



Website Development for Service Optimization in Scientific Herbal Medicine at Jamu Health Tourism Kalibakung

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ARTICLE INFO	ABSTRACT
<p>Article history Received: 2025-08-08 Revised: 2026-01-19 Accepted: 2026-02-19 Published: 2026-06-05</p> <p>Keywords Website Information Service Scientific Herbal</p>	<p>Limited digital capacity and the absence of an official web-based information platform have constrained the promotional reach and educational outreach of the Jamu Health Tourism Center (WKJ) Kalibakung. This community service program specifically aimed to strengthen staff digital competencies and improve the effectiveness of online promotion through the development of a CMS-based website and structured capacity-building activities. The intervention was implemented over six weeks and consisted of a participatory needs assessment, website development using a systematic development approach, socialization through community engagement, hands-on training applying a participatory learning model, and guided mentoring sessions. Program evaluation employed direct observation, reflection discussions, and a structured questionnaire using a four-point Likert scale. The findings demonstrate measurable improvement in participants' digital knowledge and operational skills, reflected in high average perception scores (above 4.00), increased confidence in independently managing website content, and the successful publication of institutional information online. Participants reported that the website enhanced promotional visibility and broadened access to service information for the community. Overall, the program effectively strengthened internal digital management capacity and supported sustainable information dissemination. To ensure long-term impact, continuous mentoring and the integration of digital marketing strategies are recommended to further optimize visitor engagement and institutional competitiveness.</p>
<p>Kata Kunci Website Layanan Informasi Herbal Ilmiah</p>	<p>Pengembangan Website untuk Optimalisasi Layanan Informasi Herbal Ilmiah pada Wisata Kesehatan Jamu Kalibakung. Keterbatasan kapasitas digital dan belum tersedianya platform informasi berbasis web secara resmi membatasi efektivitas promosi dan jangkauan edukasi pada UPTD Wisata Kesehatan Jamu (WKJ) Kalibakung. Program pengabdian kepada masyarakat ini bertujuan secara spesifik untuk meningkatkan kapasitas digital sumber daya manusia serta memperkuat efektivitas promosi layanan melalui pengembangan website berbasis Content Management System (CMS) yang disertai kegiatan peningkatan kompetensi secara terstruktur. Kegiatan dilaksanakan selama enam minggu dengan tahapan partisipatif yang meliputi analisis kebutuhan, perancangan dan pengembangan sistem, sosialisasi berbasis community engagement, pelatihan menggunakan pendekatan participatory learning, serta pendampingan teknis. Evaluasi dilakukan melalui observasi langsung, diskusi reflektif, dan penyebaran kuesioner menggunakan skala Likert empat tingkat. Hasil kegiatan menunjukkan adanya peningkatan pengetahuan, keterampilan operasional, dan kepercayaan diri peserta dalam mengelola konten website secara mandiri, yang tercermin dari nilai rata-rata persepsi di atas 4,00 serta keberhasilan publikasi informasi layanan secara daring. Keberadaan website juga dinilai mampu memperluas akses informasi dan meningkatkan visibilitas promosi layanan herbal kepada masyarakat. Secara keseluruhan, program ini efektif dalam memperkuat kapasitas manajemen digital internal WKJ dan mendukung keberlanjutan diseminasi informasi layanan. Untuk menjaga dampak jangka panjang, diperlukan pendampingan lanjutan serta optimalisasi strategi pemasaran digital guna meningkatkan daya saing dan keterlibatan pengunjung.</p>

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INTRODUCTION

Digital transformation has become a key catalyst in advancing the global health and tourism sectors, including practices such as digital health promotion, the development of evidence-based herbal medicine, and scientific health tourism, which combines travel experiences with traditional health services. On the other hand, herbal-based health tourism in Indonesia part of the nation's traditional medical heritage, faces significant challenges in the digitalization process, particularly in providing structured information platforms and improving the technical skills of service providers. Studies have shown that web-based information systems can enhance accessibility and effectiveness in disseminating health service information (Ezeamii et al., 2024; R Wisnu Prio Pamungkas et al., 2025). Moreover, the implementation of web-based systems in data and information management has been proven to improve the overall efficiency and quality of health services (Al-Worafi, 2023; Sidek & Martins, 2017). Therefore, strengthening digital transformation in the promotion and management of herbal health tourism services is a strategic step toward supporting the achievement of the Sustainable Development Goals (SDGs) (Fonseca, 2025; Varriale et al., 2025), particularly Goal 3 (Good Health and Well-Being) and Goal 9 (Industry, Innovation, and Infrastructure).

In the local context, the Wisata Kesehatan Jamu (WKJ) Kalibakung, under the Health Office of Tegal Regency, plays a vital role in preserving and promoting evidence-based herbal medicine. Despite offering a variety of traditional herbal therapies supported by scientific studies, WKJ Kalibakung still relies heavily on conventional information delivery methods, such as printed brochures and offline counseling. These methods limit the reach and effectiveness of public communication, particularly among younger, digitally native audiences. Moreover, the limited digital capacity of staff especially in managing online content and promotional tools, further hampers the visibility of WKJ's services. Preliminary observations also revealed the absence of a structured digital platform to serve as a credible and accessible source of information. This highlights an urgent need for digital transformation through the development of a dedicated website and capacity-building initiatives for the staff.

Previous studies have consistently highlighted the effectiveness of web-based platforms in improving accessibility, responsiveness, and the overall quality of healthcare services (Law et al., 2014; Stoltzfus et al., 2023). In the context of health tourism, websites function not only as promotional media but also as interactive platforms for delivering structured, evidence-based information that enhances destination competitiveness (Alajarmeh, 2022; Maaß et al., 2022). This is particularly relevant for traditional herbal health tourism, which requires strategic digital tools to reach broader audiences. In addition, digital marketing approaches such as search engine optimization (SEO) and social media utilization have been proven effective in expanding the reach and credibility of health-related content (Husin et al., 2022; Kannan & Li, 2017).

Equally important is the need to strengthen digital capacity among staff in public health institutions. Training in information and communication technology (ICT) has been shown to improve staff ability to manage digital content independently, promote innovation, and increase operational efficiency (Lim, 2007; Studer et al., 2021). As a result, the development of a user-friendly website, supported by comprehensive training modules, is crucial to sustaining digital transformation in traditional healthcare services. However, community service programs that specifically address the integration of scientific herbal medicine with digital platforms remain limited. This gap justifies the intervention at WKJ Kalibakung, aiming to promote digital sustainability and competitiveness through structured content management training and website development (Neirotti & Pesce, 2019; Omol, 2026).

Another challenge faced is the lack of training for staff in managing digital media for promotion and education. This limitation has led to suboptimal dissemination of information regarding the benefits of herbal medicine and related scientific research. Therefore, intervention is needed in the form of website development and training for WKJ staff so they can effectively utilize information technology to enhance the visibility and credibility of WKJ Kalibakung.

To address the identified challenges, this community service program proposes the development of an official website that functions as both a promotional platform and an educational tool grounded in scientific herbal content. The website will provide structured information on WKJ Kalibakung's services, therapeutic benefits of jamu, and related scientific research, thereby enhancing the institution's credibility and public trust. In parallel, a series of training and mentoring sessions will be conducted to improve the digital literacy of UPTD staff, enabling them to independently manage, update, and optimize content over time. The novelty of this program lies in its focus on scientific herbal medicine, a niche that bridges traditional healing practices with modern evidence-based approaches. Unlike previous digital initiatives that mainly emphasized general tourism, this program integrates research-backed content into a sustainable web-based communication system, allowing WKJ Kalibakung to function not only as a health destination but also as a trusted source of knowledge in the field of traditional scientific medicine.

The main objective of this community service program is to enhance public access to information about the services and activities of Jamu Health Tourism (WKJ) Kalibakung through the development of an informative and user-friendly digital platform in the form of a website. In addition, this initiative aims to build the capacity of UPTD WKJ Kalibakung staff in independently managing digital content through targeted training and technical assistance. In doing so, the sustainability of information management and promotional efforts can be maintained, enabling WKJ Kalibakung to adapt more effectively to the demands of the digital era.

This article aims to document the implementation of the community service program as a model for developing a web-based information system to support traditional health tourism services. It highlights the approach taken in strengthening the digital presence of Jamu Health Tourism (WKJ) Kalibakung, including the development of a scientific-content website and capacity building for staff. This article is expected to make a significant contribution in two key areas,

the advancement of science and technology through the development of a replicable digitalization model for herbal medicine services and the achievement of Sustainable Development Goals (SDGs) by strengthening aspects of health, innovation, and cross-sectoral partnerships through information technology.

METHOD

This Community Service Program (CSP) was designed as a community-based educational intervention to strengthen digital promotion and information services at Wisata Kesehatan Jamu (WKJ) Kalibakung in Tegal Regency, Central Java, Indonesia. As a public health tourism unit operating under the Health Office of Tegal Regency, WKJ Kalibakung plays an important role in providing scientific herbal medicine services while preserving traditional health practices. Despite this strategic position, the institution has faced several practical challenges. Staff members generally have limited digital literacy, and until recently, WKJ did not have a structured and officially managed website to serve as an information and promotional platform. In addition, website maintenance and digital communication activities still relied heavily on external assistance. As a result, the dissemination of service information was not optimal, and opportunities to reach a broader audience through digital channels remained underutilized.

The intervention combined two main activities that supported each other. First, a CMS-based website was developed and implemented as an official platform to provide service information and support promotional efforts. Alongside this, capacity building activities ensure that WKJ staff can manage the website independently and sustainably. Through this approach, the program aimed not only to introduce a digital platform but also to strengthen internal readiness and improve public access to WKJ services.

The program was implemented over approximately six weeks, from May to June 2025. The activity involved 15 WKJ staff members, including administrative personnel and service operators who are directly responsible for public communication and service management. Participants were selected purposively, focusing on staff actively engaged in information dissemination and those likely to be assigned website management responsibilities after the program. The implementation team was composed of lecturers from two different academic units at Universitas Harkat Negeri, namely the Department of Informatics Engineering and the Department of Pharmacy. Their combined expertise in web development, digital systems, and scientific herbal knowledge ensured that both the technical and health-related aspects of the program were addressed appropriately. This CSP program is also supported by several undergraduate students who assisted during the training and mentoring sessions to provide technical guidance throughout the process.

This CSP applied a structured training approach implemented over a series of carefully designed stages: preparation, system design and development, socialization, training, mentoring, and evaluation, as illustrated in Figure 1. The program was executed collaboratively by the academic team and student mentors, combining technical expertise with interactive learning methods to maximize engagement and learning outcomes.



Figure 1. The stages of community service activities

The initial preparation phase began with field observations and discussion with WKJ management to assess their specific needs and evaluate the staff's baseline digital competencies. This participatory approach ensured that the intervention design was grounded in the actual needs and contextual realities of the institution rather than externally imposed assumptions (Vaughn & Jacquez, 2020). This stage also involved developing tailored training materials, including modules on content management, basic website usage, and digital promotion strategies. The materials were adapted to ensure relevance to WKJ's operational context, focusing on practical applications to support service promotion and public engagement.

Following preparation, the system design and development phase was carried out using a System Development Life Cycle (SDLC) approach to ensure a structured and systematic process (Gupta, 2021; Rachma & Muhlas, 2022). The system design and development phase introduced a customized CMS-based website specifically designed to meet WKJ's needs. The system development phase was carried out over four weeks, during which a customized CMS-based website was designed and developed according to WKJ's operational needs. During this stage, training materials, user manuals, and website design plans were prepared to ensure contextual relevance and usability. The website included essential features such as service information, a product gallery, contact details, and promotional content related to herbal health tourism. Prior to implementation, the system underwent internal testing using black-box testing techniques to verify core functionalities and ensure overall usability (Sholeh et al., 2021; Sonalitha et al., 2020).

The implementation stage was conducted intensively over several days in June 2025. A socialization session was held on June 10, 2025, to introduce participants to the importance of digital transformation in herbal health tourism services and to explain the strategic role of the website as an official information and branding platform. Rather than functioning solely as an information delivery session, this stage aimed to build awareness, foster institutional commitment, and

encourage shared responsibility in adopting the newly developed website. By applying a community engagement framework, the session strengthened collaboration and trust between the academic team and institutional stakeholders, thereby enhancing readiness for technology adoption (Aguilar-Gaxiola et al., 2022; Bangani, 2024).

The training stage provided participants with direct, hands-on experience in operating the website. Training sessions combined presentations with practical group work, allowing participants to log in to the CMS, create and update articles, upload product images, manage service schedules, and edit news content. This interactive approach not only enhanced technical skills but also encouraged collaborative problem-solving among participants. Through this participatory structure, learning occurred through direct practice and peer interaction, allowing participants to build confidence and practical competence. Such an approach aligns with contemporary participatory learning frameworks that highlight co-learning, shared problem-solving, and context-based skill development (Dara & Kesavan, 2025).

The mentoring and evaluation phase ensured that participants could independently manage website operations. Mentoring sessions addressed individual technical challenges, while evaluation activities, including observation and feedback forms, assessed the participants' ability to apply the skills learned. The program concluded with a reflection session where participants shared their experiences, identified challenges, and provided suggestions for future improvements.

The technology introduced in this program included a Content Management System CMS-based website specifically designed to meet the needs of WKJ Kalibakung. The knowledge transfer involved digital literacy training, content management techniques, and the integration of health tourism-related content into a web-based platform. Participants were also introduced to workflow concepts to ensure the sustainability of the digital service system.

The instruments and materials used in this activity included laptops and internet connections for training sessions, the CMS-based website developed specifically for WKJ Kalibakung, presentation slides, digital manuals, printed training modules, observation sheets, and feedback forms for evaluation purposes. The success of the activity was measured based on the participants' ability to independently perform key website management tasks and their responses during post-activity reflection sessions. Data were collected using qualitative methods, including direct observation during training and mentoring sessions, feedback forms distributed to participants, and open discussions during reflection sessions. These techniques allowed the team to gather insights into participant engagement, comprehension, and satisfaction. Therefore, reflection is recognized as a critical component of experiential learning processes, enabling deeper understanding and continuous improvement (Alshamrani, 2023; Mohamed et al., 2022).

The indicators of success for this activity included an increased ability of WKJ staff to manage website content independently, the completion of structured training sessions with active participation, positive feedback from participants regarding the usefulness and clarity of the materials, and reduced dependency on external parties for website maintenance. The data collected from observations and feedback forms were analyzed using descriptive qualitative methods, while responses from the structured questionnaire were measured using a four-point Likert scale to quantify participants' levels of agreement and perception of training effectiveness (Robinson, 2023; South et al., 2022). Patterns in participant responses were examined to assess the effectiveness of the training and to identify areas for improvement in future community service activities.

RESULTS AND DISCUSSION

Implementation Results

The community service program was implemented over a six-week period from May to June 2025, with the core on-site activities conducted intensively on June 10–12, 2025. This program involved 15 staff members from the UPTD Jamu Health Tourism (WKJ) Kalibakung and two students from the Applied Informatics Engineering Study Program. The activities were divided into four main stages: socialization, training, mentoring and monitoring, and participant reflection. These stages were strategically designed to align with the objectives of enhancing digital literacy, improving technical capacity in website content management, and promoting the integration of digital platforms into herbal health tourism services.

The first phase of the program focused on socialization, as depicted in Figure 2. This session was conducted by lecturers from the Informatics Engineering and Pharmacy Departments at Harapan Bersama Polytechnic. The main objectives were to educate WKJ staff and community representatives on the importance of digitalization in managing herbal health tourism, and to introduce the function of a website as a platform for delivering service information, activity schedules, and product promotion. As a result, participants understood the significance of digitalization, recognized the website's role in public service promotion, and acknowledged the potential of digital platforms to increase tourist visits and boost local economic value.



Figure 2. Socialization activities led by lecturers from the Informatics Engineering and Pharmacy Departments

The training focused on the introduction and hands-on practice of managing WKJ Kalibakung's website content, as documented in Figure 3. The training phase was designed with three main objectives: (1) to provide participants with a technical understanding of the basic structure and key features of the WKJ Kalibakung website, (2) to train participants in uploading various types of content, such as informational text, activity images, and news related to herbal health services, and (3) to develop participants' ability to independently update data such as activity schedules, health articles, or herbal tourism promotions. The training combined technical orientation with hands-on practice, allowing participants to directly engage with the CMS platform. Results showed that participants were able to navigate the dashboard, upload basic content, and update information according to operational needs. Several participants successfully published trial content, including short articles on the benefits of herbal medicine and visitor schedules. These achievements indicate that the training objectives were largely met, providing a strong foundation for sustainable digital content management.



Figure 3. Training on website content management for WKJ Kalibakung

The mentoring and monitoring activities were carried out after the participants completed the training on managing the WKJ Kalibakung website content, as shown in Figure 4. The purpose of this stage was to ensure that participants could independently implement the training materials, as well as to provide guidance in the event of any technical or non-technical challenges in website management.



Figure 4. Mentoring and monitoring activities for WKJ Kalibakung website management

Participant reflection formed an essential component of the evaluation process for this community service activity. Conducted at the end of the program, the reflection aimed to measure participants' understanding, experiences, and changes in attitude toward the use of information technology in managing the WKJ Kalibakung website. The reflection was carried out through two approaches: an open discussion and the completion of a short questionnaire.

During the open discussion, three participant representatives shared their perspectives on the benefits of the WKJ Kalibakung Health Tourism website as an information service platform. All three agreed that the website significantly facilitates the dissemination of service information to the public, particularly concerning schedules, types of services, and contact details accessible online. They further stated that the website would serve as the primary reference for the public to learn more about WKJ Kalibakung. In their view, the website could broaden the reach of information and enhance the promotion of herbal health services more widely and efficiently. The documentation for this discussion can be seen in Figure 5.



Figure 5. Open discussion and participant feedback on the WKJ Kalibakung Health Tourism website

The questionnaire consisted of eight statements rated on a four-point Likert scale (1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree). The items assessed various aspects, including comprehension of the training material,

technical ability to manage the website, website usability, and participants' outlook on sustainability. The average scores for each question are presented in Table 1.

Table 1. Average Scores from Participant Reflection Questionnaire

Indicator	Statement	Avarage Score
P1	I understand the training materials	4.27
P2	I am able to manage the website	4.07
P3	The website is effective as an official information medium	4.53
P4	The website supports the promotion of herbal health tourism	4.60
P5	The website has the potential to increase visits	4.27
P6	The website serves as an educational tool for traditional health	4.33
P7	There should be an internal team for sustainable management	4.33
P8	I support the sustainability and further development of the website	4.67

Based on the results, it can be concluded that the training and implementation of the WKJ Kalibakung website had a highly positive impact. Most participants stated that they understood the training materials (P1, 4.27) and could manage the website independently (P2, 4.07). The website was rated as effective in serving as an official information platform (P3, 4.53) and strongly supporting the promotion of herbal tourism (P4, 4.60), demonstrating its strategic role in information dissemination and digital marketing.

Furthermore, participants believed that the website could increase visitor numbers (P5, 4.27) and function as an educational medium for traditional health knowledge (P6, 4.33). They emphasized the importance of establishing an internal management team (P7, 4.33) and expressed strong support for continued development (P8, 4.67). Overall, the results indicate that the website was not only well-received but also recognized as a vital instrument in the digital transformation and sustainability of the WKJ Kalibakung Health Tourism services. However, the relatively lower score in P2 (4.07) indicates a continuing need for further technical mentoring in website management.

Discussion

The results of the Community Service Program (CSP) at UPTD Wisata Kesehatan Jamu (WKJ) Kalibakung demonstrate the transformative impact of adopting digital technology to optimize service delivery and promotion in the herbal health tourism sector. This effort is a trend in increasing income both actively and passively. It is reported by Zulaika (2023) that to improve SMEs in Kelurahan Batu Sembilan, it can be done through product digitalization. The same thing was reported by Guntoro et al. (2024) regarding digitalization efforts in the Kebon Pedas district of Sukabumi. The successful development and implementation of a customized CMS-based website directly address the challenges of limited digital literacy and inefficient information dissemination, while also aligning with the broader goals of enhancing tourism competitiveness. This outcome reflects the argument of Law et al. (2014). Digital transformation acts as a catalyst in the development of tourism, improving framework, faster access to literacy, connecting between locations, and even increasing visits and revenue. Besides that, health industries by improving service quality and accessibility through online platforms (Gunko et al., 2025).

The integration of a website as a promotional medium in WKJ Kalibakung is consistent with Koo et al. (2016), who emphasized that an interactive and well-structured website can increase destination competitiveness through complete and easily accessible information. Participants' reflection scores, particularly the high ratings for the website's role in promoting herbal health tourism (4.60) and supporting further development (4.67), confirm the relevance of this approach. Furthermore, the training component of the CSP aligns with the findings of Lim (2007) and Studer et al. (2021), which highlight that ICT skill enhancement through training has a significant positive effect on digital content management and enables personnel to update information independently. This activity is also in line with Rezeki et al. (2025), digitalization is able to enhance local tourism, as reflected in the respondent evaluation reaching 85%.

From a marketing perspective, the program also resonates with Kannan and Li (2017), who underlined the importance of digital marketing strategies in expanding promotional reach and delivering consistent messages to target audiences. The training in content creation and updates equips WKJ staff with the capabilities to support these strategies, thus laying the foundation for ongoing engagement with the public. Moreover, the focus on disseminating credible, research-based information about herbal medicine echoes the recommendations of Geck et al. (2020) and World Health Organization (2013), who stressed that evidence-based communication can build public trust and enhance the global acceptance of traditional medicine. The effort towards digitalization also enhances more credible institutions, transparent information, as anyone can more easily access and exchange information for various needs (Ihnatenko, K., Sadzaglishvili, 2023; Serohin, V., Serhina, 2025).

In terms of its contribution to the Sustainable Development Goals (SDGs), the program supports Goal 3: Good Health and Well-Being by promoting the use of evidence-based traditional herbal medicine as part of community health services. It also addresses Goal 9 regarding Industry, Innovation, and Infrastructure through the development and implementation of a digital platform to enhance the visibility and accessibility of health tourism services. Furthermore, the initiative

contributes to Goal 17 concerning Partnerships for the Goals by fostering collaboration between academic institutions, local government, and community stakeholders in advancing digital transformation in the traditional health sector. These contributions align with the view of George et al. (2021), who argue that digital innovation in health tourism can improve service quality while supporting sustainable community development (Kirom et al., 2024).

The implementation of this CSP was supported by several enabling factors, including the enthusiasm and strong motivation of participants who recognized the website's necessity as a promotional and informational medium, the commitment of WKJ management to actively engage in the mentoring process and embrace digital transformation, the availability of clear and easy-to-understand training materials, and the provision of technological equipment such as laptops and projectors that facilitated the practical sessions. Evaluation was given to respondents by asking for feedback on the material, the presenter, and the facilities, with answer choices of "yes," "no," and "unsure." The results showed that 100% of respondents provided positive feedback.

However, some constraints were encountered during the program. The limited timeframe for intensive mentoring meant that not all material could be delivered in depth. In addition, several participants had other commitments outside the training, such as service schedules or village activities, which occasionally affected full attendance in each session. These challenges are consistent with previous research highlighting time constraints and competing priorities as common barriers to the successful implementation of ICT-based community programs. Addressing these barriers in future programs could involve extending the mentoring duration and offering asynchronous learning materials to ensure continued engagement (Gasumova, 2021; Tuikka, 2020).

Overall, the program demonstrates a best-practice model for integrating digital solutions into community-based tourism management, bridging the gap between traditional heritage and modern digital promotion strategies, while simultaneously contributing to multiple SDG targets.

CONCLUSION

Digital knowledge has become a massive trend for the development of communication in today's era, making this community service activity effective and running well. This occurs because feedback from respondents, reaching 100%, rated the materials, instructors, and training provided as good. This implementation is expected to become a transformative effort for WKJ in improving information services digitally, institutionally and in terms of revenue. WKJ UPTD also experiences improvements in legality, transparency, and excellent services for patients. In addition, this community service activity also contributes to fulfilling the SDGs in various sectors.

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