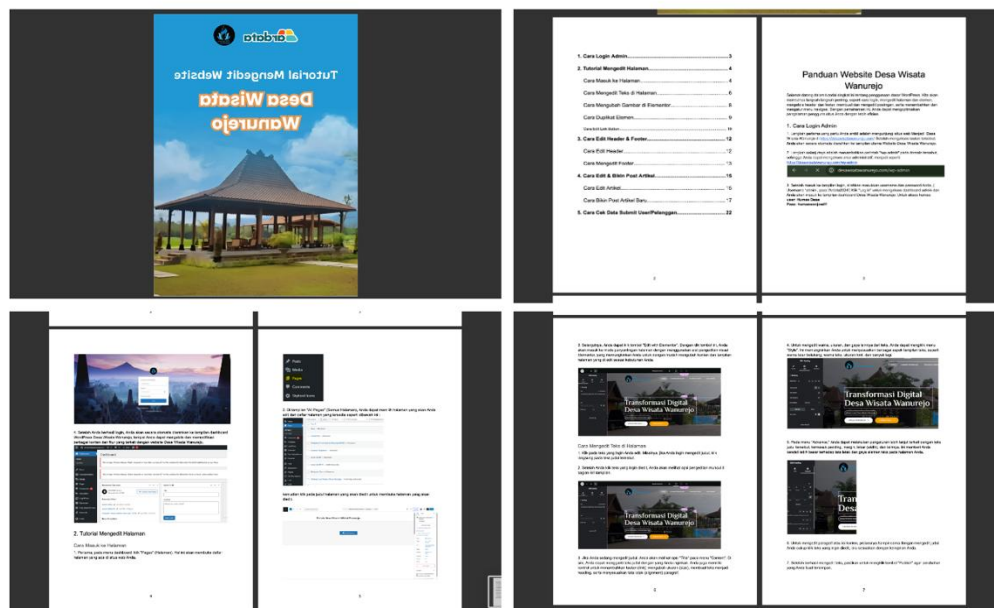


Figure 3 DEWI application guide (Wanurejo Tourism Village)

The community service program in Wanurejo Tourism Village has produced a number of strategic achievements that can be categorized into technological, social, economic, and institutional aspects:

Implementation of Smart Village Technology

- The Android-based Smart Desa application has been successfully designed and implemented.
- At least five administrative services have been digitized, such as making certificates, information on village activities, population registration, MSME services, and tourism promotion.
- More than 500 active users were recorded in the first six months, with the participation of 20 MSMEs who have joined the digital platform.
- Service efficiency increases with a reduction in administrative management time by up to 50%, and community satisfaction reaches 80%.

Digital Literacy Capacity Building

- A total of 50 residents took part in digital literacy training in 8 months of program implementation.
- Based on the pre-test and post-test, 70% of participants showed an increase in understanding in the use of digital devices, Smart Village applications, and social media.
- Print-based training modules and video tutorials in the local language were successfully compiled and distributed.

Optimization of Digital Promotion of Tourism Villages

- The digital platform of the tourism village is integrated with social media (Instagram, YouTube, TikTok, Facebook).
- Within eight months, the village's social media accounts reached 5,000 active followers with a 30% increase in engagement every quarter.
- More than 10 digital promotional content in the form of cultural videos, tourist testimonials, and MSME showcases have been published consistently.

Improvement of Infrastructure and Access to Information

- There are at least an integrated technology-based service room in the village.
- The village information system is starting to run integrated, so that access to public information is more transparent.

Institutional Strengthening and Human Resources Regeneration

- A tourism village youth forum was formed with a minimum of 15 active members.
- This forum successfully designed 2 new tour packages and managed the village's digital promotion channel.
- Village youth receive training in leadership, organizational management, and tourism entrepreneurship with the support of university collaboration.

Digitalization as a Catalyst for Village Empowerment

The results of the implementation show that the implementation of the Smart Desa application is an effective solution to improve the efficiency of public services, reduce manual bureaucratic practices, and encourage transparency. This is in line with the literature that states that village digitalization is able to accelerate public services and strengthen citizen participation in governance ([Hatim et al., 2023](#); [Kusnadi, 2023](#)).

Improving Digital Literacy and Inclusivity

Digital literacy training has been proven to increase public understanding, especially in the use of Android-based applications and the use of social media. This is very important considering that Susenas data (2024) shows that the digital literacy level of the Wanurejo community is still low (36.3%). The increase in citizens' digital skills not only makes it easier to access services but also opens up business opportunities through online marketing of MSME products.

Economic Impact through Digital Promotion

The optimization of social media has expanded the promotional reach of the Wanurejo Tourism Village. The increase in the number of tourists and MSME transactions through digital platforms shows that digital transformation has a direct impact on local economic growth. This supports SDG 8 on sustainable economic growth at the village level.

Supporting Infrastructure as a Pillar of Transformation

The availability of public Wi-Fi, digital information boards, and integrated service spaces is an important component for people to access services quickly and transparently. This digital infrastructure also strengthens the technology-based tourism ecosystem that supports the sustainability of tourist villages.

Regeneration and Village Youth Institutions

Youth involvement through tourism village forums is an important factor in maintaining the sustainability of the program. With leadership and entrepreneurship training, youth not only play the role of social media managers, but also as the driving force for tourism village innovation. This is in line with the study by [Prakoso \(2024\)](#), which emphasizes the importance of the role of *local champions* in the development of tourist villages.

Implications for the Achievement of SDGs and Higher Education IKU

This program has been proven to support SDG 8 (economic growth), SDG 9 (infrastructure and innovation), and SDG 11 (sustainable settlements). In addition, the involvement of students and lecturers in this activity is in line with the achievements of IKU 2, IKU 3, and IKU 5, which emphasize off-campus learning, lecturer service, and the use of work results for the community.

Quotes and References

Digital transformation in Wanurejo Tourism Village proves that technology is not only a tool but also a means of community empowerment. As the saying goes, *"Digital transformation is not just about technology, it's about empowering people to grow, innovate, and be sustainable."* Through the implementation of the Smart Village application, the community not only gains faster and more transparent access to public services, but also the opportunity to develop local potential, expand tourism promotion, and strengthen the competitiveness of MSMEs.

This success is in line with various studies that emphasize the importance of digital literacy and tourism village innovation. [Hatim et al. \(2023\)](#) emphasized that the use of technology in community empowerment can improve the quality of village services and strengthen the potential of local culture. Meanwhile, [Prakoso \(2024\)](#) emphasizes the role of *local champions* in mobilizing communities to be more adaptive to change. Data support from [BPS \(2024\)](#) and [the Magelang Tourism Office \(2024\)](#) also shows the urgency of this transformation, considering that the digital literacy of village communities is still low and

tourism promotion is not optimal. Therefore, Smart Village is present as an innovation that not only answers current needs, but also as a model of sustainable development towards a modern, inclusive, and competitive digital tourism village.

CONCLUSION

The community service program in Wanurejo Tourism Village, through the implementation of the Smart Village application, has clearly demonstrated its purpose and impact in strengthening village governance, improving public services, and empowering the community through digital transformation. The primary goal of digitizing village administrative services, namely to simplify access, speed up bureaucratic processes, and enhance transparency, has been effectively achieved, as residents can now obtain essential documents more easily and efficiently.

The program also aims to enhance community competence, and this objective is evident in the increased digital literacy of residents after undergoing targeted training. This improvement enables the community to utilize technology more confidently, especially in managing administrative services, accessing information, and promoting local products. Furthermore, the initiative's impact on tourism is significant, as the optimized use of social media and village digital platforms has successfully broadened promotional reach, strengthened the visibility of Wanurejo's attractions, and improved the competitiveness of local MSMEs in the digital market.

Supporting features within the application with user-friendly menus were developed to ensure easier access to information and strengthen the program's inclusivity goals. Meanwhile, the active involvement of village youth in organizational forums and content management reflects the program's long-term goal of creating sustainable human resource regeneration and building a tech-savvy community.

Overall, the Smart Village application not only serves as a technological innovation but also achieves its larger purpose of empowering the community toward an inclusive, adaptive, and sustainable digital village ecosystem. The measurable impacts—improved service quality, stronger digital skills, increased tourism promotion, and elevated MSME competitiveness—reinforce Wanurejo Village's position as a model for digital tourism villages that effectively contribute to the Sustainable Development Goals (SDGs). Additionally, the program aligns with university Key Performance Indicators (KPIs) by fostering collaboration among lecturers, students, and the community within a mutually reinforcing empowerment ecosystem.

As a follow-up to ensure sustainability and long-term impact, continuous mentoring and technical assistance will be provided to strengthen the community's capacity in managing and optimizing the Smart Village application. Periodic training and refresher workshops will be conducted to adapt to technological updates and evolving administrative needs. The village youth group will be formally established as a digital management team responsible for system maintenance, content development, and online promotion, ensuring human resource regeneration and institutional continuity. In addition, the integration of the Smart Village application with village tourism programs and MSME digital marketing strategies will be further enhanced to expand market reach and increase economic benefits. Regular monitoring and evaluation will be implemented to assess performance, identify challenges, and support continuous improvement. Through these follow-up actions, Wanurejo Tourism Village is expected to sustain an inclusive, adaptive, and resilient digital ecosystem that continuously contributes to community empowerment, local economic growth, and the achievement of the Sustainable Development Goals (SDGs).

CONFLICTS OF INTEREST

The authors declare that there is no conflict of interest.

AUTHOR CONTRIBUTIONS STATEMENT

This community service team consisted of five lecturers with diverse expertise according to their respective fields. DFP, from the Economics Education Study Program FEB UNNES plays the role of program initiator as well as coordinator, who is in charge of mapping the needs and potential of Wanurejo Tourism Village through surveys and interviews, analyzing the readiness of technological infrastructure, and evaluating and assisting programs. NO, with expertise in Office Administration Education Management, is in charge of designing a digital village service system, being a director and evaluator of the program, and determining marketing strategies so that village applications can be widely known and used by the community. UK, from Computer Engineering FT UNNES plays a role in the technical aspect, namely developing village service applications that allow access to tourism information, MSMEs, and public services in real-time. Furthermore, ADA contributed to accompanying the participants, assisting in the implementation of the program, and designing outputs in the form of articles and videos. Finally, SHNM plays a role in assisting the implementation of community service as well as preparing outputs related to IPR or patents related to the digitization of village services.

AI DISCLOSURE STATEMENT

The author used CHAT GPT during the preparation of this work for get inspiration to prepare the title and the structure of the paper will be going on. After using the chat gpt, the author thoroughly reviewed and edited the content as needed and takes full responsibility for the content of the publication. The authors declare that this research was prepared, researched, written, and edited without the aid of artificial intelligence (AI) techniques.

ACKNOWLEDGMENTS

The authors would like to express their deepest gratitude to the Ministry of Education, Science, and Technology (Kemdiknas) through the Directorate General of Higher Education, Research, and Technology (Ditjen Dikti) for providing funding support for this activity through the DPPM Community Service Community-Based Empowerment scheme. We would also like to express our gratitude to the Chairman of Wanurejo Tourism Village and all the management and community of Wanurejo Tourism Village for their willingness, participation, and contribution in every stage of the activity. Without the full support of all parties, this program will not be implemented properly and provide real benefits for strengthening community capacity and developing a digital-based and sustainable Wanurejo Tourism Village.

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